

METHODS FOR FIXING HAIR AND SKIN

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] The present application is a continuation of US Application 18/177,011 filed March 1, 2023, which is a continuation of US Application 17/941,675 filed September 9, 2022, which is a continuation of US Application 16/830,789 filed March 26, 2020 (now US Pat. 11,446,525), which is a continuation of US Application 15/854,504 filed December 26, 2017 (now US Pat. 10,639,505), which is a continuation of US Application 14/835,223 filed August 25, 2015 (now US Pat. 9,855,447), which is a continuation of US Application 14/748,831 filed June 24, 2015 (now US Pat. 9,144,537), which is a continuation of US Application 14/459,012 filed August 13, 2014 (now US Pat. 9,095,518), which is a continuation-in-part of International Application PCT/US2014/049388 filed August 1, 2014, which claims priority to US Prov. Application 61/861,281 filed August 1, 2013; US Prov. Application 61/867,872 filed August 20, 2013; US Prov. Application 61/885,898 filed on October 2, 2013; US Prov. Application 61/903,239 filed November 12, 2013; US Application 14/257,089 filed April 21, 2014 (now abandoned); US Application 14/257,056 filed April 21, 2014 (now abandoned); US Application 14/257,076 filed April 21, 2014 (now abandoned); and US Prov. Application 62/000,340 filed May 19, 2014. The contents of the referenced patent applications are incorporated into the present application by reference.

FIELD OF THE INVENTION

[0002] The present invention generally relates to compositions and methods for treating hair or skin, particularly for repairing disulfide bonds in hair or on the skin.

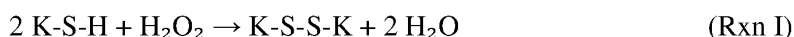
BACKGROUND OF THE INVENTION

[0003] Hair consists of many long protein chains composed of amino acid building blocks. These chains, or polymers, are bound to each other via 1) hydrogen bonding, 2) salt bridges between acid and base groups, and 3) disulfide bonds. Water reversibly cleaves the hydrogen bonds. This makes wet hair easy to shape and set. When the water evaporates, hydrogen bonds form at new positions, holding the hair in this set. In strongly acidic solutions, such as where the pH is 1.0 to 2.0, both hydrogen bonds and salt bridges are broken. The disulfide bonds, however, can still hold the protein chains together in the strand of hair under such conditions.

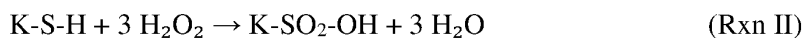
[0004] At a slightly alkaline pH of 8.5, some disulfide bonds are broken (Dombrink et al., Chem Matters, 1983, page 8). Repeated washing with slightly alkaline shampoo damages the hair by breaking more and more of the disulfide bonds. This causes the cuticle or outer surface of the hair strands to become ruffled and generally leaves the hair in a wet, tangled, and generally unmanageable state. This is one cause of "split ends." Once the hair dries, it is often left in a dry, rough, or frizzy condition. Additionally, rough hair catches light unevenly and makes the hair look lusterless and dull. The hair can also be left with increased levels of static upon drying, which can interfere with combing and result in a condition commonly referred to as "fly-away hair."

[0005] Disulfide linkages are also ruptured due to heating or use of various reducing treatments. Current compositions and methods for waving and straightening mammalian hair use reducing agents such as thioglycolic acid, particularly as the ammonium salt, to cleave the hair's cystine disulfide bonds. Once the disulfide bonds are broken, and the hair is placed in stress to establish the final style (e.g., straight, wavy, or curly) the disulfide bonds are reestablished. Oxidation to restore the reduced bonds can be achieved by simply exposing the hair to atmospheric oxygen, but this oxidation step is very slow and is of very little practical use. Generally, hydrogen peroxide or sodium bromate is used as the oxidizing agent. However, the newly formed disulfide bonds are under stress to maintain the hair's new shape, thus, they break easily resulting in a reversion of the hair style over time. In addition, the use of peroxides in the hair styling process can result in damaged hair, removal of non-natural color from the hair, and/or leave the hair frizzy. Furthermore, some latent free thiols may remain in the hair even after oxidative treatment.

[0006] Treatment with peroxides used in the hair styling process results in the following reaction:



where K represents keratin in the hair. However, if two K-S-H groups are not present for the reaction (Rxn I) to take place, it is believed that the following reaction takes place, which results in damaged hair.



[0007] Keratin is also a major component in skin. Damage to the disulfide bridges of keratin can cause skin to look unhealthy or flaky. Maintaining the disulfide bridges of keratin keeps the skin healthy and prevents cracking and splitting.

[0008] A variety of approaches have been developed to alleviate these problems, including post-shampoo application of hair conditioners, such as leave-on and rinse-off products. Typically, conditioning rinses put back the oily coating, especially to the damaged portion of the hair where the cuticle has become ruffled since conditioners cling best to these portions. However, too much or too heavy a conditioner will make the hair stickier, thus attracting dirt and often may make more shampooing treatments necessary. Typically conditioners do not bind the free thiols in hair.

[0009] The use of cationic polymers to form coacervates to provide conditioning benefits to the hair is known, such as described in International Published Applications WO 93/08787 to King et al. and WO 95/01152 to Napolione et al. Commonly used cationic deposition polymers include natural polymers, such as guar gum polymers, that have been modified with cationic substituents. The selection of a cationic guar polymer with sufficient charge density and molecular weight results in sufficient deposition of conditioning agents when incorporated in a shampoo or body wash. However, a relatively high level of such cationic guar polymer generally must be deposited on the hair or skin. Moreover, the cost of such cationic guar polymer is relatively high. As a result, incorporation of cationic guar polymer can increase the manufacturing costs of such shampoo compositions. Additionally, these shampoo compositions typically are useful for wet hair conditioning, but are not capable of delivering satisfactory dry hair smooth feel. Furthermore, these conditioners do not bind the free thiols in hair.

[0010] US Pat. 5,656,265 to Bailey et al., discloses a hair styling conditioning process for use after treating the hair with a reducing agent. The process involves contacting the hair with a compound having an electrophilic group and at least one hydrophobic group. According to Bailey, the electrophilic groups react with the thiol groups to provide a plurality of hydrophobic groups on the hair. However, these conditioners do not bind the free thiols in hair together.

[0011] There is a need for hair formulations and treatments that can provide improved conditioning benefit for hair. Specifically, there is a need to provide long lasting moisturized feel, smooth feel, and manageability control to hair when it is dried. There is also a need for hair formulations and treatments that repair latent free thiols in the hair.

[0012] There is a need for hair formulations and treatments that repair and/or strengthen damaged hair and rebuild stronger bonds in hair treated with reducing agents.

[0013] There is also a need for skin formulations and treatments that provide improved conditioning and/or moisturizing benefit to the skin. In particular, there is a need to provide a long

lasting moisturized and smooth feel to the skin. There is also a need for skin formulations and treatments that repair free thiols in the skin.

[0014] Therefore, it is an object of this invention to provide improved compositions and methods for repairing and/or strengthening damaged hair.

[0015] It is also an object of this invention to provide compositions and methods for using these compositions that repair and/or strengthen hair after a washing or reducing treatment.

[0016] It is also an object of this invention to provide compositions and methods for conditioning, moisturizing, and/or otherwise treating the skin.

SUMMARY OF THE INVENTION

[0017] Compositions, kits, and methods for repairing bonds, for example, disulfide bonds, in hair or on the skin that have been damaged are disclosed. The compositions provide improved conditioning benefit for dry hair or moisturize the skin. Specifically, the compositions provide long lasting moisturized feel and smooth feel without leaving the hair greasy, improved appearance (e.g., sheen), increased dry strength (tensile strength), ease of combing the hair when wet or dried, less hair breakage, and decreased frizz. The compositions also provide a long lasting moisturized feel and smooth feel to the skin.

[0018] The compositions contain one or more compounds that interact with keratin through more than one binding events (e.g., absorption, binding, etc.) which may involve reaction with one or more thiols in the hair or on the skin. Binding herein is defined as the formation of covalent, ionic or hydrogen bonding, etc. Under normal hair washing conditions, including shampooing and conditioning, the covalent bonds formed are not susceptible to reduction or hydrolysis. Use of the binding compositions prevents reversion of the hair's repaired bonds to their free thiol state, for at least one week, two weeks, three weeks, four weeks, one month, or two months, or longer, after application of the composition.

[0019] Improved methods of styling hair, for example permanent hair waving, hair curling, and hair straightening are also provided. The binding compositions can be applied each time the hair is washed or daily, once-weekly, twice-weekly, biweekly, once-monthly, every other month, or at less frequent intervals. Preferably, the binding compositions are applied weekly or once per month to achieve the desired results.

[0020] Traditional methods of permanent hair waving, hair curling, or straightening use hydrogen peroxide to rebuild the disulfide bonds after a reducing treatment. The process generally

takes about three days to complete. The methods disclosed herein use binding agents to repair the hair; these binding agents are washed from the individual's hair on the same day that they are applied to the hair. In some embodiments, the binding agents and the free thiol groups form a carbon-sulfur covalent bond. Under the same conditions, such as temperature and moisture, hair treated with the binding agents takes a longer time to revert to its prior state compared to the same hair that is untreated. The binding agent can contain one or more reactive groups where the reactive functional groups are bound to the surface.

[0021] In one embodiment, the binding agent contains a linker or spacer and two or more reactive functional groups, wherein the reactive functional groups are covalently bound to the linker or spacer. In other embodiments, the binding agent contains a spacer or linker which forms a salt with the two or more reactive functional groups. In other embodiments, the binding agent contains one or more reactive groups where the reactive functional groups interact with the surface of the hair or functional groups on the hair.

DETAILED DESCRIPTION OF THE INVENTION

I. Definitions

[0022] The term "hair" refers to one or more than one strand of hair, as well as the natural components of hair, such as oil from a body. Hair also refers to virgin hair or processed hair, for example hair that has been exposed to hair waving or hair straightening formulations.

[0023] An "effective amount," e.g., of the binding agent or compositions described herein, refers to an amount of the binding agent in a composition or formulation which, when applied as part of a desired dosage regimen, binds free thiols in the hair.

[0024] "Pharmaceutically acceptable" and "cosmetically acceptable" are used interchangeably and refer to those compounds, materials, compositions, and/or dosage forms which are, within the scope of sound medical judgment, suitable for use in contact with the tissues of human beings and animals without excessive toxicity, irritation, allergic response, or other problems or complications commensurate with a reasonable benefit/risk ratio. More specifically, pharmaceutically acceptable refers to a material, compound, or composition which is suitable for use in contact with the skin, scalp, or hair. Pharmaceutically acceptable materials are known to those of ordinary skill in the art.

[0025] "Shampoo," as used herein, generally refers to a liquid or semi-solid formulation applied to the hair that contains detergent or soap for washing the hair.

[0026] “Conditioner,” as used herein, generally refers to a formulation (e.g., liquid, cream, lotion, gel, semi-solid) applied to the hair to soften the hair, smooth the hair, and/or change the sheen of the hair.

[0027] “Analog” and “Derivative” are used herein interchangeably and refer to a compound that possesses the same core as the parent compound, but differs from the parent compound in bond order, the absence or presence of one or more atoms and/or groups of atoms, and combinations thereof. The derivative can differ from the parent compound, for example, in one or more substituents present on the core, which may include one or more atoms, functional groups, or substructures. In general, a derivative can be imagined to be formed, at least theoretically, from the parent compound via chemical and/or physical processes.

[0028] “Electrophilic group” or “electrophilic moiety” are used interchangeably and refer to one or more functional groups or moieties that have an affinity for or attract electrons.

[0029] “Michael acceptor,” as used herein, is a species of electrophilic groups or moieties that participates in nucleophilic addition reactions. The Michael acceptor can be or can contain an α,β -unsaturated carbonyl-containing group or moiety, such as a ketone. Other Michael acceptors include pi-bonds, such as double or triple bonds conjugated to other pi-bond containing electron withdrawing groups, such as nitro groups, nitrile groups, and carboxylic acid groups.

[0030] “Alkyl,” as used herein, refers to the radical of saturated or unsaturated aliphatic groups, including straight-chain alkyl, alkenyl, or alkynyl groups, branched-chain alkyl, alkenyl, or alkynyl groups, cycloalkyl, cycloalkenyl, or cycloalkynyl (alicyclic) groups, alkyl substituted cycloalkyl, cycloalkenyl, or cycloalkynyl groups, and cycloalkyl substituted alkyl, alkenyl, or alkynyl groups. Unless otherwise indicated, a straight chain or branched chain alkyl has 30 or fewer carbon atoms in its backbone (e.g., C1-C30 for straight chain, C3-C30 for branched chain), more preferably 20 or fewer carbon atoms, more preferably 12 or fewer carbon atoms, and most preferably 8 or fewer carbon atoms. In some embodiments, the chain has 1-6 carbons. Likewise, preferred cycloalkyls have from 3-10 carbon atoms in their ring structure, and more preferably have 5, 6 or 7 carbons in the ring structure. The ranges provided above are inclusive of all values between the minimum value and the maximum value.

[0031] The term “alkyl” includes both “unsubstituted alkyls” and “substituted alkyls,” the latter of which refers to alkyl moieties having one or more substituents replacing a hydrogen on one or more carbons of the hydrocarbon backbone. Such substituents include, but are not limited

to, halogen, hydroxyl, carbonyl (such as a carboxyl, alkoxycarbonyl, formyl, or an acyl), thiocarbonyl (such as a thioester, a thioacetate, or a thioformate), alkoxyl, phosphoryl, phosphate, phosphonate, a phosphinate, amino, amido, amidine, imine, cyano, nitro, azido, sulfhydryl, alkylthio, sulfate, sulfonate, sulfamoyl, sulfonamido, sulfonyl, heterocyclyl, aralkyl, or an aromatic or heteroaromatic moiety.

[0032] Unless the number of carbons is otherwise specified, “lower alkyl” as used herein means an alkyl group, as defined above, but having from one to ten carbons, more preferably from one to six carbon atoms in its backbone structure. Likewise, “lower alkenyl” and “lower alkynyl” have similar chain lengths. Preferred alkyl groups are lower alkyls.

[0033] The alkyl groups may also contain one or more heteroatoms within the carbon backbone. Examples include oxygen, nitrogen, sulfur, and combinations thereof. In certain embodiments, the alkyl group contains between one and four heteroatoms.

[0034] “Alkenyl” and “Alkynyl,” as used herein, refer to unsaturated aliphatic groups containing one or more double or triple bonds analogous in length (e.g., C2-C30) and possible substitution to the alkyl groups described above.

[0035] “Aryl,” as used herein, refers to 5-, 6- and 7-membered aromatic rings. The ring may be a carbocyclic, heterocyclic, fused carbocyclic, fused heterocyclic, bicarbocyclic, or biheterocyclic ring system, optionally substituted as described above for alkyl. Broadly defined, “Ar,” as used herein, includes 5-, 6- and 7-membered single-ring aromatic groups that may include from zero to four heteroatoms. Examples include, but are not limited to, benzene, pyrrole, furan, thiophene, imidazole, oxazole, thiazole, triazole, pyrazole, pyridine, pyrazine, pyridazine and pyrimidine. Those aryl groups having heteroatoms in the ring structure may also be referred to as “heteroaryl,” “aryl heterocycles,” or “heteroaromatics.” The aromatic ring can be substituted at one or more ring positions with such substituents as described above, for example, halogen, azide, alkyl, aralkyl, alkenyl, alkynyl, cycloalkyl, hydroxyl, alkoxyl, amino, nitro, sulfhydryl, imino, amido, phosphonate, phosphinate, carbonyl, carboxyl, silyl, ether, alkylthio, sulfonyl, sulfonamido, ketone, aldehyde, ester, heterocyclyl, aromatic or heteroaromatic moieties, perfluoroalkyl, and cyano. The term “Ar” also includes polycyclic ring systems having two or more cyclic rings in which two or more carbons are common to two adjoining rings (the rings are “fused rings”) wherein at least one of the rings is aromatic, e.g., the other cyclic rings can be cycloalkyls, cycloalkenyls, cycloalkynyls, aryls and/or heterocycles, or both rings are aromatic.

[0036] “Alkylaryl,” as used herein, refers to an alkyl group substituted with an aryl group (e.g., an aromatic or hetero aromatic group).

[0037] “Heterocycle” or “heterocyclic,” as used herein, refers to a cyclic radical attached via a ring carbon or nitrogen of a monocyclic or bicyclic ring containing 3-10 ring atoms, and preferably from 5-6 ring atoms, containing carbon and one to four heteroatoms each selected from non-peroxide oxygen, sulfur, and N(Y) wherein Y is absent or is H, O, (C1-4) alkyl, phenyl or benzyl, and optionally containing one or more double or triple bonds, and optionally substituted with one or more substituents. The term “heterocycle” also encompasses substituted and unsubstituted heteroaryl rings. Examples of heterocyclic ring include, but are not limited to, benzimidazolyl, benzofuranyl, benzothiofuranyl, benzothiophenyl, benzoxazolyl, benzoxazoliny, benzthiazolyl, benztriazolyl, benztetrazolyl, benzisoxazolyl, benzisothiazolyl, benzimidazoliny, carbazolyl, 4aH-carbazolyl, carboliny, chromanyl, chromenyl, cinnoliny, decahydroquinoliny, 2H,6H-1,5,2-dithiaziny, dihydrofuro[2,3-b]tetrahydrofuranyl, furanyl, furazanyl, imidazolidiny, imidazoliny, imidazolyl, 1H-indazolyl, indolenyl, indoliny, indoliziny, indolyl, 3H-indolyl, isatinoyl, isobenzofuranyl, isochromanyl, isoindazolyl, isoindoliny, isoindolyl, isoquinoliny, isothiazolyl, isoxazolyl, methylenedioxyphenyl, morpholiny, naphthyridiny, octahydroisoquinoliny, oxadiazolyl, 1,2,3-oxadiazolyl, 1,2,4-oxadiazolyl, 1,2,5-oxadiazolyl, 1,3,4-oxadiazolyl, oxazolidiny, oxazolyl, oxindolyl, pyrimidiny, phenanthridiny, phenanthroliny, phenaziny, phenothiaziny, phenoxathiny, phenoxaziny, phthalaziny, piperaziny, piperidiny, piperidonyl, 4-piperidonyl, piperonyl, pteridiny, puriny, pyranly, pyraziny, pyrazolidiny, pyrazoliny, pyrazolyl, pyridaziny, pyridooxazole, pyridoimidazole, pyridothiazole, pyridiny, pyridyl, pyrimidiny, pyrrolidiny, pyrroliny, 2H-pyrrolyl, pyrrolyl, quinazoliny, quinoliny, 4H-quinoliziny, quinoxaliny, quinuclidiny, tetrahydrofuranyl, tetrahydroisoquinoliny, tetrahydroquinoliny, tetrazolyl, 6H-1,2,5-thiadiaziny, 1,2,3-thiadiazolyl, 1,2,4-thiadiazolyl, 1,2,5-thiadiazolyl, 1,3,4-thiadiazolyl, thianthrenyl, thiazolyl, thienyl, thienothiazolyl, thienooxazolyl, thienoimidazolyl, thiophenyl and xanthenyl.

[0038] “Heteroaryl,” as used herein, refers to a monocyclic aromatic ring containing five or six ring atoms containing carbon and 1, 2, 3, or 4 heteroatoms each selected from non-peroxide oxygen, sulfur, and N(Y) where Y is absent or is H, O, (C1-C8) alkyl, phenyl or benzyl. Non-limiting examples of heteroaryl groups include furyl, imidazolyl, triazolyl, triaziny, oxazolyl, isoxazolyl, thiazolyl, isothiazolyl, pyrazolyl, pyrrolyl, pyraziny, tetrazolyl, pyridyl, (or its N-

oxide), thienyl, pyrimidinyl (or its N-oxide), indolyl, isoquinolyl (or its N-oxide), quinolyl (or its N-oxide) and the like. The term "heteroaryl" can include radicals of an ortho-fused bicyclic heterocycle of about eight to ten ring atoms derived therefrom, particularly a benzyl-derivative or one derived by fusing a propylene, trimethylene, or tetramethylene diradical thereto. Examples of heteroaryl include, but are not limited to, furyl, imidazolyl, triazolyl, triazinyl, oxazolyl, isoxazolyl, thiazolyl, isothiazolyl, pyrazolyl, pyrrolyl, pyrazinyl, tetrazolyl, pyridyl (or its N-oxide), thienyl, pyrimidinyl (or its N-oxide), indolyl, isoquinolyl (or its N-oxide), quinolyl (or its N-oxide), and the like.

[0039] "Halogen," as used herein, refers to fluorine, chlorine, bromine, or iodine.

[0040] The term "substituted" as used herein, refers to all permissible substituents of the compounds described herein. In the broadest sense, the permissible substituents include acyclic and cyclic, branched and unbranched, carbocyclic and heterocyclic, aromatic and nonaromatic substituents of organic compounds. Illustrative substituents include, but are not limited to, halogens, hydroxyl groups, or any other organic groupings containing any number of carbon atoms, preferably 1-14 carbon atoms, and optionally include one or more heteroatoms such as oxygen, sulfur, or nitrogen grouping in linear, branched, or cyclic structural formats. Representative substituents include alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, phenyl, substituted phenyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, halo, hydroxyl, alkoxy, substituted alkoxy, phenoxy, substituted phenoxy, aroxy, substituted aroxy, alkylthio, substituted alkylthio, phenylthio, substituted phenylthio, arylthio, substituted arylthio, cyano, isocyano, substituted isocyano, carbonyl, substituted carbonyl, carboxyl, substituted carboxyl, amino, substituted amino, amido, substituted amido, sulfonyl, substituted sulfonyl, sulfonic acid, phosphoryl, substituted phosphoryl, phosphonyl, substituted phosphonyl, polyaryl, substituted polyaryl, C3-C20 cyclic, substituted C3-C20 cyclic, heterocyclic, substituted heterocyclic, amino acid, peptide, and polypeptide groups.

[0041] Heteroatoms, such as nitrogen, may have hydrogen substituents and/or any permissible substituents of organic compounds described herein that satisfy the valences of the heteroatoms. It is understood that "substitution" or "substituted" includes the implicit proviso that such substitution is in accordance with permitted valence of the substituted atom and the substituent, and that the substitution results in a stable compound, i.e. a compound that does not spontaneously undergo transformation such as by rearrangement, cyclization, elimination, etc.

[0042] “Polymer,” as used herein, refers to a molecule containing more than 10 monomer units.

[0043] “Water-soluble,” as used herein, generally means at least 10, 50, 100, 125, 150, 200, 225, or 250 g is soluble in 1L of water at 25°C.

[0044] “Binding agent,” as used herein, refers to a molecule that forms covalent, ionic or hydrogen bonding, etc. with the hair and generally includes the formation of at least one covalent bond with a free thiol.

II. Binding Formulations

[0045] The formulations disclosed herein are concerned with treating hair or skin. In particular, the formulations can rebuild latent disulfide bonds in hair or skin. Additionally, the formulations may also react with free amines in the hair to provide a conditioning effect.

[0046] The formulations contain one or more binding agents (also referred to herein as “compounds” or “active agents”).

[0047] The binding agents can be combined with one or more pharmaceutically acceptable carriers and/or excipients that are considered safe and effective to human hair, skin, and/or human scalp, and may be administered to an individual’s hair without causing undesirable side effects, such as burning, itching, and/or redness, or similar adverse reactions. The formulations may further contain an excipient that renders the formulations neutral pH, or a pH ranging from about pH 3 to about pH 12, preferably from pH 5 to pH 8.

[0048] The binding agent is typically present in an amount ranging from about 0.01 wt% to about 50 wt% of the formulation, preferably from about 1 wt% to about 25 wt% of the formulation, more preferably from about 1 wt% to about 15 wt%, most preferably from about 1 wt% to about 10 wt%. Typically, the binding agent is about 2.5-3 wt% of the formulation.

[0049] The binding agent is stable in aqueous solution for a period of at least 2, 3, 4, 5, 6, 8, 9, 10, 11, or 12 months or longer at pH of 6 to 8 and a temperature of about 25-30°C, preferably about 25°C. “Stable” as used herein with respect to shelf-life means that at least 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, or 95% of the reactive moieties are intact or to the extent that the reactive moieties react with water, the resulting product is also electrophilic.

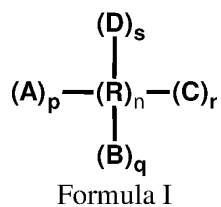
a. Binding agent

[0050] The binding agent contains at least two reactive moieties capable of reacting with a thiol. The binding agent optionally contains a linker between the two or more reactive moieties. The linker forms two or more ionic bonds with the reactive moieties. The reactive moieties, upon reaction with thiol groups on the hair follicle, form bonds that are stable, for example, hydrolytically stable. “Stable,” as used in reference to the bonds formed between thiol groups on hair follicles means the bonds remain intact for at least one week, two weeks, three weeks, four weeks, one month, or two months or longer when exposed to water at pH 6-8 at a temperature from about 5°C to about 100°C, preferably from about 20°C to about 75°C, more preferably from about 20°C to about 50°C, more preferably from about 25°C to about 40°C, most preferably from about 25°C to about 30°C. In some embodiments, the temperature is about 25°C. It is also preferred that the binding reaction occurs around room temperature, for example, from about 15°C to about 35°C, preferably from about 20°C to about 30°C, more preferably from about 22°C to about 27°C.

[0051] The binding agents typically have a low molecular weight and are compatible with aqueous or solvent delivery systems. In some embodiments, the compound is water-soluble. The low molecular weight is preferred, as it allows the molecule to diffuse in and out of hair at a reasonable rate. Molecular weights of less than 10,000 Da, 8,000 Da, 6,000 Da, 5,000 Da, 4,000 Da, 3,000 Da, 2,000 Da, or 1,000 Da are preferred. In some embodiments, the molecular weight is less than 1500 Da, preferably less than 800 Da, most preferably less than 500 Daltons to achieve sufficient diffusion rates in conventional aqueous hair care systems.

i. Binding agents defined by Formula I

[0052] In some embodiments, the binding agents have a structure according to Formula I:



wherein A, B, C, and D are reactive moieties containing one or more charges, R is a linker that contains two or more charges, wherein the charges are opposite to the charges on the reactive moieties, and each occurrence of p, q, r, and s is independently an integer from 0 to 25, preferably from 0 to 10, more preferably from 0 to 2. The sum of p + q + r + s is equal to or greater than 2.

[0053] The reactive moieties may be present on any atom of the linker. In some embodiments, the reactive moieties are the same. In some embodiments, one or more of the reactive moieties is different.

[0054] In some embodiments, the reactive moieties are negatively charged and the linker or spacer has positively charged moieties. In other embodiments, the reactive moieties are positively charged and the linker or spacer has negatively charged moieties. Generally, the sum of the charges on the binding agent of Formula I is zero though stoichiometric imbalances may exist.

ii. Linker

[0055] The reactive moieties on the binding agents are preferably linked via a linker. The term "linker," as used herein, refers to one or more polyfunctional, e.g. bifunctional molecules, trifunctional molecules, tetrafunctional molecules, etc., which can be used to ionically bound the two or more reactive moieties and which do not interfere with the reactive properties of the binding agents. The reactive moieties may be attached to any part of the linker.

[0056] Linkers can be a single atom, such as a heteroatom (e.g., O or S), a group of atoms, such as a functional group (e.g., amine, $-C(=O)-$, $-CH_2-$), or multiple groups of atoms, such as an alkylene chain. Suitable linkers include but are not limited to oxygen, sulfur, carbon, boron, nitrogen, alkoxy, alkyl, alkenyl, cycloalkyl, cycloalkenyl, aryl, heterocycloalkyl, heteroaryl, ether, amine, and a polymer.

[0057] The linker is optionally independently substituted with one or more substituents including hydrogen, halogen, cyano, alkoxy, alkyl, alkenyl, cycloalkyl, cycloalkenyl, aryl, heterocycloalkyl, heteroaryl, amine, hydroxy, formyl, acyl, carboxylic acid ($-COOH$), $-C(O)R^1$, $-C(O)OR^1$, carboxylate ($-COO^-$), primary amide (e.g., $-CONH_2$), secondary amide (e.g., $-CONHR^1$), $-C(O)NR^1R^2$, $-NR^1R^2$, $-NR^1S(O)_2R^2$, $-NR^1C(O)R^2$, $-S(O)_2R^2$, $-SR^1$, and $-S(O)_2NR^1R^2$, sulfinyl group (e.g., $-SOR^1$), and sulfonyl group (e.g., $-SOOR^1$); wherein R^1 and R^2 may each independently be hydrogen, alkyl, alkenyl, alkynyl, cycloalkyl, aryl, heterocycloalkyl and heteroaryl; wherein each of R^1 and R^2 is optionally independently substituted with one or more substituents selected from the group consisting of halogen, hydroxyl, cyano, nitro, amino, alkylamino, dialkylamino, alkyl optionally substituted with one or more halogen or alkoxy or aryloxy, aryl optionally substituted with one or more halogen or alkoxy or alkyl or trihaloalkyl, heterocycloalkyl optionally substituted with aryl or heteroaryl or $=O$ or alkyl optionally substituted with hydroxyl, cycloalkyl optionally substituted with hydroxyl, heteroaryl optionally

substituted with one or more halogen or alkoxy or alkyl or trihaloalkyl, haloalkyl, hydroxyalkyl, carboxy, alkoxy, aryloxy, alkoxycarbonyl, aminocarbonyl, alkylaminocarbonyl and dialkylaminocarbonyl.

[0058] In some embodiments, the linker may be an alkoxy, ether, alkyl, alkenyl, cycloalkyl, cycloalkenyl, aryl, heterocycloalkyl, heteroaryl, amine, or a polymer. In some embodiments, the linker is not a polymer.

iii. Polymeric Binding agents

[0059] The binding agent can be a polymer. In this form, the linker forms or is the polymer backbone having ionically associated therewith two or more reactive moieties. Optionally, the polymeric binding agent can have a structure according to Formula I. In some forms, for each occurrence of a monomer unit in the polymer, zero, one, two, three, four, or more reactive moieties can be ionically associated with, the monomer. The reactive moieties on each monomer unit in the polymer can be the same or different.

[0060] In some embodiments, at least one reactive moiety is present on each monomer unit. Alternately, the reactive moieties may be present on alternate monomer units. In some embodiments, reactive moieties are present on a minimum percentage of the monomer units in the polymer. For example, at least one reactive moiety can be present on 0.1%, 1%, 5%, 10%, 15%, 20%, 25%, 30%, 35%, 40%, 45%, 50%, 55%, 60%, 65%, 70%, 75%, 80%, 85%, 90%, 95%, or 100% of the monomer units in the polymer. The reactive moieties can be present on any atom on the monomer.

I. Polymers

[0061] The polymer may be functionalized at the termini (and/or within the polymer backbone) with one or more of reactive moieties, A-D. One or more monomers in the polymer may be functionalized so that one or more reactive moieties, A-D, may be introduced (*e.g.*, ionically associated with) using techniques known in the art. For ionically associated moieties, the salt is typically generated *in situ*.

[0062] A wide variety of polymers and methods for forming the polymers are known in the art of polymer science. Polymers can be degradable or non-degradable polymers. Polymers can be natural or unnatural (synthetic) polymers. Polymers can be homopolymers or copolymers comprising two or more monomers. In terms of sequence, copolymers can be random, block, or comprise a combination of random and block sequences. The polymers can in some embodiments

be linear polymers, branched polymers, or hyperbranched/dendritic polymers. The polymers may also be present as a bound particle or surface functionalized inorganic particle. Suitable polymers include, but are not limited to poly (vinyl acetate), copolymers of styrene and alkyl acrylates, and copolymers of vinyl acetate and acrylic acid, polyvinylpyrrolidone, dextran, carboxymethylcellulose, polyethylene glycol, polyalkylene, polyacrylates, and polymethacrylates; polyanhydrides; polyorthoesters; polystyrene (PS), poly(ethylene-co-maleic anhydride), poly(ethylene maleic anhydride-co-L-dopamine), poly(ethylene maleic anhydride-co-phenylalanine), poly(ethylene maleic anhydride-co-tyrosine), poly(butadiene-co-maleic anhydride), poly(butadiene maleic anhydride-co-L-dopamine) (pBMAD), poly(butadiene maleic anhydride-co-phenylalanine), poly(butadiene maleic anhydride-co-tyrosine), poly(bis carboxy phenoxy propane-co-sebacic anhydride) (poly (CCP:SA)), alginate; and poly(fumaric anhydride-co-sebacic anhydride (p[FA:SA]), copolymers of p[FA:SA], polyacrylates and polyacrylamides, and copolymers thereof, and combinations thereof. In some embodiments, the polymeric linker is preferably water-soluble.

[0063] For polymeric linkers, the number of monomers is typically greater than or equal to 1, such as 1-10 (*e.g.*, oligomer) or greater than 10 (*e.g.*, polymer), such as 10-1000 or greater.

iv. Reactive moieties that react with thiols

[0064] The binding agent contains at least two reactive moieties that react with thiols to form covalent bonds. The reactive moieties are capable of reacting with a thiol group in the hair or on the skin to form a stable covalent bond. The reactive moiety is typically an electrophilic moiety capable of forming a salt with the linker. Alternately, the reactive moiety can be a free radical forming moiety.

[0065] The binding agent contains at least two reactive moieties. However, the binding agent may contain three, four, five, six, or greater than six reactive moieties.

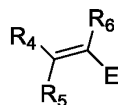
[0066] The reaction between the reactive moiety and the thiol groups may be initiated at room temperature and pressure when the reactive moiety contacts a thiol group in the hair or on the skin. In some embodiments, the reaction may require an initiator, such as heat, catalyst, basic conditions, or a free radical initiator. The rate of reaction between the reactive moiety and the thiol may be increased by changes in temperature, pH, and/or addition of one or more excipients, such as a catalyst; however, this is generally not required.

[0067] The two or more reactive moieties on the binding agent can be the same. In some embodiments, the two or more reactive moieties are different.

[0068] In some embodiments, the reactive moieties are capable of undergoing a conjugate additional reaction. The reactive moieties can independently be or contain a Michael acceptor, a succinimidyl-containing group, a maleimido-containing group, azlactone, a benzoxazinone derivative, vinyl sulfone, vinyl sulfoximine, vinyl sulfonate, vinyl phosphonate, benzoxazinone, isocyanate, epoxide, an electrophilic moiety containing a leaving group, an electrophilic thiol acceptor, acrylic or acrylate group, a methacrylic or methacrylate group, a styrene group, an acryl amide group, a methacryl amide group, a maleate group, a fumarate group, an itaconate group, a vinyl ether group, an allyl ether group, an allyl ester group, a vinyl ester group, a sulfonate group, a phosphonate group, a sulfoxide group, a sulfonamide group, a sulfinimide group, a sulfinamide group, a sulfonimide group, or a sulfonimidamide group.

1. Michael acceptor

[0069] A “Michael acceptor,” as used herein, is a compound or moiety with at least one Michael acceptor functional group with the structure below:



where E is $-\text{C}(=\text{O})\text{R}_3$, $-\text{C}(=\text{O})\text{OR}_3$, $-\text{C}(=\text{O})\text{NHR}_3$, $-\text{CN}$, $-\text{S}(\text{O})\text{R}_3$ or $-\text{S}(\text{O})_2\text{R}_3$, where R₃, R₄, R₅, and R₆ taken independently, are hydrogen or a group or grouping selected from, but not limited to, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, phenyl, substituted phenyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, halo, hydroxyl, alkoxy, substituted alkoxy, phenoxy, substituted phenoxy, aroxy, substituted aroxy, alkylthio, substituted alkylthio, phenylthio, substituted phenylthio, arylthio, substituted arylthio, cyano, isocyano, substituted isocyano, carbonyl, substituted carbonyl, carboxyl, substituted carboxyl, amino, substituted amino, amido, substituted amido, sulfonyl, substituted sulfonyl, sulfonic acid, phosphoryl, substituted phosphoryl, phosphonyl, substituted phosphonyl, polyaryl, substituted polyaryl, C₃-C₂₀ cyclic, substituted C₃-C₂₀ cyclic, heterocyclic, substituted heterocyclic, amino acid, peptide, and polypeptide groups. In certain embodiments, R₃ and one of R₄, R₅, or R₆ may together form a ring.

[0070] Some suitable Michael acceptors include, but are not limited to molecules in which some or all of the structure above are residues of (meth)acrylic acid, fumaric acid, or maleic acid, substituted versions thereof, or combinations thereof, attached to the Michael acceptor molecule through an ester linkage.

[0071] The linker is attached to the Michael acceptor via R₃, R₄, R₅, or R₆. In some embodiments, R₃, R₄, R₅, or R₆ may be the linker.

2. *Vinyl sulfone*

[0072] The chemistry of vinyl sulfones with respect to attack by nucleophiles is analogous to that of α,β -unsaturated ketones in that they can undergo a 1,4- type Michael addition without releasing any undesirable by-products.

3. *Vinyl sulfoximines*

[0073] The chemistry of vinyl sulfoximines is similar to vinyl sulfones. The N-tosyl sulfoximine group is more electron withdrawing than the phenyl sulfone and therefore the vinyl groups will be more susceptible towards nucleophilic attack. N-substituents can be used to alter the electrophilic potential of the vinyl group.

4. *Electrophilic moiety containing a leaving group*

[0074] The reactive moiety may be an electrophile with a leaving group. Electrophile, as used herein refers to one or more functional groups or moieties that have an affinity for or attract electrons. Suitable electrophiles include, but are not limited to, ester moieties $-(CO)-O-R$, wherein R is lower alkyl or the like), carbonyl moieties $-C(O)$, carboxylic acid or carbonic acid $-(COOH)$ or $-OCOOH$, carbonate moieties $-O-(CO)-O-R$, wherein R is lower alkyl or the like), urethane moieties $-O-(CO)-NH-R$, wherein R is H, lower alkyl, or the like), substituted urethane moieties $-O-(CO)-NR'-R$, where R' is a nonhydrogen substituent such as alkyl, aryl, alkaryl, or the like), amido moieties $-(CO)-NH-R$, wherein R is H, lower alkyl, or the like), substituted amido moieties $-(CO)-NR'-R$ where R' is as defined previously), thioester moieties $-(CO)-S-R$, wherein R is H, lower alkyl, or the like), sulfonic ester moieties $-S(O)_2-O-R$, wherein R is H, lower alkyl, or the like), and the like. Other electrophiles will be known to those of ordinary skill in the art of organic chemistry and polymer science and/or can be readily found by reference to the pertinent texts and literature.

[0075] The electrophiles preferably contain a leaving group. Suitable leaving groups are well known in the art, *see, e.g.*, "Advanced Organic Chemistry," Jerry March, 5th Ed., pp. 445-448, John Wiley and Sons, N.Y. Examples of leaving groups include, but are not limited to, halogen, sulfonyloxy, optionally substituted alkylsulfonyloxy, optionally substituted alkenylsulfonyloxy, optionally substituted arylsulfonyloxy. Specific examples of leaving groups include chloro, iodo, bromo, fluoro, methanesulfonyloxy (mesyloxy), tosyloxy, triflyloxy, nitrophenylsulfonyloxy (nosyloxy), bromophenylsulfonyloxy (brosyloxy), hydroxyl, carboxylate, carbonate, phosphate, phosphonate, phosphinate, phosphonium, urethane, urea, amide, imide, amine, ammonium, sulfonato, $-N_3$, CN, RO-, NH_2O- , $NHRO-$, $N(R^4)_2O-$, R^4CO_2- , R^4OCO_2- , R^4NCO_2- , R^4S- , $R^4C(S)O-$, R^4CS_2- , $R^4SC(O)S-$, R^4SCS_2- , R^4SCO_2- , $R^4OC(S)O-$, R^4OCS_2- , R^4SO_2- , R^4SO_3- , R^4OSO_2- , R^4OSO_3- , R^4PO_3- , R^4OPO_3- , an N-imidazolyl group, an N-triazolyl group, an N-benzotriazolyl group, a benzotriazolyl group, an imidazolyl group, an N-imidazolinone group, an N-imidazolone group, an N-imidazolinethione group, an N-imidazolinethione group, an N-succinimidyl group, an N-phthalimidyl group, an N-succinimidyloxy group, an N-phthalimididyloxy group, $-ON=C(CN)R^4$, and a 2-pyridyloxy group. R^4 is preferably an alkyl group or an aryl group.

[0076] Preferably, the leaving group is removed from the reactive moieties and does not result in the formation of side product that disadvantageously affects the reaction between the reactive moieties and the thiol groups or form a material or compound that is unsuitable for contact with skin or hair.

[0077] In some embodiments, the leaving group is a halogen.

5. *Electrophilic thiol acceptors*

[0078] Electrophilic thiol acceptors, as used herein, refer to a chemical moiety that reacts with a thiol group so that the sulfur atom of the thiol group becomes covalently bonded to the thiol acceptor. Thiol acceptors are well known in the art. Koval (Reactions of Thiols, Russian Journal of Organic Chemistry, 2007, 43:319-349) discloses several electrophilic thiol acceptors, the disclosure of which is incorporated herein by reference.

[0079] Electrophilic thiol acceptors, in addition to those listed above, include but are not limited to an alpha-substituted acetyl group with the formula $Y-CH_2-CO-$ wherein Y is a leaving group. Examples of leaving groups include, but are not limited to, chloride, bromide, iodide,

mesylate, tosylate, and the like. If the thiol acceptor is an alpha-substituted acetyl group, the thiol adduct after covalent linkage to the acceptor forms the bond -S-CH₂-.

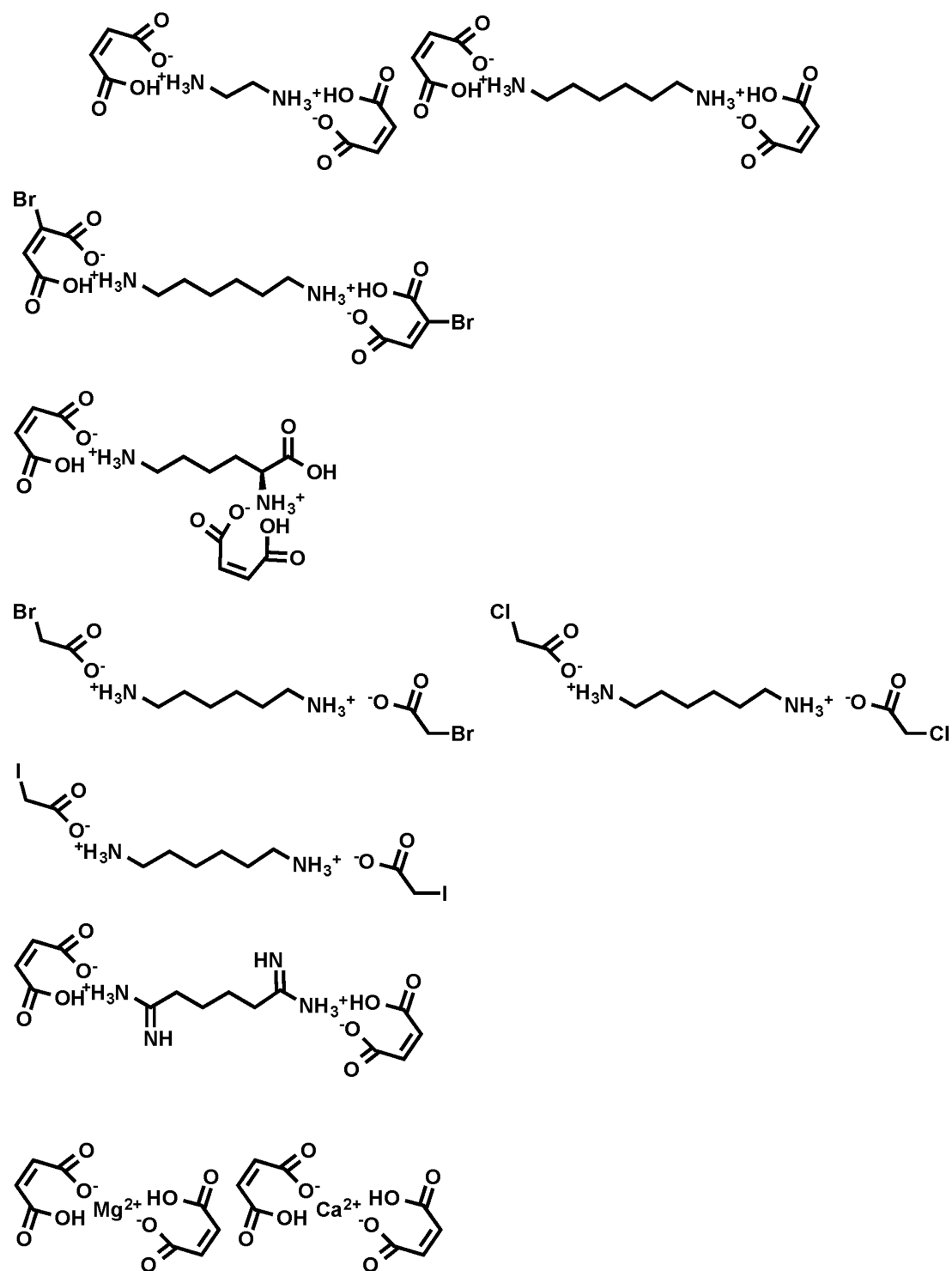
6. *Free radical-forming groups*

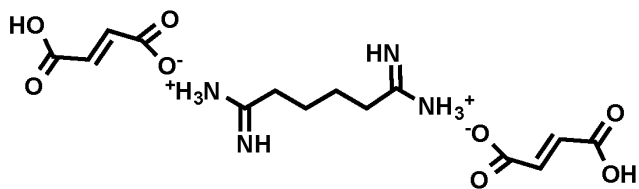
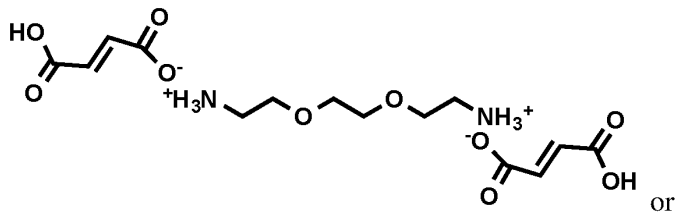
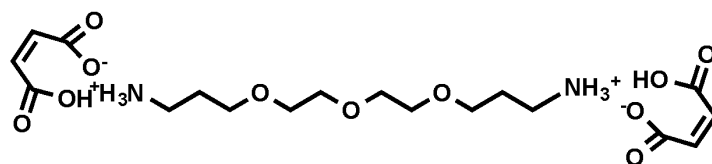
[0080] The binding agent may contain at least two free radical-forming groups that can react with thiols. The free radical-forming groups on the binding agent can be the same. Alternately, the free radical-forming groups may be different. Suitable free radical forming groups include, but are not limited to acrylate groups, methacrylate groups, styrene groups, acryl amide groups, methacryl amide groups, maleate groups, fumarate groups, itaconate groups, vinyl ether groups, allyl ether groups, allyl ester groups, and vinyl ester groups. For example, suitable binding agents include ethylene glycol dimethacrylate, diethylene glycol diacrylate, allyl methacrylate, trimethylolpropane triacrylate, triallylamine, tetraallyloxyethane, and di- and triacrylates, mixed acrylates which, as well as acrylate groups, comprise further ethylenically unsaturated groups. Other examples of binding agents include N,N'-methylenebisacrylamide and N,N'-methylenebismethacrylamide, esters of unsaturated mono- or polycarboxylic acids of polyols, such as diacrylate or triacrylate, for example butanediol diacrylate, butanediol dimethacrylate, ethylene glycol diacrylate, ethylene glycol dimethacrylate and also trimethylolpropane triacrylate and allyl compounds, such as allyl (meth)acrylate, triallyl cyanurate, diallyl maleate, polyallyl esters, tetraallyloxyethane, triallylamine, tetraallylethylenediamine, allyl esters of phosphoric acid and also vinylphosphonic acid derivatives, pentaerythritol diallyl ether, pentaerythritol triallyl ether, pentaerythritol tetraallyl ether, polyethylene glycol diallyl ether, ethylene glycol diallyl ether, glycerol diallyl ether, glycerol triallyl ether, polyallyl ethers based on sorbitol, and also ethoxylated variants thereof. Other examples of binding agents include di- and triacrylates of 3- to 15-tuply ethoxylated glycerol, of 3- to 15-tuply ethoxylated trimethylolpropane, of 3- to 15-tuply ethoxylated trimethylolethane, especially di- and triacrylates of 2- to 6-tuply ethoxylated glycerol or of 2- to 6-tuply ethoxylated trimethylolpropane, of 3-tuply propoxylated glycerol, of 3-tuply propoxylated trimethylolpropane, and also of 3-tuply mixed ethoxylated or propoxylated glycerol, of 3-tuply mixed ethoxylated or propoxylated trimethylolpropane, of 15-tuply ethoxylated glycerol, of 15-tuply ethoxylated trimethylolpropane, of 40-tuply ethoxylated glycerol, of 40-tuply ethoxylated trimethylolethane and also of 40-tuply ethoxylated trimethylolpropane, ethylene glycol dimethacrylate, diethylene glycol diacrylate, allyl methacrylate, trimethylolpropane triacrylate, triallylamine, tetraallyloxyethane, N,N'-methylenebisacrylamide, N,N'-

methylenebismethacrylamide, butanediol diacrylate, butanediol dimethacrylate, trimethylolpropane triacrylate, triallyl cyanurate, diallyl maleate, a polyallyl ester, tetraallylethylenediamine, pentaerythritol diallyl ether, pentaerythritol triallyl ether, pentaerythritol tetraallyl ether, polyethylene glycol diallyl ether, ethylene glycol diallyl ether, glycerol diallyl ether, glycerol triallyl ether, di- and triacrylates of 3- to 15-tuply ethoxylated glycerol, di- and tri-acrylates of 3- to 15-tuply ethoxylated trimethylolpropane, and di- and tri-acrylates of 3- to 15-tuply ethoxylated trimethylolethane. As used herein, the term “tuply” refers to the number of monomeric units in the ethoxylated chain.

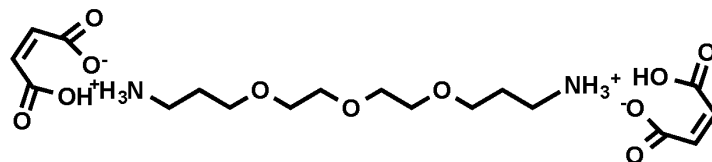
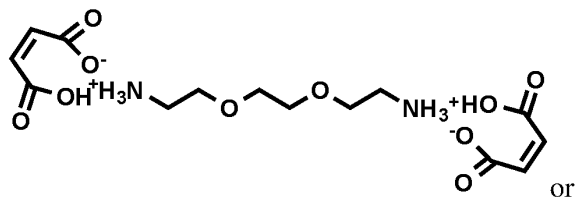
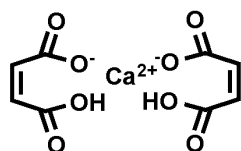
[0081] The reactive free radical moieties may require the presence of one or more initiators. Suitable initiators include, but are not limited to peroxides, hydroperoxides, hydrogen peroxide, persulfates, azo compounds, and redox initiators. Suitable organic peroxides include acetylacetone peroxide, methyl ethyl ketone peroxide, tert-butyl hydroperoxide, cumene hydroperoxide, tert-amyl perpivalate, tert-butyl perpivalate, tert-butyl perneohexanoate, tert-butyl perisobutyrate, tert-butyl per-2-ethylhexanoate, tert-butyl perisononanoate, tert-butyl permaleate, tert-butyl perbenzoate, di(2-ethylhexyl) peroxydicarbonate, dicyclohexyl peroxydicarbonate, di(4-tert-butylcyclohexyl) peroxydicarbonate, dimyristyl peroxydicarbonate, diacetyl peroxydicarbonate, allyl peresters, cumyl peroxyneodecanoate, tert-butyl per-3,5,5-trimethylhexanoate, acetylcyclohexylsulfonyl peroxide, dilauryl peroxide, dibenzoyl peroxide, and tert-aryl perneodecanoate. Suitable azo compounds include 2,2'-azobisisobutyronitrile, 2,2'-azobis(2,4-dimethylvaleronitrile) and 2,2'-azobis(4-methoxy-2,4-dimethylvaleronitrile), preferably water-soluble azo initiators, such as, but not limited to, 2,2'-azobis{2-[1-(2-hydroxyethyl)-2-imidazolin-2-yl]propane}dihydrochloride, 2,2'-azobis-(2-amidinopropane) dihydrochloride, 2,2'-azobis[2-(2-imidazolin-2-yl)propane]dihydrochloride and 2,2'-azobis[2-(5-methyl-2-imidazolin-2-yl)propane]dihydrochloride. For the redox initiators, the oxidizing component is at least one of the peroxo compounds indicated above and the reducing component is, for example, ascorbic acid, glucose, sorbose, ammonium bisulfite, ammonium sulfite, ammonium thiosulfate, ammonium hyposulfite, ammonium pyrosulfite, ammonium sulfide, alkali metal bisulfite, alkali metal sulfite, alkali metal thiosulfate, alkali metal hyposulfite, alkali metal pyrosulfite, alkali metal sulfide, or sodium hydroxymethylsulfoxylate.

[0082] In some embodiments, the molecule is:

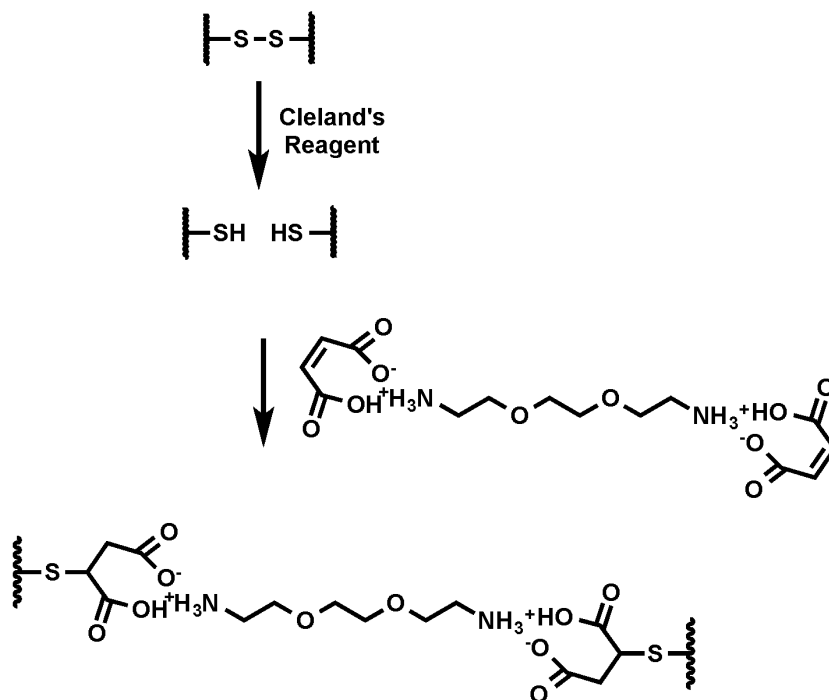




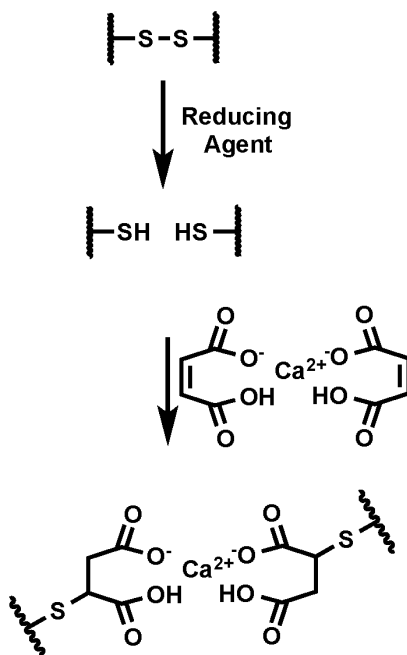
In some embodiments, the binding agent has the structure:



[0083] The reaction with thiol groups on hair follicles is as follows:



or



[0084] Other agents include, but are not limited to, acid-containing electrophiles, such as acrylic acid and bromo-acetic acid and similar compounds.

b. Excipients

[0085] The formulations typically contain one or more cosmetically acceptable excipients. Cosmetically acceptable excipients include, but are not limited to, water, preservatives, antioxidants, chelating agents, sunscreen agents, vitamins, dyes, hair coloring agents, proteins, amino acids, natural extracts such as plant extracts, humectants, fragrances, perfumes, oils, emollients, lubricants, butters, penetrants, thickeners, viscosity modifiers, polymers, resins, hair fixatives, film formers, surfactants, detergents, emulsifiers, opacifying agents, volatiles, propellants, liquid vehicles, carriers, salts, pH adjusting agents (e.g., citric acid), neutralizing agents, buffers, hair conditioning agents, anti-static agents, anti-frizz agents, anti-dandruff agents, absorbents, and combinations thereof.

[0086] The formulations can contain at least two or more cosmetically acceptable excipients. In some forms, the formulations contain the binding agent, water, and optionally a preservative and/or fragrance.

[0087] The formulation for treating hair may be in any suitable physical form. Suitable forms include, but are not limited to low to moderate viscosity liquids, lotions, milks, mousses, sprays, gels, creams, shampoos, conditioners, and the like. Suitable excipients, such as those listed above, are included or excluded from the hair care formulation depending on the form of use of the formulation (e.g., hair spray, cream, conditioner, or shampoo).

[0088] The formulation for treating skin may be in any suitable physical form. Suitable forms include, but are not limited to low to moderate viscosity liquids, lotions, milks, mousses, sprays, gels, creams, ointments, and the like. Suitable excipients, such as those listed above, are included or excluded from the skin formulation depending on the form of use of the formulation (e.g., lotion, gel, ointment, or cream).

[0089] The pharmaceutical excipient is typically present in an amount ranging from about 10 wt% to about 99.99 wt% of the formulation, preferably about 40 wt% to about 99 wt%, more preferably from about 80 wt% to about to about 99 wt%.

i. Surfactants

[0090] Surfactants are surface-active agents that are able to reduce the surface tension of water and cause the formulation to slip across or onto the skin or hair. Surfactants also include detergents and soap. The surfactants may be amphoteric, anionic, or cationic. Suitable surfactants that may be used in the formulation include, but are not limited to, 3-aminopropane sulfonic acid, almond

amide, almond amidopropyl betaine, almond amidopropylamine oxide, aluminum hydrogenated tallow glutamate, aluminum lanolate, aminoethyl sulfate, aminopropyl lauryl glutamine, ammonium C₁₂₋₁₅ alkyl sulfate, ammonium C₁₂₋₁₅ pareth sulfate, ammonium C₁₂₋₁₆ alkyl sulfate, ammonium C₉₋₁₀ perfluoroalkylsulfonate, ammonium capryleth sulfate, ammonium capryleth-3 sulfate, ammonium monoglyceride sulfate, ammonium sulfate, ammonium isothionate, ammonium cocoyl sarcosinate, ammonium cumene sulfonate, ammonium dimethicone copolyol sulfate, ammonium dodecylbenzenesulfonate, ammonium isostearate, ammonium laureth sulfate, ammonium laureth-12 sulfate, ammonium laureth-5 sulfate, ammonium laureth-6 carboxylate, ammonium laureth-7 sulfate, ammonium laureth-8 carboxylate, ammonium laureth-9 sulfate, ammonium lauroyl sarcosinate, ammonium lauryl sulfate, ammonium lauryl sulfosuccinate, ammonium myreth sulfate, ammonium myristyl sulfate, ammonium nonoxynol-30 sulfate, ammonium nonoxynol-4 sulfate, ammonium oleate, ammonium palm kernel sulfate, ammonium polyacrylate, ammonium stearate, ammonium tallate, ammonium xylene sulfonate, ammonium xylene sulfonate, amp-isostearoyl gelatin/keratin amino acids/lysine hydroxypropyltrimonium chloride, amp-isostearoyl hydrolyzed collagen, apricot kernel oil PEG-6 esters, apricot amide, apricot amidopropyl betaine, arachideth-20, avocadamide, avocamidopropyl betaine, babassuamide, babassuamidopropyl betaine, babassuamidopropylamine oxide, behenalkonium chloride, behenamide, behenamide, behenamidopropyl betaine, behenamine oxide, sodium laureth sulfate, sodium lauryl sulfate, a polyoxyether of lauryl alcohol or ceteareth-20, or combinations thereof.

[0091] Suitable anionic surfactants include, but are not limited to, those containing carboxylate, sulfonate and sulfate ions. Examples of anionic surfactants include sodium, potassium, ammonium of long chain alkyl sulfonates and alkyl aryl sulfonates such as sodium dodecylbenzene sulfonate; dialkyl sodium sulfosuccinates, such as sodium dodecylbenzene sulfonate; dialkyl sodium sulfosuccinates, such as sodium bis-(2-ethylthioxyl)-sulfosuccinate; and alkyl sulfates such as sodium lauryl sulfate. Cationic surfactants include, but are not limited to, quaternary ammonium compounds such as benzalkonium chloride, benzethonium chloride, cetrimonium bromide, stearyl dimethylbenzyl ammonium chloride, polyoxyethylene and coconut amine. Examples of nonionic surfactants include ethylene glycol monostearate, propylene glycol myristate, glyceryl monostearate, glyceryl stearate, polyglyceryl-4-oleate, sorbitan acylate, sucrose acylate, PEG-150 laurate, PEG-400 monolaurate, polyoxyethylene monolaurate,

polysorbates, polyoxyethylene octylphenylether, PEG-1000 cetyl ether, polyoxyethylene tridecyl ether, polypropylene glycol butyl ether, Poloxamer 401, stearyl monoisopropanolamide, and polyoxyethylene hydrogenated tallow amide. Examples of amphoteric surfactants include sodium N-dodecyl-.beta.-alanine, sodium N-lauryl- β -iminodipropionate, myristoamphoacetate, lauryl betaine and lauryl sulfobetaine.

[0092] More than one surfactant may be included in the formulation.

[0093] The surfactants are optionally included in an amount ranging from about 0.1% to about 15% by weight of the formulation, preferably about 1% to about 10% by weight of the formulation.

ii. Emollients

[0094] Emollient refers to a material that protects against wetness or irritation, softens, soothes, coats, lubricates, moisturizes, protects, and/or cleanses the skin. Suitable emollients for use in the formulations include, but are not limited to a silicone compound (*e.g.*, dimethicone, cyclomethicone, dimethicone copolyol or a mixture of cyclopentasiloxane and dimethicone/vinyldimethicone cross polymer, cyclopentasiloxane polysilicone), polyols such as sorbitol, glycerin, propylene glycol, ethylene glycol, polyethylene glycol, caprylyl glycol, polypropylene glycol, 1,3-butane diol, hexylene glycol, isoprene glycol, xylitol; ethylhexyl palmitate; a triglyceride such as caprylic/capric triglyceride and fatty acid ester such as cetearyl isononanoate or cetyl palmitate. In a specific embodiment, the emollient is dimethicone, amidodimethicone, dimethiconol, cyclopentasiloxane, potassium dimethicone PEG-7 panthenyl phosphate, or a combination thereof. More than one emollient may be included in the formulation.

[0095] The emollient is optionally included in an amount ranging from about 0.5% to about 15% by weight of the formulation, preferably from about 1% to about 10% by weight of the formulation.

iii. Emulsifiers

[0096] The formulations may also contain one or more emulsifiers. Suitable emulsifiers include, but are not limited to, copolymers of an unsaturated ester and styrene sulfonate monomer, cetearyl alcohol, glyceryl ester, polyoxyethylene glycol ether of cetearyl alcohol, stearic acid, polysorbate-20, cetareth-20, lecithin, glycol stearate, polysorbate-60, or polysorbate-80, or combinations thereof. More than one emulsifier may be included in the formulation.

[0097] The emulsifier is optionally included in an amount ranging from about 0.05% to about 15% by weight of the formulation, preferably from about 0.1% to about 10% by weight of the formulation.

iv. Preservatives

[0098] One or more preservatives may be included in the formulations to prevent microbial growth in the formulations. Suitable preservatives include, but are not limited to, glycerin containing compounds (*e.g.*, glycerin or ethylhexylglycerin or phenoxyethanol), benzyl alcohol, parabens (methylparaben, ethylparaben, propylparaben, butylparaben, isobutylparaben, etc.), sodium benzoate, ethylenediamine-tetraacetic acid (EDTA), potassium sorbate, and/or grapefruit seed extract, or combinations thereof. More than one preservative may be included in the formulation. Other preservatives are known in the cosmetics industries and include salicylic acid, DMDM Hydantoin, Formaldehyde, Chlorphenism, Triclosan, Imidazolidinyl Urea, Diazolidinyl Urea, Sorbic Acid, Methylisothiazolinone, Sodium Dehydroacetate, Dehydroacetic Acid, Quaternium – 15, Stearalkonium Chloride, Zinc Pyrithione, Sodium Metabisulfite, 2-Bromo-2-Nitropropane, Chlorhexidine Digluconate, Polyaminopropyl biguanide, Benzalkonium Chloride, Sodium Sulfite, Sodium Salicylate, Citric Acid, Neem Oil, Essential Oils (various), Lactic Acid, and Vitamin E (tocopherol).

[0099] The preservative is optionally included in an amount ranging from about 0.1% to about 5% by weight of the formulation, preferably from about 0.3% to about 3% by weight of the formulation. Preferably, the formulations are paraben free.

v. Conditioning Agents

[0100] One or more conditioning agents may be included in the formulations. Suitable conditioning agents include, but are not limited to, silicone-based agents (*e.g.*, silicone quaternium-8), panthenol, hydrolyzed wheat and/or soy protein, amino acids (*e.g.* wheat amino acids), rice bran wax, meadowfoam seed oil, mango seed oil, grape seed oil, jojoba seed oil, sweet almond oil, hydroxyethyl behenamidopropyl dimonium chloride, aloe leaf extract, aloe barbadensis leaf juice, phytantriol, panthenol, retinyl palmitate, behentrimonium methosulfate, cyclopentasiloxane, quaternium-91, stearamidopropyl dimethylamine, and combinations thereof.

[0101] The conditioning agent(s) is optionally included in an amount ranging from about 0.1% to about 5% by weight of the formulation, preferably from about 0.3% to about 3% by weight of the formulation.

vi. Diluents

[0102] Diluent, as used herein, refers to a substance(s) that dilutes the binding agent. Water is the preferred diluent. The formulations typically contains greater than one percent (wt) water, preferably greater than five percent (wt) water, more preferably greater than 50% (wt) water, and most preferably greater than 80% (wt)water. Alcohols, such as ethyl alcohol and isopropyl alcohol, may be used at low concentrations (about 0.5% by weight of the formulation) to enhance hair or skin penetration and/or reduce odor.

vii. Viscosity modifying agents

[0103] The formulations may contain one or more viscosity modifying agents, such as viscosity increasing agents. Classes of such agents include, but are not limited to, viscous liquids, such as polyethylene glycol, semisynthetic polymers, such as semisynthetic cellulose derivatives, synthetic polymers, such as carbomers, poloxamers, and polyethyleneimines (e.g., PEI-10), naturally occurring polymers, such as acacia, tragacanth, alginates (e.g., sodium alginate), carrageenan, vegetable gums, such as xanthan gum, petroleum jelly, waxes, particulate associate colloids, such as bentonite, colloidal silicon dioxide, and microcrystalline cellulose, surfactants, such as PPG-2 hydroxyethyl coco/isostearamide, emulsifiers, such as disteareth-75 IPDI, and salts, such as sodium chloride, and combinations thereof.

viii. Antioxidants

[0104] The formulations may contain one or more antioxidants. Examples include, but are not limited to, tocopheryls, BHT, ascorbic acid, camellia sinensis leaf extract, ascorbyl palmitate, magnesium ascorbyl phosphate, carotenoids, resveratrol, triethyl citrate, arbutin, kojic acid, tetrahexydecyl ascorbate, superoxide dismutase, zinc, sodium metabisulfite, lycopene, ubiquinone, and combinations thereof.

ix. Opacifying agents

[0105] The formulations may contain one or more opacifying agents. Opacifying agents are added to the formulations to make them opaque. Suitable opacifying agents include, but are not limited to, glycol distearate and ethoxylated fatty alcohols.

c. Forms of the formulation

i. Sprays

[0106] The formulation may be in the form of a spray. The spray typically includes the binding agent and a cosmetically acceptable carrier. In some embodiments, the carrier is water or a water and alcohol mixture. The spray formulation optionally includes an antioxidant, sunscreen agent, vitamin, protein, peptide, plant extract, humectant, oil, emollient, lubricant, thickener, hair conditioning agent, polymer, and/or surfactant. Preferably, the spray formulation includes a preservative. In some embodiments, the formulation includes a fragrance. In some embodiments, the formulation includes a surfactant. In some embodiments, the formulation contains water, fragrance, a preservative, and a binding agent. In some embodiments, the formulation contains water, fragrance, a preservative, and a binding agent. In some embodiments, the formulation contains water, a preservative, fragrance, the binding agent, and an anti-static agent. In some embodiments, the formulation contains water, a preservative, fragrance, the binding agent, and a hair conditioning agent. In some embodiments, the formulation contains water, a preservative, fragrance, the binding agent, and a surfactant.

[0107] The hair spray formulations may be dispensed from containers that include aerosol dispensers or pump spray dispensers. Such dispensers are known in the art and are commercially available from a variety of manufacturers.

1. Propellant

[0108] When the hair spray formulation is dispensed from a pressurized aerosol container, a propellant may be used to force the composition out of the container. Suitable propellants include, but are not limited to, a liquefiable gas or a halogenated propellant. Examples of suitable propellants include dimethyl ether and hydrocarbon propellants such as propane, n-butane, iso-butane, CFCs, and CFC-replacement propellants. The propellants may be used singly or admixed.

[0109] The amount of propellant may range from about 10% to about 60% by weight of the formulation. The propellant may be separated from the hair repair formulation as in a two compartment container. Other suitable aerosol dispensers are those characterized by the propellant being compressed air, which can be filled into the dispenser using a pump or equivalent device prior to use. Conventional non-aerosol pump spray dispensers, *i.e.*, atomizers, may also be used to apply the hair strengthening formulation to the hair.

ii. Conditioners

[0110] The formulation may be in the form of a conditioner. The conditioner typically includes the binding agent in a suitable carrier. Additionally, the conditioner may include cationic polymers derived from polysaccharides, for example cationic cellulose derivatives, cationic starch derivatives, cationic guar derivatives and cationic locust bean gum derivatives, synthetic cationic polymers, mixtures or combinations of these agents. The formulation may comprise other synthetic or natural polymers or polymers derived from biological preparation processes, which are functionalized, where appropriate, for example with cationic or neutral groups. These polymers may have a stabilizing or strengthening action on the compositions, and/or a conditioning action (deposition on the surface of the skin or the hair).

[0111] The binding agent may be included in any suitable concentration. Typical concentrations of the binding agent in the conditioner range from small amounts such as approximately 0.01% (wt), preferably at least 0.1% (wt), to large amounts, such as up to 50% (wt). Preferably the conditioner contains the binding agent in a concentration ranging from 0.1% (wt) to 5% (wt), more preferably from 0.1% wt to 3% (wt). While greater concentrations of binding agent could be present in the conditioner, they are generally not needed to achieve the desired results.

iii. Shampoos

[0112] The hair repair formulation may be in the form of a shampoo. The shampoo typically includes the binding agent in a suitable carrier. The binding agent may be included in any suitable concentration. Typical concentrations of the binding agent in the shampoo range from small amounts such as approximately 0.01% (wt), preferably at least 0.1% (wt), to large amounts, such as up to 50% (wt). Preferably the shampoo contains the binding agent in a concentration ranging from 0.1% (wt) to 5% (wt), more preferably from 0.1% wt to 3% (wt). While greater concentrations of binding agent could be present in the shampoo, they are generally not needed to achieve the desired results.

[0113] Additionally, the shampoo may include from about 0.5% to about 20% of a surfactant material. Surfactants utilized in shampoo compositions are well-known in the art and are disclosed, for example, in U.S. Patent No. 6,706,258 to Gallagher *et al.* and U.S. Patent No. 7,598,213 to Geary *et al.*

iv. Creams

[0114] The formulation may be in the form of a cream. The cream typically includes the binding agent in a suitable carrier. The binding agent may be included in any suitable concentration. Typical concentrations of the binding agent in the cream range from small amounts such as approximately 0.01% (wt), preferably at least 0.1% (wt), to large amounts, such as up to 50% (wt). Preferably the cream contains the binding agent in a concentration ranging from 0.1% (wt) to 5% (wt), more preferably from 0.1% wt to 3% (wt). While greater concentrations of binding agent could be present in the cream, they are generally not needed to achieve the desired results.

[0115] Additionally, the cream may include an oil, a hair conditioning agent, and/or a thickening agent. The cream may also include a fragrance, a plant extract, and/or a surfactant. The cream may be packaged in a tube, tub, bottle, or other suitable container.

v. Liquid Binding Formulations

[0116] In some embodiments, a liquid binding formulation is provided, which is mixed at the time of use with a second formulation, such as a coloring or highlighting formulation. In these embodiments, the liquid binding formulation may contain any suitable concentration of binding agent in a suitable carrier, typically a diluent, such as described above. The concentration of the binding agent is suitable to provide a mixture with the appropriate final volume and final concentration of binding agent.

[0117] For example, a liquid binding formulation can contain a concentration of binding agent ranging from about 5% (wt) to about 50% (wt) or greater. In a preferred embodiment, the liquid binding formulation contains about 20% (wt) binding agent.

[0118] The terms “highlighting” and “bleaching” are used synonymously herein. For highlighting applications, prior to use, a sufficient volume of a liquid binding formulation is mixed with a sufficient volume of a highlighting formulation to form a highlighting mixture having the desired concentration of binding agent. Typical concentrations of the binding agent in the highlighting mixture range from small amounts, such as approximately at least 0.01% (wt), preferably at least 0.1% (wt), to large amounts, such as up to 50% (wt). Preferably the highlighting mixture contains the binding agent in a concentration ranging from 0.1% (wt) to 5% (wt), more preferably from 0.1% wt to 3% (wt). While greater concentrations of binding agent could be present in the highlighting mixture, they are generally not needed to achieve the desired results.

[0119] Alternatively, two separate formulations are applied, such as a first formulation containing bleach (*i.e.* the highlighting formulation), and a second formulation containing a binding agent (*i.e.* the binding formulation) in an effective amount to covalently bind the free thiol groups. The highlighting formulation may be applied first, which produces free thiol groups in hair. Subsequently, the second binding formulation may be applied to bind the free thiol groups.

III. Kit

[0120] Kits for treating hair typically contain a binding formulation containing an effective amount of a binding agent to covalently bind latent free thiol groups in hair.

[0121] Instructions for use of the kit are also typically provided.

[0122] The kit may further contain a formulation, also referred to herein as the reducing formulation, capable of reducing the disulfide bonds in the hair and producing free thiol groups.

a. Reducing Formulation

[0123] The first formulation may be a reducing formulation. A reducing formulation contains a reducing agent capable of reducing the disulfide bonds in hair and producing free thiol groups. The reducing formulation may differ depending on the hair styling treatment desired (such as hair waving or hair straightening), the texture of the hair, the sensitivity of the user's skin, and the like.

[0124] Formulations containing reducing agents and their selection are well known to those skilled in the cosmetic industry. Suitable reducing agents include, but are not limited to, thioglycolic acid and thioglycolic acid salts and esters, thiolactic acid and thiolactic acid salts and esters, cysteine thioglycerol, thioglycolic hydrazide, thioglycolamide, glycerol monothioglycolate, sodium metabisulfite, beta-mercaptopropionic acid, N-hydroxyethyl mercapto-acetamide, N-methyl mercapto-acetamide, beta-mercapto-ethylamine, beta-mercaptopropionamide, 2-mercapto-ethanesulfonic acid, dimercaptoadipic acid, dithiothreitol, homocysteinethiolactone, cysteine derivatives, polythiol derivatives formed by the addition of cysteamine onto a maleic anhydride-alkylvinylether copolymer, inorganic sulfites, inorganic bisulfites, cysteamine and its derivatives, dithioerythritol, organic phosphines, and Japanese relaxers.

[0125] In some embodiments, the kit contains a reducing formulation, which contains a reducing agent for permanent hair waving and hair curling such as acid perms, alkaline perms, perms having neutral pH, or perms using buffered alkaline waving lotions. Such reducing agents include, but are not limited to thioglycolic acid and its derivative salts and esters, thiolactic acid and its derivative salts and esters, cysteine and its derivatives, cysteamine and its derivatives,

inorganic sulfites, and inorganic bisulfites such as sodium metabisulfite, dithiothreitol, dithioerythritol, organic phosphines, and Japanese relaxers.

[0126] In other embodiments, the kit contains a reducing formulation, which contains a reducing agent for straightening hair. Such reducing agents include, but are not limited, to inorganic bisulfites such as sodium metabisulfite, inorganic sulfites, ammonium thioglycolate, dithiothreitol, dithioerythritol, organic phosphines, and Japanese relaxers.

[0127] The amount of the reducing agent in the reducing formulation is sufficient to rupture a sufficient number of disulfide bonds for effective hair waving, hair curling, or hair straightening as would be appreciated by one of skill in the art.

b. Coloring formulation

[0128] The first formulation may be a coloring treatment. The first formulation may be formulated as two or more components that may be mixed together before application to the hair. For example, the first formulation may be in the form of two components such as a dye precursor and an oxidant. Typically, the hair coloring formulation contains a reducing agent capable of reducing the disulfide bonds in hair and producing free thiol groups. Suitable reducing agents include, but are not limited to, thioglycolic acid, thiolactic acid, dihydrolipoate, thioglycerol, mercaptopropionic acid, sodium bisulfite, ammonium bisulfide, zinc formaldehyde sulfoxylate, sodium formaldehyde sulfoxylate, sodium metabisulfite, potassium borohydride, pegylated thiols and hydroquinone. The amount of the reducing agent in the first formulation is sufficient to rupture a sufficient number of disulfide bonds for effective diffusion of the hair coloring ingredients as would be appreciated by one of skill in the art.

[0129] The components of the first formulation may differ depending on the hair coloring treatment desired (such as for semi-permanent, demi-permanent, or permanent hair color), the texture of the hair, the sensitivity of the user's skin, and such the like. Hair coloring formulations for different hair coloring treatment, hair texture, and hair sensitivity are known to those of skill in the art.

c. Binding formulation

[0130] The binding formulation contains an effective amount of a binding agent to bind free thiols in the hair. Suitable formulations containing the binding agents are discussed above. The binding formulation may be in any suitable form. Suitable forms include, but are not limited to, low to moderate viscosity liquids, lotions, milks, mousses, sprays, gels, creams, shampoos,

conditioners, and the like. The binding formulation will be present in a suitable container, which depends on the form of the formulation.

[0131] In one embodiment, the binding formulation is provided as two or more separate ingredients. For example, the binding agent may be provided as a dry powder in a sealed package and the excipient provided in a vial or other container. A suitable mixing container for the binding agent and the excipient may be provided.

[0132] Optionally, the binding agent is premixed with a shampoo or conditioner.

[0133] In some embodiments, the binding formulation (or second formulation) is mixed with the first formulation (reducing formulation or hair coloring treatment), and the mixture is applied to the hair.

d. Other materials in the kit

[0134] The kit optionally contains shampoos and conditioners. Suitable shampoos and conditioners include, but are not limited to LiQWd® Hydrating Shampoo and LiQWd® Hydrating Conditioner.

[0135] The kit may further contain an odor eliminator. The odor eliminator can be incorporated into the reducing formulation. Alternately, the odor eliminator is present in a suitable container for use before or after washing the binding formulation from the hair. Some suitable odor eliminators are known to those of ordinary skill in the art.

IV. Methods of Use

[0136] The methods disclosed herein are concerned with treating hair with free thiol groups.

a. Treating damaged hair with free thiol groups

[0137] In one embodiment, prior to treatment with a binding agent, the hair has been damaged and the thiol groups in the hair are free thiols. The binding agent can be applied to the hair to bind the free thiol groups. Preferably, the binding agent is applied at least within one week of the hair being damaged, preferably within three days, more preferably within two days, most preferably, the same day.

i. Rinse or wash the hair

[0138] Optionally, the hair may be shampooed and/or conditioned prior to applying the binding formulation. Alternately, the hair may only be rinsed with water prior to application of the binding formulation.

ii. Apply the binding formulation to the hair

[0139] Subsequent to shampooing, conditioning, and/or rinsing the hair, the binding formulation is applied to the hair. Alternately, the hair does not have to be washed or rinsed prior to application of the binding formulation. In this embodiment, the binding formulation is applied to dry hair.

[0140] The binding formulations may be used as a daily conditioning treatment for hair.

[0141] Typically, the amount of binding formulation applied is sufficient to saturate the hair.

[0142] The binding formulation may be applied to the hair as a single application, or application of the binding agent may be repeated one or more times. Typically, the amount of binding formulation applied in each application is sufficient to saturate the hair. The volume of binding formulation applied to the hair in each application may be about 1 to about 100 mL per person depending on their length and volume of hair. In some embodiments, application of the binding agent could be repeated immediately (*e.g.* within about 10 to 15 seconds) or between about one and five minutes, greater than five minutes, between about five and ten minutes, greater than ten minutes, between about ten and twenty (20) minutes after the first application.

iii. Remove the binding formulation from the hair

[0143] Preferably, the hair is washed or rinsed subsequent to the application of the binding formulation. The hair may be rinsed and subsequently washed immediately (*e.g.* within 10, 15, 25, 30, 45, 60 seconds (one minute), two minutes, three minutes, four, or five minutes following application) after final application of the binding agent. Alternatively the hair may be rinsed and washed within about 30 minutes following application, preferably between about 5 minutes and about 20 minutes, more preferably about 10 minutes after the final application of the binding agent to the hair, depending on the hair type.

[0144] Alternately, the hair does not have to be washed or rinsed subsequent to application of the binding formulation.

[0145] The binding agent covalently binds latent free thiols in the hair. The thiols remain bound for at least one week, preferably for at least one month following application of the binding agent. The thiols may remain bound for longer periods of time, such as for about two months or more following application of the binding agent. The binding reaction is a stable reaction, such that the thiols may remain bound even if subjected to a hair coloring treatment (simultaneous or subsequent to the binding reaction).

b. Chemical treatment of hair with a reducing agent

[0146] In one embodiment, prior to treatment with a binding agent, the hair has been subjected to a reducing agent used for waving (also referred to herein as hair perming or permanent waves), curling, and/or straightening of the hair.

i. Apply a reducing agent to the hair

[0147] The first step in waving, curling, or straightening hair is breaking the cysteine disulfide bonds to form free thiol moieties. The process for breaking the cysteine disulfide bonds is via application of a reducing agent. The process for applying the reducing agent involves following normal perming or hair straightening procedures, that are known to those skilled in the art. For example, to perm a hair, the hair is first washed and set on perm rods of various sizes. Second, a reducing agent, such as thioglycolate reducing solution or lotion, is applied to the hair. The hair is allowed to set for a specified period of time, and then the thioglycolate solution is rinsed from the hair.

[0148] The application of hydrogen peroxide in this process is optional. In some processes, such as when treating previously chemically treated hair, hydrogen peroxide is generally not used. In other processes, such as when perming virgin hair, hydrogen peroxide may be added. In these embodiments, hydrogen peroxide is typically added after the reducing agent is rinsed out. Then the hydrogen peroxide is rinsed from the hair prior to adding the binding agent.

ii. Apply the binding agent

[0149] Subsequent to the reducing treatment, one or more of the binding agent, or a formulation thereof is applied to the hair. Although the binding agent is typically applied on the same day as treatment with the reducing agent, it may be applied later, such as within 1 to 2 weeks following treatment with the reducing agent.

[0150] Typically, the amount of binding formulation applied is sufficient to saturate the hair. The binding agent is generally rinsed and shampooed from the hair after the desired level of hair waving, curling, or straightening is achieved. In some embodiments, the binding agent is rinsed from the hair immediately (e.g. within 10, 15, 25, 30, 45, or 60 seconds following application) following the final application of the binding agent. Alternatively the hair may be rinsed and washed about within about 30 minutes following application, preferably between about 5 minutes and about 20 minutes, more preferably about 10 minutes after the final application of the binding agent to the hair, depending on the hair type. The binding agent can be rinsed from the hair within

10, 15, 25, 30, 45, or 60 seconds from the hair after application, and still achieve a desired level of hair waving, curling, or straightening.

[0151] The binding agent may be applied to the hair as a single application, or application of the binding agent may be repeated one or more times. Typically, the amount of binding formulation applied in each application is sufficient to saturate the hair. In some embodiments, the volume of binding formulation applied to the hair in each application is about 1 to about 10 mL per perm rod. In some embodiments, application of the binding agent could be repeated immediately (e.g. within 10 to 15 seconds) or approximately 1, 5, 7.5, 10, 12.5, 15, 17.5, or 20 minutes after the first application. In some embodiments, the second application is about 7 minutes to about 10 minutes after the first application.

[0152] The binding agent is rinsed from the hair after its application. The hair may be rinsed and washed immediately (e.g. within 10 to 15 seconds following application) after final application of the binding agent. Alternatively the hair may be rinsed and washed about 10 minutes or later after the final application of the binding agent, such as about 15 minutes to about 30 minutes, preferably about 20 minutes after repeated application of the binding agent to the hair.

[0153] The binding agent covalently binds the free thiols in the hair. The thiols remain bound for at least one week, two weeks, three weeks, four weeks, one month, two months or more.

[0154] The binding agents are generally washed from the individual's hair on the same day as they are applied. In contrast, traditional perms which use only hydrogen peroxide (and do not involve the addition of a cross-linking agent) are generally not washed for at least 48 hours following application (washing the hair prior to 48 hours following a traditional permanent treatment may result in significant loss in the amount of curl in the hair and/or cause damage to the hair).

[0155] The compositions described herein improve hair quality, such as appearance (e.g., sheen) and feel, increase dry strength (e.g., tensile strength), and decrease hair breakage when the hair is subjected to subsequent treatments, such as coloring.

[0156] In some embodiments, hair breakage decreases by 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, or 75% or higher after treatment with the binding agent compared to untreated hair from the same individual. Hair breakage is a significant problem encountered during coloring and other treatments.

c. Apply the coloring formulation to the hair

[0157] The coloring formulation is generally applied to an individual's hair following normal hair coloring procedures that are known to those skilled in the art. Typically, hair color treatments include two complementary processes: bleaching the hair's natural pigment and/or other artificial pigments present in the hair, and diffusion of dye precursors into the hair, followed by coupling reactions that result in the formation of chromophores within the hair shaft, which are too large to diffuse out of the hair. The hair coloring formulation may be a highlighting formulation, such as formed by mixing bleach powder and developer. More complex colors may contain several precursors and many couplers, and may involve multiple reactions.

[0158] The dye precursors may contain several ingredients, each with different functions. The first ingredient is usually an alkalizing agent (usually ammonia and/or an ammonia substitute, such as monoethanolamine [MEA]). The alkalizing agent serves a number of roles in the hair colorant process including swelling the hair fiber to aid in diffusion of the dye precursors. The dye precursors generally include p-diamines and p-aminophenols. Precursors are oxidized to active intermediates once they have penetrated the hair shaft. Intermediates then react with color couplers to create wash resistant dyes. More specifically, the intermediates, in the presence of an oxidant, couple with another oxidation dye intermediate molecule to form a large fused ring color compound within the hair shaft. The precursor intermediate should penetrate the hair shaft prior to the coupling reaction since the fused ring product is too large to penetrate the hair shaft. Couplers modify the color produced by the oxidation of precursor compounds. The primary difference between demi-permanent and permanent products is the alkalizing agent and the concentration of peroxide. The cuticle does not swell as greatly with demi-permanent dyes, making dye penetration less efficient compared to permanent coloring products.

[0159] Several coloring formulations use a reducing agent, such as sodium bisulfate, to break disulfide bonds in the hair, allowing deeper penetration of the hair coloring dyes into the hair. Specifically, the method includes reducing some of the disulfide linkages of the cysteine in the hair shafts to thiol groups while breaking hydrogen bonds. The reducing process changes the chemical and cosmetic characteristics of the hair, which are undesirable.

[0160] The hair dyeing process may be followed by a shampoo and conditioning treatment, a neutralizing rinse or an acid balanced shampoo containing in addition to cationic or amphoteric surfactants, cation-active emollients and quarternary polymers. Alternately, the hair dyeing

process may be followed by application of the binding formulations described herein, before a shampoo and/or conditioning treatment.

i. Applying binding formulation

[0161] The binding formulation may be applied simultaneously with the hair coloring formulation or subsequently to the application of the hair coloring formulation. For example, the binding formulation may be mixed with the hair coloring treatment and the mixture, containing both the binding formulation and the hair coloring treatment, may be applied to the hair.

[0162] Alternatively, subsequent to coloring the hair, the binding formulation, or a formulation thereof is applied to the hair. Although the binding agent is typically applied on the same day as the coloring treatment, it may be applied later such as within 1 to 2 weeks following treatment with the reducing agent. Typically, the amount of binding formulation (or a mixture of the binding formulation and the hair coloring formulation) applied is enough to saturate the hair. The binding formulation may be applied to the hair as a single application, or application of the binding agent may be repeated one or more times. Typically, the amount of binding formulation applied in each application is sufficient to saturate the hair. The volume of binding formulation applied to the hair in each application may be about 1 to about 100 mL per person depending on their length and volume of hair. In some embodiments, application of the binding agent could be repeated immediately (e.g. within 10 to 15 seconds) or approximately 1, 5, 7.5, 10, 12.5, 15, 17.5, or 20 minutes after the first application.

[0163] The binding agent can be rinsed and shampooed from the hair immediately following application, for example within 10, 15, 25, 30, 45, or 60 seconds, or two, three, four, or five minutes after application. Alternatively, the binding agent may be rinsed from the hair within about 30 minutes following application, preferably between about 5 minutes and about 20 minutes, more preferably about 10 minutes after application of the binding agent to the hair, depending on hair type.

[0164] If the binding formulation is combined with the hair coloring treatment and applied as a mixture to the hair, then the mixture remains on the hair as long as needed for the hair coloring treatment. Typically the mixture is applied for approximately 10 minutes. The mixture is removed from the hair in accordance with standard methods for hair coloring treatments, e.g., rinse and shampoo, approximately 10 minutes after applying the mixture.

[0165] The binding formulation is rinsed from the hair after its application. The hair may be rinsed and subsequently washed immediately (e.g. within 10 to 15 seconds following application) after final application of the binding agent. Preferably, the hair is rinsed and/or washed about 10 minutes or later after the final application of the binding agent, such as about 15 minutes to about 30 minutes, optionally about 20 minutes after repeated application of the binding agent to the hair.

[0166] The binding agent covalently binds the free thiols in the hair. The thiols remain bound for at least one week, two weeks, three weeks, four weeks, one month, or two months, or more.

[0167] The binding agents are generally washed from the individual's hair on the same day as they are applied. In contrast, traditional perms which use only hydrogen peroxide (and do not involve the addition of a cross-linking agent) are generally not washed for at least 48 hours following application (washing the hair prior to 48 hours following a traditional permanent treatment may result in significant loss in the amount of curl in the hair and/or cause damage to the hair).

[0168] The compositions described herein improve hair quality, such as appearance (e.g., sheen) and feel, increase dry strength (e.g., tensile strength), and decrease hair breakage when the hair is subjected to subsequent treatments, such as coloring.

[0169] In some embodiments, hair breakage decreases by 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, or 90% or higher after treatment with the binding agent compared to untreated hair from the same individual. Hair breakage is a significant problem encountered during coloring and other treatments.

EXAMPLES

I. Example 1: Comparison of traditional perm versus perm using bismaleate binding agent

a. General

[0170] Hair samples were obtained from a human subject and cut in ½ inch wide wefts.

[0171] *Reducing agents:* Ammonium thioglycolate (ATG) was obtained from a permanent wave kit manufactured by Zotos. 300 mg of Dithiothreitol in a 10g solution was also used as the reducing agent.

[0172] *Binding formulation:* A bismaleate binding agent 2,2'-(ethane-1,2-diylbis(oxy))bis(ethan-1-amine) di-maleate at a concentration of 300 mg in 10 g total solution (water) was used.

b. Methods

i. Method for perming hair using the binding agents

[0173] The hair was washed with clarifying shampoo, towel dried, and then rolled around a perm rod. Ammonium thioglycolate or dithiothreitol was then applied to the hair and left on the hair for 10 minutes to 1 hour. The hair was then rinsed for 30 seconds to 1 minute and then blotted dry with a towel.

[0174] The binding formulation was applied to the hair, via a needle nose applicator, drenching the hair. The binding agent was left on the hair for a period of about 7.5 minutes. The hair was drenched for a second time with the binding formulation and left for a second 7.5 minutes, for a total of 15 minutes. The hair was then rinsed with water for about 1-2 minutes then unrolled from the perm rods. After the hair was removed from the perm rods, the hair was shampooed and conditioned with various salon shampoo and conditioner brands, including LiQWd® Hydrating Shampoo and Hydrating Conditioner. The washing and drying steps were repeated 40 times.

[0175] A second portion of hair was permed as described above, except, hydrogen peroxide was used instead of the binding formulation.

c. Results

[0176] Both perms (utilizing the binding formulation or hydrogen peroxide) showed only slight reduction in the overall curl after 40 cycles of washing and drying with the same shampoo and conditioner. However, the appearance and texture of the perm using the binding formulation showed more sheen and less frizz compared to the perm using hydrogen peroxide.

II. Example 2: Comparison of hair breakage due to repeated application of traditional perm and the binding formulations.

a. Methods

[0177] Two hair samples were obtained. Both samples were treated with dithiothreitol or ammonium thioglycolate as described in Example 1. One of the hair samples was subsequently treated with the binding formulation, while the other was neutralized with hydrogen peroxide. The process was completed the same day for the hair treated with the binding formulation. The process was completed in three days with hydrogen peroxide (traditional perm).

[0178] The procedure was repeated three times for each hair sample over a 48 hour time period.

b. Results

[0179] Upon visual inspections, the second hair sample treated with the binding formulation showed little or no signs of breakage. However, the first hair sample treated with hydrogen peroxide showed significant breakage.

III. Example 3: Comparison of the extent of damage to hair previously relaxed with a Japanese relaxer

a. Methods

[0180] Two samples of hair, the first previously straightened with a Japanese relaxer (Yuko), and the second previously straightened with a no lye relaxer (African Pride Miracle Deep Conditioning) were obtained. The samples were treated as described in Examples 1 and 2 using the binding formulation.

[0181] Another hair sample, previously straightened with a no lye relaxer (African Pride Miracle Deep Conditioning) was obtained. The sample was treated with a traditional hair straightening perm (Zotos).

b. Results

[0182] The hair samples treated with the binding formulation showed no noticeable damage. However, the sample treated with a traditional perm showed significant breaking, even during application.

IV. Example 4: Hair sheen and texture after treatment with binding formulation.

a. General

[0183] A sample of untreated virgin gray hair was obtained from a human subject.

[0184] *Binding formulation:* The bismaleate binding agent in Example 1 (300 mg) was dissolved in water (10 g). The resulting solution was mixed with LiQWD Volumizing Conditioner® in a 1:1 ratio.

b. Methods

[0185] A section of the virgin gray hair was washed with LiQWD® Hydrating Shampoo and then blotted dry with a towel. The hair was then combed with a wide tooth comb followed by combing with a fine tooth comb for 2 minutes.

[0186] After combing, the binding formulation (about 4 mL) was applied to the hair sample by hand and then the sample combed through for approximately 1 minute. The hair sample was

left undisturbed for a period of about 10 minutes, after which it was rinsed with water, and then washed with LiQWD® Volumizing Shampoo and Conditioner before being examined.

[0187] The hair sample was washed and conditioned for an additional five (5) times with LiQWD® Volumizing Shampoo and Conditioner.

[0188] A second section of the virgin gray hair, the control, was treated identically as above, except the binding formulation was not applied to the control hair sample. Thus after the hair was combed, LiQWD Volumizing Conditioner® (without a binding agent) was applied to the hair sample by hand.

c. Results:

[0189] The hair sample treated with the binding formulation had more shine and felt softer to the touch than the original untreated sample. The treated hair sample gave an overall healthier appearance compared to the control sample.

[0190] The shine, texture, and overall appearance remained intact after five shampoo and conditioning treatments.

V. Example 5: Hair sheen and texture after treatment with binding formulation.

a. General

[0191] A sample of untreated virgin blonde hair described as highly porous and difficult to comb through was obtained from a human subject.

[0192] *Binding formulation:* The bismaleate binding agent in Example 1 (300 mg) was dissolved in water (10 g). The resulting solution was mixed with LiQWD Enhancing Conditioner® in a 1:1 ratio.

b. Methods

[0193] A section of the virgin blonde hair was washed with LiQWD® Hydrating Shampoo and then blotted dry with a towel. The hair was then combed with a wide tooth comb followed by combing with a fine tooth comb for 5 minutes.

[0194] The binding formulation (about 7 mL) was then applied to the hair sample by hand and the sample combed through for approximately 2 minutes. The hair sample was left undisturbed for a period of about 5 minutes after which the hair was treated again with the binding formulation (about 4 mL). The hair sample was combed through for approximately 10 seconds and left undisturbed for about 5 minutes.

[0195] The hair sample was then rinsed with water then washed with LiQWD® Sulfate Free Enhancing Shampoo and Conditioner before examination.

[0196] Following initial examination, the sample was washed and conditioned for an additional two (2) times with LiQWD® Sulfate Free Enhancing Shampoo and Conditioner.

[0197] A second section of the virgin blonde hair, the control, was treated identically as above, except the binding formulation was not applied to the control hair sample. Thus, after the hair was combed, LiQWD Volumizing Conditioner® (without a binding agent) was applied to the hair sample by hand.

c. Results

[0198] The hair sample treated with the binding formulation had more shine and felt softer to the touch than the original untreated sample. The treated hair sample gave an overall healthier appearance compared to the control sample.

[0199] The shine, texture, and overall appearance remained intact after two shampoo and conditioning treatments.

VI. Example 6: Color retention and texture of colored hair treated with the binding formulation.

a. General

[0200] Three hair samples were obtained from a human subject and cut in ½ inch wide wefts.

[0201] *Coloring formulation:* The permanent hair coloring formulation was obtained from a L'Oreal® permanent hair coloring service (L'Oreal® Majirel permanent color #10 with 20 volume peroxide).

[0202] *Binding formulation:* A bismaleate binding agent, 2,2'-(ethane-1,2-diylbis(oxy))bis(ethan-1-amine) di-maleate, at a concentration of 300 mg in 10 g total solution (water) was used.

b. Methods

[0203] *The hair samples were washed with a clarifying shampoo then towel dried. The samples were then colored with the L'Oreal® permanent hair color service, which was left on the hair samples for approximately 35-40 minutes.*

[0204] *The first color treated hair sample ("control") was subsequently rinsed and washed with Liqwd® Hydrating Shampoo and Conditioner five times before being photographed.*

[0205] The binding formulation was applied to the second and third color treated hair samples via a spray bottle and massaging using the fingers. The binding formulation was left on the second hair sample for a period of about 1 minute and on the third sample for a period of about 10 minutes. The hair samples were subsequently rinsed, and then washed with Liqwd® Hydrating Shampoo and Conditioner five times before being examined.

c. Results

[0206] The hair samples treated with the binding formulation showed better color retention, more shine, and less frizz than the control. The hair samples treated with the binding formulation felt smoother to the touch and combined with the lower frizz and added sheen gave an overall healthier appearance over the control.

VII. Example 7: Comparison of color retention in traditionally permed hair and hair permed using the binding formulations.

a. Method

[0207] A ½ inch wide weft of hair sample, obtained from a human subject, was washed with clarifying shampoo then towel dried. Ammonium thioglycolate or dithiothreitol was mechanically pulled through the hair with a wide and a fine toothcomb several times then left on the hair for 10 minutes to 1 hour. The hair was then rinsed for 30 seconds to 1 minute with water, and then towel dried.

[0208] The binding formulation, described in Example 1, was then applied via a needle nose applicator drenching the hair and leaving it on for 7.5 minutes. This step was repeated, for a total of 15 minutes. The hair was then rinsed for 1-2 minutes, shampooed, and then conditioned with various salon shampoo and conditioner brands, including LiQWd® Hydrating Shampoo and Hydrating Conditioner.

[0209] A second sample of hair was straightened, as described above, but using hydrogen peroxide instead of the binding formulation. The hair samples were washed and conditioned repeatedly.

i. Comparison of hair color

[0210] After both hair samples were washed five times using LiQWd® Hydrating Shampoo and LiQWd® Hydrating Conditioner, the samples were examined for their color retention.

b. Results

[0211] The hair sample treated with the binding formulation displayed a color closer in intensity to the hair sample prior to the first washing, compared to the hair treated with hydrogen peroxide.

VIII. Example 8: Comparison of hair treated with highlighting formulation applied simultaneously with binding formulation and hair treated with highlighting formulation alone

[0212] The binding formulation in Example 1 contained the bismaleate binding agent at concentrations of 2400 mg in 10 g total solution (water).

[0213] Two swatches of human hair were tested. A sample was taken from the same head, 1 inch wide, and split in half. The color was medium brown and had been previously color treated with an unknown professional hair color.

[0214] Swatch 1, 1/2 inch wide and 8 inches long, was lightened with traditional highlighting ingredients mixed with a binding formulation. 1oz of Joico Verocolor Veroxide developer-20 volume was mixed with 1oz Joico Verolight powder bleach to form the highlighting formulation. Then 9mL of the binding formulation was added to the highlighting formulation to form a mixture.

[0215] The mixture was applied on the Swatch 1 hair with an applicator brush as the hair lay on aluminum foil. The foil was then wrapped around the swatch and allowed to process for 35 minutes. The swatch was rinsed and shampooed one time.

[0216] Swatch 2, the control, 1/2 inch wide and 8 inches long, was lightened with traditional highlighting ingredients in the absence of a binding formulation. 1oz of Joico Verocolor Veroxide developer-20 volume was mixed with 1oz Joico Verolight powder bleach to form a highlighting formulation with a creamy consistency.

[0217] The highlighting formulation was applied on the Swatch 2 hair with an applicator brush as the hair lay on aluminum foil. The foil was then wrapped around the swatch and allowed to process for 35 minutes. The swatch was rinsed and shampooed one time.

a. Results

[0218] A noticeable difference in hair quality between Swatch 1 and Swatch 2 was observed. Swatch 1 hair was softer, less frizzy, appeared hydrated, with more shine than the control, Swatch 2.

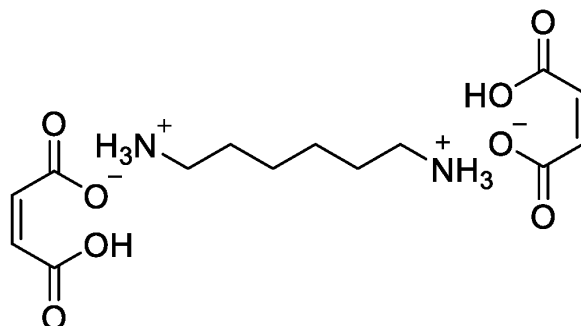
[0219] Both swatches were washed and conditioned 5 more times with the same noticeable benefits of Swatch 1 (treated with the mixture of highlighting formulation and binding formulation) compared to the control, Swatch 2 (treated with highlighting formulation, alone).

[0220] Unless defined otherwise, all technical and scientific terms used herein have the same meanings as commonly understood by one of skill in the art to which the disclosed invention belongs. Publications cited herein and the materials for which they are cited are specifically incorporated by reference.

[0221] Those skilled in the art will recognize, or be able to ascertain using no more than routine experimentation, many equivalents to the specific embodiments of the invention described herein. Such equivalents are intended to be encompassed by the following claims.

WE CLAIM

1. A method of treating keratin of a person, the method comprising contacting the keratin with a composition comprising a compound having a chemical structure of:

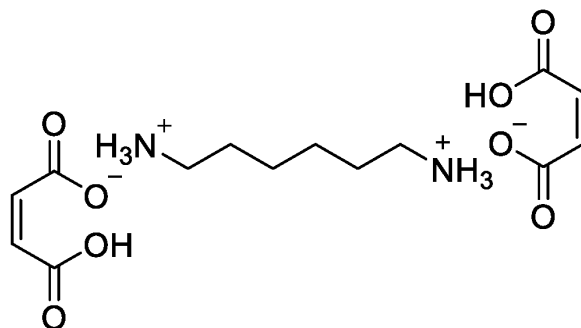


2. The method of claim 1, wherein the composition further comprises water and an alcohol.
3. The method of claim 2, wherein the composition comprises greater than 1 wt. % water.
4. The method of claim 2, wherein the alcohol comprises ethyl alcohol.
5. The method of claim 1, wherein the composition is in the form of a shampoo.
6. The method of claim 1, wherein the composition is in the form of a conditioner.
7. The method of claim 1, wherein the composition is in the form of a gel.
8. The method of claim 1, wherein the composition is in the form of a cream.
9. The method of claim 1, wherein the composition is in the form of a liquid.
10. The method of claim 1, wherein the composition further comprises a cosmetically acceptable excipient comprising a surfactant, a vitamin, a preservative, an antioxidant, an emollients, or a pH adjusting agent, or any combination thereof.
11. The method of claim 1, wherein the compound binds to a free thiol in the keratin.
12. The method of claim 1, wherein the compound binds to the keratin through a covalent bond.

13. The method of claim 1, wherein the keratin is comprised in the person's hair and the composition is applied to the person's hair.
14. The method of claim 1, wherein the keratin is comprised in the person's skin and the composition is applied to the person's skin.
15. The method of claim 1, wherein the composition comprises 0.01 wt. % to 25 wt. % of the compound.
16. The method of claim 1, wherein the composition consists of the compound, the water, and the alcohol.
17. The method of claim 1, wherein the composition has a pH of 5 to 8.

ABSTRACT

A method of treating keratin of a person is disclosed. The method includes contacting the keratin with a composition comprising a compound having a chemical structure of





ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
18/811,158	08/21/2024 03:38:49 PM Z ET	OLAP.P0007USC9/1001313621

Title of Invention

METHODS FOR FIXING HAIR AND SKIN

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	1437	FILED BY	Pam Gerik
PATENT CENTER #	66874234	FILING DATE	-
CUSTOMER #	32425	FIRST NAMED INVENTOR	Eric D. PRESSLY
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Michael KrawzseneK

Documents

TOTAL DOCUMENTS: 5

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
OLAP.P0007US.C9 - ADS.pdf	10	Application Data Sheet	2175 KB
OLAP.P0007US.C9 - Track 1 Request.pdf	1	Track One Request	115 KB
Declarations.pdf	2	Oath or Declaration filed	148 KB
POA.pdf	1	Power of Attorney	1210 KB
OLAP.P0007US.C9 - Specification-APP.TEXT.docx	49	Application body structured text document	409 KB

Warning: All artifacts (SmartArt, Drawings, Charts, etc) have been replaced with images. The abstract should be in narrative form and generally limited to a single paragraph preferably within the range of 50 to 150 words in length. See MPEP 608.01(b).

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DOCUMENT	MESSAGE DIGEST(SHA-512)
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If a new application is being filed and the application includes the necessary components for filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application

National Stage of an International Application under 35 U.S.C. 371

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**DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN
APPLICATION DATA SHEET (37 CFR 1.76)**

**Title of
Invention**

METHODS FOR FIXING HAIR AND SKIN

As the below named inventor, I hereby declare that:

This declaration is directed to: ☒ The attached application, or
☐ United States application or PCT international application number _____
filed on _____.

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

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LEGAL NAME OF INVENTOR

Inventor: Craig J. Hawker Date (Optional): 08/13/2014
Signature: /Craig J. Hawker/ Craig J. Hawker

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.

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DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of
Invention

METHODS FOR FIXING HAIR AND SKIN

As the below named inventor, I hereby declare that:

This declaration
is directed to:

☐

The attached application, or

☒

United States application or PCT international application number 14/459,012

filed on August 13, 2014

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

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LEGAL NAME OF INVENTOR

Inventor: Eric D. Pressly

Date (Optional): 08/15/2014

Signature: /Eric D. Pressly/ Eric D. Pressly

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 1 minute to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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ELECTRONIC PAYMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
18/811,158	08/21/2024 03:38:49 PM Z ET	OLAP.P0007USC9/1001313621

Title of Invention

METHODS FOR FIXING HAIR AND SKIN

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	1437	FILED BY	Pam Gerik
PATENT CENTER #	66874234	AUTHORIZED BY	Michael Krawzsenek
CUSTOMER #	32425	FILING DATE	-
CORRESPONDENCE ADDRESS	-	FIRST NAMED INVENTOR	Eric D. PRESSLY

Payment Information

PAYMENT METHOD	PAYMENT TRANSACTION ID	PAYMENT AUTHORIZED BY
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FEE CODE	DESCRIPTION	ITEM PRICE(\$)	QUANTITY	ITEM TOTAL(\$)
1830	PROCESSING FEE, EXCEPT IN PROVISIONAL APPLICATIONS	140.00	1	140.00
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1111	UTILITY PATENT APPL. SEARCH FEE	700.00	1	700.00
1011	BASIC FILING FEE - UTILITY (PAPER FILING ALSO REQUIRES NON-ELECTRONIC FILING FEE UNDER 1.16(T))	320.00	1	320.00
1311	PATENT APPL. EXAMINATION FEE	800.00	1	800.00
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New Applications Under 35 U.S.C. 111

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National Stage of an International Application under 35 U.S.C. 371

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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	OLAP.P0007USC9/1001313621
		Application Number	
Title of Invention	METHODS FOR FIXING HAIR AND SKIN		
<small>The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76. This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.</small>			

Secrecy Order 37 CFR 5.2:

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Inventor Information:

Inventor 1						Remove	
Legal Name							
Prefix	Given Name	Middle Name		Family Name		Suffix	
	Eric	D.		PRESSLY			
Residence Information (Select One) ☒ US Residency ☐ Non US Residency ☐ Active US Military Service							
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Address 2							
City	Santa Barbara	State/Province		CA			
Postal Code	93108	Countryⁱ		US			
Inventor 2						Remove	
Legal Name							
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	Craig	J.		Hawker			
Residence Information (Select One) ☒ US Residency ☐ Non US Residency ☐ Active US Military Service							
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Address 2							
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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	OLAP.P0007USC9/1001313621
		Application Number	
Title of Invention	METHODS FOR FIXING HAIR AND SKIN		

☐ An Address is being provided for the correspondence information of this application.

Customer Number	32425		
Email Address		<input type="button" value="Add Email"/>	<input type="button" value="Remove Email"/>

Application Information:

Title of the Invention	METHODS FOR FIXING HAIR AND SKIN		
Attorney Docket Number	OLAP.P0007USC9/1001313621	Small Entity Status Claimed	☐
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)		Suggested Figure for Publication (if any)	

Filing By Reference:

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

Publication Information:☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

☐ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	OLAP.P0007USC9/1001313621
		Application Number	
Title of Invention	METHODS FOR FIXING HAIR AND SKIN		

Domestic Benefit/National Stage Information:

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When referring to the current application, please leave the "Application Number" field blank.

Prior Application Status	Pending	Remove			
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)		
	Continuation of	18177011	2023-03-01		
Prior Application Status	Pending	Remove			
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)		
18177011	Continuation of	17941675	2022-09-09		
Prior Application Status	Patented	Remove			
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
17941675	Continuation of	16830789	2020-03-26	11446525	2022-09-20
Prior Application Status	Patented	Remove			
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
16830789	Continuation of	15854504	2017-12-26	10639505	2020-05-05
Prior Application Status	Patented	Remove			
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
15854504	Continuation of	14835223	2015-08-25	9855447	2018-01-02
Prior Application Status	Patented	Remove			
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
14835223	Continuation of	14748831	2015-06-24	9144537	2015-09-29
Prior Application Status	Patented	Remove			
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
14748831	Continuation of	14459012	2014-08-13	9095518	2015-08-04
Prior Application Status	Expired	Remove			
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)		
14459012	Continuation in part of	PCT/US2014/049388	2014-08-01		

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	OLAP.P0007USC9/1001313621
		Application Number	
Title of Invention	METHODS FOR FIXING HAIR AND SKIN		

Prior Application Status	Expired	Remove	
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
PCT/US2014/049388	Claims benefit of provisional	62000340	2014-05-19
Prior Application Status	Abandoned	Remove	
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
PCT/US2014/049388	Continuation in part of	14257056	2014-04-21
Prior Application Status	Expired	Remove	
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
PCT/US2014/049388	Claims benefit of provisional	61861281	2013-08-01
Prior Application Status	Expired	Remove	
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
PCT/US2014/049388	Claims benefit of provisional	61885898	2013-10-02
Prior Application Status	Abandoned	Remove	
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
PCT/US2014/049388	Continuation in part of	14257089	2014-04-21
Prior Application Status	Expired	Remove	
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
PCT/US2014/049388	Claims benefit of provisional	61867872	2013-08-20
Prior Application Status	Abandoned	Remove	
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
PCT/US2014/049388	Continuation in part of	14257076	2014-04-21
Prior Application Status	Expired	Remove	
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
PCT/US2014/049388	Claims benefit of provisional	61903239	2013-11-12
Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the Add button. Add			

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	OLAP.P0007USC9/1001313621
		Application Number	
Title of Invention	METHODS FOR FIXING HAIR AND SKIN		

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX)ⁱ the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

Application Number	Country ⁱ	Filing Date (YYYY-MM-DD)	Access Code ⁱ (if applicable)	Remove

Additional Foreign Priority Data may be generated within this form by selecting the **Add** button.

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.

☐ NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	OLAP.P0007USC9/1001313621
		Application Number	
Title of Invention	METHODS FOR FIXING HAIR AND SKIN		

Authorization or Opt-Out of Authorization to Permit Access:

When this Application Data Sheet is properly signed and filed with the application, applicant has provided written authority to permit a participating foreign intellectual property (IP) office access to the instant application-as-filed (see paragraph A in subsection 1 below) and the European Patent Office (EPO) access to any search results from the instant application (see paragraph B in subsection 1 below).

Should applicant choose not to provide an authorization identified in subsection 1 below, applicant **must opt-out** of the authorization by checking the corresponding box A or B or both in subsection 2 below.

NOTE: This section of the Application Data Sheet is **ONLY** reviewed and processed with the **INITIAL** filing of an application. After the initial filing of an application, an Application Data Sheet cannot be used to provide or rescind authorization for access by a foreign IP office(s). Instead, Form PTO/SB/39 or PTO/SB/69 must be used as appropriate.

1. Authorization to Permit Access by a Foreign Intellectual Property Office(s)

A. Priority Document Exchange (PDX) - Unless box A in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the State Intellectual Property Office of the People's Republic of China (SIPO), the World Intellectual Property Organization (WIPO), and any other foreign intellectual property office participating with the USPTO in a bilateral or multilateral priority document exchange agreement in which a foreign application claiming priority to the instant patent application is filed, access to: (1) the instant patent application-as-filed and its related bibliographic data, (2) any foreign or domestic application to which priority or benefit is claimed by the instant application and its related bibliographic data, and (3) the date of filing of this Authorization. See 37 CFR 1.14(h)(1).

B. Search Results from U.S. Application to EPO - Unless box B in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the EPO access to the bibliographic data and search results from the instant patent application when a European patent application claiming priority to the instant patent application is filed. See 37 CFR 1.14(h)(2).

The applicant is reminded that the EPO's Rule 141(1) EPC (European Patent Convention) requires applicants to submit a copy of search results from the instant application without delay in a European patent application that claims priority to the instant application.

2. Opt-Out of Authorizations to Permit Access by a Foreign Intellectual Property Office(s)

☐ A. Applicant **DOES NOT** authorize the USPTO to permit a participating foreign IP office access to the instant application-as-filed. If this box is checked, the USPTO will not be providing a participating foreign IP office with any documents and information identified in subsection 1A above.

☐ B. Applicant **DOES NOT** authorize the USPTO to transmit to the EPO any search results from the instant patent application. If this box is checked, the USPTO will not be providing the EPO with search results from the instant application.

NOTE: Once the application has published or is otherwise publicly available, the USPTO may provide access to the application in accordance with 37 CFR 1.14.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	OLAP.P0007USC9/1001313621
		Application Number	
Title of Invention	METHODS FOR FIXING HAIR AND SKIN		

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.			
Applicant 1			Remove
If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.			
Clear			
☒ Assignee	☐ Legal Representative under 35 U.S.C. 117	☐ Joint Inventor	
☐ Person to whom the inventor is obligated to assign.	☐ Person who shows sufficient proprietary interest		
If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:			
Name of the Deceased or Legally Incapacitated Inventor:			
If the Applicant is an Organization check here. ☒			
Organization Name	OLAPLEX, INC.		
Mailing Address Information For Applicant:			
Address 1	1187 Coast Village Road, Suite 1-520		
Address 2			
City	Santa Barbara	State/Province	CA
Country	US	Postal Code	93108
Phone Number		Fax Number	
Email Address			
Additional Applicant Data may be generated within this form by selecting the Add button. Add			

Assignee Information including Non-Applicant Assignee Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	OLAP.P0007USC9/1001313621	
		Application Number		
Title of Invention	METHODS FOR FIXING HAIR AND SKIN			

Assignee 1				
Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.				
<div>Remove</div>				
If the Assignee or Non-Applicant Assignee is an Organization check here. ☐				
Prefix	Given Name	Middle Name	Family Name	Suffix
Mailing Address Information For Assignee including Non-Applicant Assignee:				
Address 1				
Address 2				
City		State/Province		
Country ⁱ		Postal Code		
Phone Number		Fax Number		
Email Address				
Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button. <div>Add</div>				

Signature:

Remove

NOTE: This Application Data Sheet must be signed in accordance with 37 CFR 1.33(b). **However, if this Application Data Sheet is submitted with the INITIAL filing of the application and either box A or B is not checked in subsection 2 of the "Authorization or Opt-Out of Authorization to Permit Access" section, then this form must also be signed in accordance with 37 CFR 1.14(c).**

This Application Data Sheet **must** be signed by a patent practitioner if one or more of the applicants is a **juristic entity** (e.g., corporation or association). If the applicant is two or more joint inventors, this form must be signed by a patent practitioner, **all** joint inventors who are the applicant, or one or more joint inventor-applicants who have been given power of attorney (e.g., see USPTO Form PTO/AIA/81) on behalf of **all** joint inventor-applicants.

See 37 CFR 1.4(d) for the manner of making signatures and certifications.

Signature	/Michael R. Krawzsenek/			Date (YYYY-MM-DD)	2024-08-21
First Name	Michael R.	Last Name	Krawzsenek	Registration Number	51898
Additional Signature may be generated within this form by selecting the Add button. <div>Add</div>					

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	OLAP.P0007USC9/1001313621
		Application Number	
Title of Invention	METHODS FOR FIXING HAIR AND SKIN		

This collection of information is required by 37 CFR 1.76. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

POWER OF ATTORNEY BY APPLICANT

I hereby revoke all previous powers of attorney given in the application identified in either the attached transmittal letter or the boxes below.

Application Number	Filing Date
18/177,011	Mar. 1, 2023

(Note: The boxes above may be left blank if information is provided on form PTO/AIA/82A.)

- ☒ I hereby appoint the Patent Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above:
- OR
- ☐ I hereby appoint Practitioner(s) named in the attached list (form PTO/AIA/82C) as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the patent application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above. (Note: Complete form PTO/AIA/82C.)

Please recognize or change the correspondence address for the application identified in the attached transmittal letter or the boxes above to:

- ☒ The address associated with the above-mentioned Customer Number
- OR
- ☐ The address associated with Customer Number:
- OR

☐ Firm or Individual Name

Address

City

State

Zip

Country

Telephone

Email

I am the Applicant (if the Applicant is a juristic entity, list the Applicant name in the box):

OLAPLEX, INC.

- ☐ Inventor or Joint Inventor (title not required below)
- ☐ Legal Representative of a Deceased or Legally Incapacitated Inventor (title not required below)
- ☒ Assignee or Person to Whom the Inventor is Under an Obligation to Assign (provide signer's title if applicant is a juristic entity)
- ☐ Person Who Otherwise Shows Sufficient Proprietary Interest (e.g., a petition under 37 CFR 1.48(b)(2) was granted in the application or is concurrently being filed with this document) (provide signer's title if applicant is a juristic entity)

SIGNATURE of Applicant for Patent

The undersigned (whose title is supplied below) is authorized to act on behalf of the applicant (e.g., where the applicant is a juristic entity).

Signature

Maryleuren Hagan

Date (Optional)

Name

Maryleuren Hagan

Title

Senior Counsel, Intellectual Property

NOTE: Signature - This form must be signed by the applicant in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. If more than one applicant, use multiple forms.

☐ Total of _____ forms are submitted.

This collection of information is required by 37 CFR 1.121, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

**CERTIFICATION AND REQUEST FOR PRIORITIZED EXAMINATION
UNDER 37 CFR 1.102(e) (Page 1 of 1)**

First Named Inventor:	Eric D. PRESSLY	Nonprovisional Application Number (if known):	
Title of Invention:	METHODS FOR FIXING HAIR AND SKIN		

APPLICANT HEREBY CERTIFIES THE FOLLOWING AND REQUESTS PRIORITIZED EXAMINATION FOR THE ABOVE-IDENTIFIED APPLICATION.

1. The processing fee set forth in 37 CFR 1.17(i)(1) and the prioritized examination fee set forth in 37 CFR 1.17(c) have been filed with the request. The publication fee requirement is met because that fee, set forth in 37 CFR 1.18(d), is currently \$0. The basic filing fee, search fee, and examination fee are filed with the request or have been already been paid. I understand that any required excess claims fees or application size fee must be paid for the application.
2. I understand that the application may not contain, or be amended to contain, more than four independent claims, more than thirty total claims, or any multiple dependent claims, and that any request for an extension of time will cause an outstanding Track I request to be dismissed.
3. The applicable box is checked below:
 - I. ☒ **Original Application (Track One) - Prioritized Examination under § 1.102(e)(1)**
 - i. (a) The application is an original nonprovisional utility application filed under 35 U.S.C. 111(a). This certification and request is being filed with the utility application via EFS-Web.
---OR---
 - (b) The application is an original nonprovisional plant application filed under 35 U.S.C. 111(a). This certification and request is being filed with the plant application in paper.
 - ii. An executed inventor's oath or declaration under 37 CFR 1.63 or 37 CFR 1.64 for each inventor, or the application data sheet meeting the conditions specified in 37 CFR 1.53(f)(3)(i) is filed with the application.
 - II. ☐ **Request for Continued Examination - Prioritized Examination under § 1.102(e)(2)**
 - i. A request for continued examination has been filed with, or prior to, this form.
 - ii. If the application is a utility application, this certification and request is being filed via EFS-Web.
 - iii. The application is an original nonprovisional utility application filed under 35 U.S.C. 111(a), or is a national stage entry under 35 U.S.C. 371.
 - iv. This certification and request is being filed prior to the mailing of a first Office action responsive to the request for continued examination.
 - v. No prior request for continued examination has been granted prioritized examination status under 37 CFR 1.102(e)(2).

Signature <u>/Michael R. Krawzsenek/</u>	Date <u>2024-08-21</u>
Name (Print/Typed) <u>Michael R. Krawzsenek</u>	Practitioner Registration Number <u>51898</u>
Note: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. Submit multiple forms if more than one signature is required.*	
☐ *Total of _____ forms are submitted.	



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO.	TOT CLAIMS	IND CLAIMS
18/811,158	08/21/2024		1820	OLAP.P0007USC9/1001313621	17	1

CONFIRMATION NO. 1437

FILING RECEIPT



0000000077263598

32425

Norton Rose Fulbright US LLP
98 San Jacinto Blvd
Suite 1100
Austin, TX 78701

Date Mailed: 09/05/2024

Receipt is acknowledged of this non-provisional utility patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF FIRST INVENTOR, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection.

Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please submit a written request for a corrected Filing Receipt, including a properly marked-up ADS showing the changes with strike-through for deletions and underlining for additions. If you received a "Notice to File Missing Parts" or other Notice requiring a response for this application, please submit any request for correction to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections provided that the request is grantable.

Inventor(s)

Eric D. PRESSLY, Santa Barbara, CA;
Craig J. Hawker, Santa Barbara, CA;

Applicant(s)

OLAPLEX, INC., Santa Barbara, CA;

Power of Attorney: The patent practitioners associated with Customer Number 32425

Domestic Priority data as claimed by applicant

This application is a CON of 18/177,011 03/01/2023
which is a CON of 17/941,675 09/09/2022
which is a CON of 16/830,789 03/26/2020 PAT 11,446,525
which is a CON of 15/854,504 12/26/2017 PAT 10,639,505
which is a CON of 14/835,223 08/25/2015 PAT 9,855,447
which is a CON of 14/748,831 06/24/2015 PAT 9,144,537
which is a CON of 14/459,012 08/13/2014 PAT 9,095,518
which is a CIP of PCT/US2014/049388 08/01/2014
which claims benefit of 62/000,340 05/19/2014
and is a CIP of 14/257,056 04/21/2014 ABN
and claims benefit of 61/861,281 08/01/2013
and claims benefit of 61/885,898 10/02/2013
and is a CIP of 14/257,089 04/21/2014 ABN
and claims benefit of 61/867,872 08/20/2013
and is a CIP of 14/257,076 04/21/2014 ABN

page 1 of 4

and claims benefit of 61/903,239 11/12/2013

Foreign Applications for which priority is claimed (You may be eligible to benefit from the Patent Prosecution Highway program at the USPTO. Please see <http://www.uspto.gov> for more information.) - None.

Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 08/30/2024

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 18/811,158**

Projected Publication Date: 12/12/2024

Non-Publication Request: No

Early Publication Request: No

Title

METHODS FOR FIXING HAIR AND SKIN

Preliminary Class

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at <http://www.uspto.gov/web/offices/pac/doc/general/index.html>.

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Title 35, United States Code, Section 184
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PATENT APPLICATION FEE DETERMINATION RECORD						Application or Docket Number 18/811,158		
Substitute for Form PTO-875								
APPLICATION AS FILED - PART I								
(Column 1)		(Column 2)		SMALL ENTITY		OTHER THAN SMALL ENTITY		
FOR	NUMBER FILED	NUMBER EXTRA	RATE(\$)	FEE(\$)		RATE(\$)	FEE(\$)	
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	320	
SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A	N/A			N/A	700	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	800	
TOTAL CLAIMS (37 CFR 1.16(j))	17 minus 20 =	*				x =	0	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	1 minus 3 =	*				x =	0	
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						0	
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							0	
			TOTAL			TOTAL	1820	
* If the difference in column 1 is less than zero, enter "0" in column 2.								
APPLICATION AS AMENDED - PART II								
AMENDMENT A	(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY	
	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)		OTHER THAN SMALL ENTITY	
	Total (37 CFR 1.16(j))	*	Minus **	=	x =		RATE(\$)	ADDITIONAL FEE(\$)
	Independent (37 CFR 1.16(h))	*	Minus ***	=	x =		x =	
	Application Size Fee (37 CFR 1.16(s))						OR	
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						OR	
				TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	
AMENDMENT B	(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY	
	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)		OTHER THAN SMALL ENTITY	
	Total (37 CFR 1.16(j))	*	Minus **	=	x =		RATE(\$)	ADDITIONAL FEE(\$)
	Independent (37 CFR 1.16(h))	*	Minus ***	=	x =		x =	
	Application Size Fee (37 CFR 1.16(s))						OR	
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						OR	
				TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	
* If the entry in column 1 is less than the entry in column 2, write "0" in column 3. ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20". *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3". The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.								



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Derrick Brent

Deputy Under Secretary of Commerce for Intellectual Property and
Deputy Director of the United States Patent and Trademark Office

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Title: METHODS FOR FIXING HAIR AND SKIN
Appl. No.: 18/811,158
Applicant: OLAPLEX, INC.
Filed: 08/21/2024
Group Art Unit: To Be Assigned
Examiner: To Be Assigned
Docket No.: OLAP.P0007USC9/1001313621
Confirmation No.: 1437

CERTIFICATE OF ELECTRONIC TRANSMISSION (37 C.F.R. § 1.8)
I, Zion Stewart, hereby certify that this correspondence is being electronically filed with the United States Patent and Trademark Office via Patent Center on September 9, 2024. Signed: /Zion Stewart/

INFORMATION DISCLOSURE STATEMENT

In compliance with the duty of disclosure under 37 C.F.R. § 1.56, it is respectfully requested that this Information Disclosure Statement be entered and the documents listed on attached Form PTO-1449 be considered by the Examiner and made of record.

In accordance with 37 C.F.R. §§ 1.97(g), (h), this Information Disclosure Statement is not to be construed as a representation that a search has been made, and is not to be construed to be an admission that the information cited is, or is considered to be, material to patentability as defined in 37 C.F.R. § 1.56(b).

Timing and Fees

- ☒ Under 37 C.F.R. § 1.97(b), **no fee or statement is required** for filing this Information Disclosure Statement because it is filed:
- ☒ within three months of the filing date of a national application other than a CPA under § 1.53(d); **OR**
 - ☐ within three months of the actual filing date of the national phase of a PCT application; **OR**
 - ☐ before the mailing of a first substantive office action (including after filing of an RCE).
- ☐ Under 37 C.F.R. § 1.97(c), this Information Disclosure Statement is filed after the periods specified in 37 C.F.R. § 1.97(b), but **before** the mailing date of:
- ☐ a final rejection under 37 C.F.R. § 1.113; **OR**
 - ☐ termination of prosecution, e.g. Ex Parte Quayle, M.P.E.P. § 609(B)(2); **OR**
 - ☐ a notice of allowance under 37 C.F.R. § 1.311;
- AND** is accompanied by:
- ☐ the statement as specified in 37 C.F.R. § 1.97(e) set out below; **OR**
 - ☐ payment covering the fee of \$ _____ under 37 C.F.R. § 1.17(p).

☐ Under 37 C.F.R. § 1.97(d), this Information Disclosure Statement is filed **after** the mailing date of the following actions which have not been withdrawn:

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- ☐ termination of prosecution; e.g. Ex Parte Quayle, M.P.E.P. § 609(B)(2); **OR**
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AND is accompanied by:

the statement as specified in 37 C.F.R. § 1.97(e) as set forth below, **AND** payment covering the fee of \$ _____ under 37 C.F.R. § 1.17(p).

Statements Under 37 C.F.R. § 1.97(e) (if applicable)

☐ Each item of information contained in this Information Disclosure Statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the present Information Disclosure Statement;

Copies of Cited Materials (if applicable)

☒ Copies of materials listed but not attached were cited in benefit (35 U.S.C. § 120) ancestor application Serial No. 18/177011, Serial No. 17/941,674, Serial No. 16/830,789, Serial No. 15/854,504, Serial No. 14/835,223, Serial No. 14/748,831, and Serial No. 14/459,012 on Form 892 by the Examiner and/or Form 1449 by the applicant; see 37 C.F.R. § 1.98(d).

☐ This application may be related by inventorship and/or subject matter to co-pending U.S. application Serial No. _____, filed _____.

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☐ Payment is made by credit card via Patent Center for \$ _____ covering the fee identified above.

☒ The Commissioner is hereby authorized to charge or credit any overpayment direct to this Information Disclosure Statement to Deposit Account 50-1212/1001313621.

Respectfully submitted,

/Michael R. Krawzsenek/

Michael R. Krawzsenek
Reg. No. 51,898
Attorney

NORTON ROSE FULBRIGHT US LLP
Phone: 512-536-5267
Date: September 6, 2024

Form PTO-1449 (modified)		Atty. Docket No.: OLAP.P0007USC9/1001313621	Serial No.: 18/811,158
List of Patents and Publications for Applicant's INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)		Applicant: OLAPLEX, INC.	
		Filing Date: August 21, 2024	Group: Not Yet Assigned
U.S. Patent Documents <i>See Page 1-6</i>	Foreign Patent Documents <i>See Page 7-10</i>	Other Art <i>See Page 10-46</i>	

U.S. Patent Documents

Exam. Init.	Ref. Des.	Document Number	Date	Name
	A1	2850351	09/02/1958	Moore et al.
	A2	3142623	07/28/1964	Zviak et al.
	A3	3472243	10/14/1969	Wall et al.
	A4	3568685	03/09/1971	Scott
	A5	3840656	10/08/1974	Kalopissis et al.
	A6	4007143	02/08/1977	Lyndon et al.
	A7	4067345	01/10/1978	Kelly et al.
	A8	4138478	02/06/1979	Reese et al.
	A9	4240450	12/23/1980	Grollier et al.
	A10	4425132	01/10/1984	Grollier et al.
	A11	4532950	08/06/1985	Lang et al.
	A12	4567039	01/28/1986	Stadnick et al.
	A13	4658839	04/21/1987	Dallal et al.
	A14	4793993	12/27/1988	Siuta-Mangano et al.
	A15	4812307	03/14/1989	Siuta-Mangano et al.
	A16	4834971	05/30/1989	Klenk et al.
	A17	5143518	09/01/1992	Madrang et al.
	A18	5200429	04/06/1993	Sato et al.
	A19	5221286	06/22/1993	Singleton et al.
	A20	5350572	09/27/1994	Savaides et al.
	A21	5356438	10/18/1994	Kim et al.
	A22	5490980	02/13/1996	Richardson et al.

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INFORMATION DISCLOSURE STATEMENT — PTO-1449 (MODIFIED)

Form PTO-1449 (modified)		Atty. Docket No.: OLAP.P0007USC9/1001313621	Serial No.: 18/811,158
List of Patents and Publications for Applicant's INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)		Applicant: OLAPLEX, INC.	
		Filing Date: August 21, 2024	Group: Not Yet Assigned
U.S. Patent Documents <i>See Page 1-6</i>		Foreign Patent Documents <i>See Page 7-10</i>	Other Art <i>See Page 10-46</i>

U.S. Patent Documents

Exam. Init.	Ref. Des.	Document Number	Date	Name
	A23	5565216	10/15/1996	Cowsar et al.
	A24	5651960	07/29/1997	Chan et al.
	A25	5656265	08/12/1997	Bailey et al.
	A26	5811085	09/22/1998	Halloran
	A27	5833966	11/10/1998	Samain
	A28	6010690	01/04/2000	Varco
	A29	6173717	01/16/2001	Schonert et al.
	A30	6358502	03/19/2002	Tanabe et al.
	A31	6458906	10/01/2002	Torgerson et al.
	A32	6537532	03/25/2003	Torgerson et al.
	A33	6572663	06/03/2003	Pitfield et al.
	A34	6706258	03/16/2004	Gallagher et al.
	A35	6984250	01/10/2006	Legrand et al.
	A36	7041142	05/09/2006	Chan et al.
	A37	7044986	05/16/2006	Ogawa et al.
	A38	7179302	02/20/2007	Boswell et al.
	A39	7390479	06/24/2008	Sockel et al.
	A40	7597880	10/06/2009	Darkwa et al.
	A41	7598213	10/06/2009	Geary et al.
	A42	8137414	03/20/2012	Wood et al.
	A43	8298519	10/30/2012	Adams et al.
	A44	8343238	01/01/2013	Lopez et al.

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U.S. Patent Documents <i>See Page 1-6</i>	Foreign Patent Documents <i>See Page 7-10</i>	Other Art <i>See Page 10-46</i>	

U.S. Patent Documents

Exam. Init.	Ref. Des.	Document Number	Date	Name
	A45	8556992	10/15/2013	De George et al.
	A46	8613913	12/24/2013	Tae Sun Chang et al.
	A47	9095518	08/04/2015	Pressly et al.
	A48	9144537	09/29/2015	Pressly et al.
	A49	9180086	11/10/2015	Cabourg et al.
	A50	9326926	05/03/2016	Pressly et al.
	A51	9498419	11/22/2016	Pressly et al.
	A52	9597273	03/21/2017	Pressly et al.
	A53	9668954	06/06/2017	Pressly et al.
	A54	9713583	07/25/2017	Pressly et al.
	A55	9717668	08/01/2017	Pressly et al.
	A56	9855447	01/02/2018	Pressly et al.
	A57	9872821	01/23/2018	Pressly et al.
	A58	10076475	09/18/2018	Gershon et al.
	A59	10076478	09/18/2018	Pressly et al.
	A60	10639505	05/05/2020	Pressly et al.
	A61	10792233	10/06/2020	Pressly et al.
	A62	11191707	12/07/2021	Pressly et al.
	A63	11446525	09/20/2022	Pressly
	A64	20010042276	11/22/2001	Kawasoe et al.
	A65	20020189034	12/19/2002	Kitabata et al.
	A66	20020197227	12/26/2002	Scholz

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U.S. Patent Documents

Exam. Init.	Ref. Des.	Document Number	Date	Name
	A67	20030037384	02/27/2003	Ngyuen et al.
	A68	20030049222	03/13/2003	Akhter et al.
	A69	20030072962	04/17/2003	Matsuzaki et al.
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	A72	20040086475	05/06/2004	Boswell et al.
	A73	20040088800	05/13/2004	Cotteret
	A74	20040166073	08/26/2004	Darkwa et al.
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	A78	20050215622	09/29/2005	Majeed et al.
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	A80	20060228316	10/12/2006	Cannell et al.
	A81	20070041921	02/22/2007	Neill et al.
	A82	20070067924	03/29/2007	Beck et al.
	A83	20070141005	06/21/2007	Wood et al.
	A84	20070261594	11/15/2007	Vaskelis et al.
	A85	20070264208	11/15/2007	Mougin et al.
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	A87	20080138309	06/12/2008	Malle et al.
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U.S. Patent Documents <i>See Page 1-6</i>		Foreign Patent Documents <i>See Page 7-10</i>	Other Art <i>See Page 10-46</i>

U.S. Patent Documents

Exam. Init.	Ref. Des.	Document Number	Date	Name
	A89	20080187506	08/07/2008	Carballada et al.
	A90	20090022681	01/22/2009	Carballada et al.
	A91	20090126756	05/21/2009	Syed et al.
	A92	20090252697	10/08/2009	Barbarat et al.
	A93	20100004391	01/07/2010	Haddleton et al.
	A94	20100015253	01/21/2010	Benjamin
	A95	20100202998	08/12/2010	Ramos-Stanbury et al.
	A96	20110038818	02/17/2011	Onyebuagu et al.
	A97	20110097293	04/28/2011	Grey et al.
	A98	20110250153	10/13/2011	Owen et al.
	A99	20110256084	10/20/2011	Dixon et al.
	A100	20120024309	02/02/2012	Pratt et al.
	A101	20120114584	05/10/2012	Woghiren et al.
	A102	20120145477	06/14/2012	Peaslee
	A103	20120148517	06/14/2012	Gilmore et al.
	A104	20120180807	07/19/2012	Flohr
	A105	20120225106	09/06/2012	Ross et al.
	A106	20120244082	09/27/2012	Sulzbach et al.
	A107	20130034515	02/07/2013	Stone et al.
	A108	20130078205	03/28/2013	Dayan
	A109	20130152959	06/20/2013	Genain et al.
	A110	20130172518	07/04/2013	Huang et al.

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U.S. Patent Documents <i>See Page 1-6</i>	Foreign Patent Documents <i>See Page 7-10</i>	Other Art <i>See Page 10-46</i>	

U.S. Patent Documents

Exam. Init.	Ref. Des.	Document Number	Date	Name
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	A112	20130340785	12/26/2013	Baum et al.
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	A114	20140186283	07/03/2014	Cabourg et al.
	A115	20140196741	07/17/2014	Cabourg et al.
	A116	20150034117	02/05/2015	Pressly et al.
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	A119	20150297496	10/22/2015	Kroon et al.
	A120	20150320658	11/12/2015	Flohr et al.
	A121	20150328102	11/19/2015	Pressly et al.
	A122	20160081899	03/24/2016	Pressly et al.
	A123	20160193129	07/07/2016	Pressly et al.
	A124	20160263003	09/15/2016	Pressly et al.
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	A126	20200009035	01/09/2020	Pressly et al.
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	B1	CN105431128	03/23/2016	China

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INFORMATION DISCLOSURE STATEMENT — PTO-1449 (MODIFIED)

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U.S. Patent Documents <i>See Page 1-6</i>		Foreign Patent Documents <i>See Page 7-10</i>	Other Art <i>See Page 10-46</i>

Exam. Init.	Ref. Des.	Document Number	Date	Country
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202702493.1

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	B54	WO2006051287	05/18/2006	WIPO
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	C1	"ThatBlondeGirl Mandie" - Youtube video: Brunette Goes Blonde No Damage, No.1, retrieved online from, < https://www.youtube.com/watch?v=7fIFBmxJk8s > (January 11, 2015), retrieved December 13, 2022.
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	C6	2019Heo3618 Appeal of Korean Patent Cancellation, Defendant-Intervenor Presentation (with English translation) dated September 23, 2020.
	C7	2019Heo3618 Appeal of Korean Patent Cancellation, Defendant-Intervenor Reference Brief (with English translation) filed October 27, 2020.
	C8	2019Heo3618 Appeal of Korean Patent Cancellation, Expert Declaration of Dr. Steve Rannard signed December 25, 2019.
	C9	2019Heo3618 Appeal of Korean Patent Cancellation, Expert Declaration of Dr. Steve Rannard signed June 9, 2020.

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Other Art (Including Author, Title, Date, Pertinent Pages, Etc.)		
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	C10	2019Heo3618 Appeal of Korean Patent Cancellation, Expert Declaration of Dr. Steve Rannard signed November 4, 2020.
	C11	2019Heo3618 Appeal of Korean Patent Cancellation, KIPO Defendant Brief (with English translation) dated September 18, 2020 .
	C12	2019Heo3618 Appeal of Korean Patent Cancellation, KIPO Defendant Presentation (with English Translation) dated September 23, 2020 .
	C13	2019Heo3618 Korean Court Decision (with English Translation) dated February 3, 2021.
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	C16	Aparecida Da Franca, et al., "Types of Hair Dye and Their Mechanisms of Action", Cosmetics, 2:110-126 (2015).
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202702493.1

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Exam. Init.	Ref. Des.	Citation
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	C26	BORISH, Edward T. CV filed Nov 16, 2018.
	C27	BOUILLON and WILKINSON, Chapter 1, "Hair Structure, Function, and Physicochemical Properties" in The Science of Hair Care, (2005).
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	C29	Brief English Summary of Office Action IL (Israel) Application No. 265590 mailed September 23, 2020.
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	C35	CANARI, "Effect of pH on Dicarboxylic Acids Extraction by Amine-Based Extractants", Ind. Eng. Chem. Res., 42:1293-1300 (2003).
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	C44	CIR Safety Report "Final Report on the Safety Assessment of Maleic Acid", International Journal of Toxicology, 26 (Suppl.2); 125-131, (2007).
	C45	Citraconic Acid, C5H6O4-PubChem, accessed DECEMBER 21, 2018.
	C46	Claims of GB1605346.4 submitted on September 7, 2018.
	C47	Combined Search and Examination Report for GB 1523109.5 mailed February 4, 2016.
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	C52	DAVIES and EVANS, "The isomerization of maleic acid in aqueous solutions", Transactions of Faraday Society, 52:74-80 (1956).
	C53	DAVIS, et al., Excerpts from Modern Chemistry, pages 214,215, and 454 (1999).
	C54	Declaration by Dr. Hefford dated January 7, 2020 filed in KR Appeal No. 2019Heo3618.
	C55	Declaration by Prof. Steve Rannard dated December 25, 2019 filed in KR Appeal No. 2019Heo3618.
	C56	Declaration of Arun Nandagiri dated Jan. 30, 2017, with curriculum vitae.
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202702493.1

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Other Art (Including Author, Title, Date, Pertinent Pages, Etc.)		
Exam. Init.	Ref. Des.	Citation
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	C65	Declaration of Prof. Steve Rannard dated October 27, 2019 filed in EP 15725209.9.
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	C67	Defendant-Intervenor brief in Appeal No. 2019Heo3618, KR (Korea) 1787310, dated OCTOBER 23, 2019.
	C68	Defendant's Brief- REDACTED version - in Opposition to Plaintiff's Motion for Preliminary Injunction, by L'Oreal USA Products, Inc., et al., filed in Liqwd, Inc. et al. v. L'Oreal USA, Inc. et al., U.S. District Court for the District of Delaware, Civil Action No. 1:17-cv-00014 on April 17, 2017.
	C69	DISPENZA License status webpage, https://aca.licensecenter.ny.gov/aca/GeneralProperty/LicenseeDetail , retrieved from the internet 12/12/2017.
	C70	DISPENZA, Thomas - Declaration, signed OCT 17, 2017 filed in PGR 2017-00012
	C71	DISPENZA, Thomas - Deposition transcript, pages 1-125, December 13, 2017.
	C72	DMUCHOVSKY, et al., "The Mechanism of the Base-Catalyzed Addition of Thiols to Maleic Anhydride", Free-Radical Addition of Thiols to Maleic Anhydride, 86:2875-2877 (1964).
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	C78	English Summary of Examination Report QA (Qatar) QA/201601/00021, dated December 12, 2019.
	C79	English Summary of IL (Israel) Application No. 265590 dated March 13, 2020.
	C80	English Summary of MY (Malaysia) Application No. PI 2016704186 Office Action dated October 26, 2020.
	C81	English Summary of Notice of Re-examination CN (China) Application No. 201580026038.9 dated November 25, 2020.
	C82	English Summary of Office Action HN (Honduras) 2016002313, dated February 11, 2020.
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	C87	English Translation of Defendant-Intervenor brief in Appeal No. 2019Heo3618, KR (Korea) 1787310, dated OCTOBER 23, 2019.
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	C89	English Translation of KIPO Response Correction in Appeal No. 2019Heo3618, KR (Korea) 1787310, dated OCTOBER 22, 2019.
	C90	English Translation of KIPO Response in Appeal No. 2019Heo3618, KR (Korea) 1787310 dated OCTOBER 15, 2019.
	C91	English Translation of MX (Mexico) Application No. MX/a/2020/011029 Office Action dated September 24, 2021.
	C92	ENGLISH TRANSLATION OF PACKAGING IN MINTEL DATABASE, RECORD ID 743114, CATZY HAIR COLOURANT, PUBLISHED JULY 2007. Translation Filed February 2, 2018.
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	C95	English Translation of Third Party Observation BR (Brazil) Application No. 1120160263782 dated March 17, 2020.
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	C97	EVANS, "Fatigue testing of hair-A statistical approach to hair breakage", J Cosmet. Sci., 60:599-616 (2009).
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Other Art (Including Author, Title, Date, Pertinent Pages, Etc.)		
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	C103	EX 2004 - TRIAL TESTIMONY IN LIQWD, INC. ET AL. V. L'OREAL (UK) LTD. ET AL., EQHC PATENTS COURT, CLAIM NO. HP-2016-000056, APRIL 26, 2018.
	C104	EX 2010, pGR 2018-00023, Joico Bleach Powder label with instructions and ingredients, filed May 21, 2018.
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	C117	EX 2049, PGR 2018-00025, Lab report from Analyze Inc., filed Nov 16, 2018.
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	C132	Examination Report GB1605346.4 mailed January 11, 2017.
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	C136	EXPERT VILLAGE, Hair color mixing and application techniques: Mixing bleach for highlights, https://www.youtube.com/watch?v=nOE_BaC57mw , 3 pages, retrieved from the internet 05/17/2016.
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	C138	Facebook page, https://www.facebook.com/behindthechair/photos/a.153398501906.116563.44389181906/1015241786416190/?type=3&theater , May 13, 2014.
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202702493.1

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202702493.1

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	C180	International Search Report and Written Opinion for PCT application, PCT/US2015/065032, mailed May 9, 2016.
	C181	International Search Report and Written Opinion for PCT/US2014/049388 mailed 10/29/2014.
	C182	International Search Report and Written Opinion for PCT/US2016/029215 mailed July 8, 2016.
	C183	International Search Report and Written Opinion for PCT/US2016/058432, mailed January 16, 2017.
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		Filing Date: August 21, 2024	Group: Not Yet Assigned
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Other Art (Including Author, Title, Date, Pertinent Pages, Etc.)		
Exam. Init.	Ref. Des.	Citation
	C241	L'Oreal Invalidity Opinion Ex A35, filed July 26, 2018.
	C242	L'Oreal Invalidity Opinion Ex A36, filed July 26, 2018.
	C243	L'Oreal Invalidity Opinion Ex A37, filed July 26, 2018.
	C244	L'Oreal Invalidity Opinion Ex A38, filed July 26, 2018.
	C245	L'Oreal Invalidity Opinion Ex A39, filed July 26, 2018.
	C246	L'Oreal Invalidity Opinion Ex A40, filed July 26, 2018.
	C247	L'Oreal Invalidity Opinion Ex A41, filed July 26, 2018.
	C248	L'Oreal Invalidity Opinion Ex A42, filed July 26, 2018.
	C249	L'Oreal Invalidity Opinion Ex A43, filed July 26, 2018.
	C250	L'Oreal Invalidity Opinion Ex A44, filed July 26, 2018.
	C251	L'Oreal Invalidity Opinion Ex A45, filed July 26, 2018.
	C252	L'Oreal Invalidity Opinion Ex A46, filed July 26, 2018.
	C253	L'Oreal Invalidity Opinion Ex A47, filed July 26, 2018.
	C254	Lab muffin "How Does Olaplex Hair Treatment Work?" http://www.labmuffin.com/2015/04/how-does-hair-treatment-work , 8 pages retrieved from the internet June 24, 2016
	C255	LAW, Robert - Declaration dated JUL 13 2018, Filed by third party in GB 1605346.4 and GB 1813313.2
	C256	LEWIS excerpt from Hawley's Condensed Chemical Dictionary, 5 pages (1997).
	C257	Liqwd vs. L'Oreal (UK) Ltd., Amended Invalidity Grounds November 6, 2017.
	C258	Lipkowska, Zofia Urbalczyk, and Przemyslaw Gluzinski. "Molecular recognition of acyclic amines I: Co-crystallization of 2, 2'-(ethylenedioxy)-diethylamine with dicarboxylic acids." Supramolecular Chemistry 7.2: 113-118 (1996)

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	C259	MAJONIS, et al., "Dual-purpose polymer labels for fluorescent and mass cytometric affinity bioassays," Biomacromolecules, 14(5):1503-13 (2013)
	C260	MAYO, et al., "Effect of Spacer Chemistry on the Formation and Properties of Linear Reversible Polymers", Journal of Polymer Chemistry, Part A: Polymer Chemistry, 51:5056-5066 (2013).
	C261	MEMORANDUM filed in response to official action of June 5, 2017 in corresponding Israel application no. 248989.
	C262	Memorandum in Response to Official Action of October 7, 2018 in Israel application no. 248989 dated January 24, 2019.
	C263	MEMORANDUM ORDER in Liqwd, Inc. et al. v. L'Oreal USA, Inc. et al., Case No. 1:17-cv-00014 (D. Del), denying MOTION for Preliminary Injunction by Judge Sue L. Robinson (JUL 06, 2017).
	C264	MHASKAR, et al., "Hair breakage index: An alternative tool for damage assessment of human hair", J. Cosmet. Sci., 62:203-207 (2011).
	C265	Mintel database entry for Bigen Permanent Powder Hair Colour (June 2013).
	C266	Mintel database entry for Samy Fat Foam product (October 2010).
	C267	Mintel Database Record ID 1999129, L'Oreal Preference Les Blondissimes Hair Colourant, 2013.
	C268	MINTEL DATABASE, Record ID 743114, Catzy Hair Colourant, 4 pages, Published July 23, 2007.
	C269	MINTEL Leave-in Hair and Scalp Nutrient, XP002743522, Database accession No. 10141004, June 1, 2003.
	C270	MINTEL Permanent Hair Colour, XP002743523, Database Accession No. 2061070, May 1, 2013.
	C271	MORGAN, et al., "Interaction of Maleic Acid with Thiol Compounds", Biochemical Laboratory, Cambridge, 733-742 (1983).
	C272	MSDS Olaplex No. 1 Bond Multiplier, dated JUNE 2014.

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	C273	MSDS Olaplex No. 2 Bond Perfector, updated JULY 2014.
	C274	MUROTA, et al., "Emedastine Difumurate Inhibits Histamine-Induced Collagen Synthesis in Dermal Fibroblasts", J. Investig. Allergol. Clin. Immunol, 18(4):245-252, (2008).
	C275	NAIR, et al., "The Thiol-Michael Addition Click Reaction: A Powerful and Widely Used Tool in Materials Chemistry", Chemistry of Materials, 26:724-744 (2014).
	C276	NANDAGIRI, Arun - Declaration signed JAN 30, 2017 (Ex. 1008) with CV (Ex. 1016).
	C277	NANDAGIRI, Arun - Deposition transcript dated MAR 02 2018 (Ex 2055).
	C278	NANDAGIRI, Arun - Deposition transcript dated MAR 14 2018 (Ex 2057).
	C279	NANDAGIRI, Arun - Deposition transcript dated OCT 6, 2017.
	C280	NANDAGIRI, Arun - Rebuttal Declaration dated JAN 26 2018 (Ex 1040).
	C281	NANDAGIRI, Arun - Rebuttal Declaration, pages 1-7, JAN 30, 2017.
	C282	Naver Encyclopedia, Trichology Dictionary: Developer, with English Translation (2003).
	C283	New Olaplex Usage Instructions label (JUNE 2014).
	C284	Notice of Intention to refuse Supplementary Examination Report SG (Singapore) Application No. 11201609005Q dated January 7, 2021.
	C285	Notice of Opposition in EP (Europe) European Application No. EP 16720308.2 dated July 14, 2020.
	C286	Notice of Opposition in EP (Europe) European Application No. EP 3142637 dated July 29, 2020.
	C287	Notice of Re-Examination CN (China) Application No. 201580026038.9 dated December 10, 2020 and English Summary Thereof.
	C288	Notice of Re-Examination CN (China) Application No. 201580026038.9 dated June 10, 2021 and English Summary Thereof.
	C289	Notification of Grant for GB 1513932.2 mailed October 4, 2016.

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	C290	Office Action ARIPO AP/P/2015/008934, dated MAY 27, 2019.
	C291	Office Action AU (Australia) 2017251818, mailed May 31, 2019.
	C292	Office Action AU 2015258904 mailed NOV 2, 2016 (Examination Report).
	C293	Office Action CA (Canada) 2,947,303 mailed DEC 28, 2016.
	C294	Office Action CA (Canada) 2,947,303, mailed MARCH 19, 2019.
	C295	Office Action CA (Canada) 2,947,303, mailed MAY 12, 2017.
	C296	Office Action CA (CANADA) 2947303 - SEP 17, 2018.
	C297	Office Action CA (CANADA) 2947303, MAILED OCT 10, 2018.
	C298	Office Action CA (Canada) CA 2,947,303 mailed DEC 21, 2017.
	C299	Office Action CL (Chile) 201600158 mailed JUN 18, 2018, with English Summary.
	C300	Office Action CL (CHILE) 201602911 - SEP 27, 2018, with English Summary.
	C301	Office Action CL (Chile) 201602911 mailed APR 11, 2018, with English Translation.
	C302	Office Action CN (China) 201480042200.1 mailed JAN 01, 2018.
	C303	Office Action CN (China) 201480042200.1 mailed MAY 02, 2017 (with English summary).
	C304	Office Action CN (China) 201480042200.1 with English summary, mailed APRIL 22, 2019.
	C305	Office Action CN (CHINA) 201480042200.10 Dated AUG 03, 2018 with English Summary
	C306	Office Action CN (CHINA) 201580026038.9 - SEP 05, 2018 with English Summary
	C307	Office Action CN (China) 201580026038.9 with English summary, mailed APRIL 11, 2019.
	C308	Office Action CO (Colombia) 16-030.965 mailed JUL 28, 2017 (with English summary).
	C309	Office Action CU (Cuba) 2016-0017 mailed JAN 26, 2018 (English Translation).
	C310	Office Action CU (Cuban) 2016-0017 dated JUN 20, 2018 (English Translation).

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	C311	Office Action DO (Dominican Republic) P20160030 mailed APR 10, 2018 (English Summary).
	C312	Office Action DO (DOMINICAN REPUBLIC) P20160030, mailed SEP 18, 2018, with English Summary.
	C313	Office Action EA (Eurasia) 201592291 mailed MAY 08, 2018, with English Translation.
	C314	Office Action EA (EURASIA) 201592291, dated AUG 30, 2018, with English Summary.
	C315	Office Action EA (Eurasia) 2016-92315 mailed JAN 30, 2019 with English Summary.
	C316	Office Action EA (Eurasia) 201692315 mailed with English translation, September 28, 2017.
	C317	Office Action EG (EGYPT) 2016111820, dated NOV 26, 2018, with English Translation.
	C318	Office Action EP (Europe) 15725209.9 dated MAY 16, 2019.
	C319	Office Action EP (Europe) 15725209.9 mailed JAN 01, 2018.
	C320	Office Action EP (Europe) 15725209.9, mailed AUG 15, 2018.
	C321	Office Action EP (Europe) 16798857.5 dated February 19, 2019.
	C322	Office Action GB (United Kingdom) 1605344.9 mailed APR 29, 2016.
	C323	Office Action GE (Georgia) AP 2014 01404 mailed MAY 04, 2017 (with English translation).
	C324	Office Action HN (Honduras) 2016-000236 mailed FEB 01, 2019 with English Translation.
	C325	Office Action IL (Israel) 248989 with Third Party Observation mailed SEP 06, 2017 (English Summary).
	C326	Office Action IL (Israel) 248989, mailed JUN 05, 2017 (with English summary).
	C327	Office Action IN (INDIA) 20147007019.00, mailed SEP 06, 2018, with English Translation.
	C328	Office Action IN (INDIA) 201617038524, mailed MAY 12, 2018, with English Translation.
	C329	Office Action JP (Japan) 2016-572832 with English summary, mailed DECEMBER 11, 2018.

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	C330	Office Action JP (JAPAN) 2016-572832, AUG 02, 2018, with English Translation.
	C331	Office Action JP (JAPAN) 2016-572832, mailed JUL 31, 2018, English Translation.
	C332	Office Action JP (Japan) 2017-152453 dated May 14, 2019, with English summary.
	C333	Office Action KR (Republic of Korea) 10-2016-7034158, mailed APR 10, 2017 (with English summary).
	C334	Office Action MX (Mexico) MX/a/2016/014917, mailed JUNE 20, 2018.
	C335	Office Action MX (Mexico) MXa/2016/00176 mailed AUG 24, 2017.
	C336	Office Action NZ (New Zealand) 725652 mailed APR 03, 2017 (Examination Report).
	C337	Office Action SA (SAUDI ARABIA) 516370509, received AUG 01, 2017 with English Summary.
	C338	Office Action SG (SINGAPORE) 11201609005Q, dated MAY 24, 2017.
	C339	Office Action SG (SINGAPORE) 11201609005Q, Dated NOV 29, 2017.
	C340	Office Action SG (SINGAPORE) 11201609005Q, dated SEP 28, 2018.
	C341	Office Action SV (El Salvador) 20160019660, mailed MAR 14, 2018, with brief English Summary.
	C342	Office Action SV (EL SALVADOR) 2016005320, Mailed OCT 05, 2018.
	C343	Office Action UA (Ukraine) a201601137 mailed JUN 22, 2017 (with English translation).
	C344	Office Action UK (United Kingdom) 1618547.2 mailed NOV 30, 2016.
	C345	Office Action US 14/713,885, dated AUG 17, 2015.
	C346	Office Action US 15/087,415, dated MAY23, 2016.
	C347	Office Action US 15/290,593 mailed JAN 02, 2018.
	C348	Office Action US 15/290,593, dated AUG 01, 2018.

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	C349	Office Action US 15/415,464 ,mailed MAR 15, 2017.
	C350	Office Action US 15/626,453 dated MAY 14, 2019.
	C351	Office Action US 15/854,504, mailed MARCH 7, 2019.
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	C353	Office Action US 15/940,150, dated MAY 16, 2018.
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	C361	Office Action CN (CHINA) 201480042200.10, Dated NOV 09, 2018, with English Summary
	C362	Office Action CN (China) 201580026038.90 mailed DEC 18, 2017, with English Summary.
	C363	Office Action CN (China) 201580026039, dated JULY 16, 2019 with English Summary.
	C364	Office Action CN (China) Application No. 201580026038.9 dated November 25, 2020 with English Summary.
	C365	Office Action CN (China) Application No. 201680088959.2 with English Summary dated December 3, 2021.
	C366	Office Action CR (Costa Rica) Application No. 20160053 dated December 9, 2020 with English Summary.
	C367	Office Action CU (Cuba) 2016-0017 dated JUL 03, 2018 (with English Translation).

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	C384	Office Action IL (Israel) 248989 (with third party submission) mailed SEP 06, 2017 (English Summary)
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	C397	Office Action MX (Mexico) MX/a/2016/014917, dated APRIL 12, 2019 with English Summary.
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	C399	Office Action MY (Malaysia) PI 2016700195 dated SEPTEMBER 30, 2019.
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	C406	Office Action SV (El Salvador) Application No. 2016-0020933 with English Summary dated April 19, 2021.
	C407	Office Action US (United States) 16/571,933 dated April 9, 2021.
	C408	Office Action US 15/854,504 dated AUGUST 8, 2019.
	C409	Official communication in UK Patent Application 1513932.2 (April 13, 2016).
	C410	OGATA and SAWAKI, et al., "Kinetics of the Acid-Catalysed Formation of Aliphatic Peracids from Hydrogen Peroxide and Aliphatic Acids in Dioxin" Tetrahedron, 21:3381-3386, (1965).
	C411	OLAPLEX "The Olaplex Difference" https://olaplex.com/pages/how-it-works , retrieved from the internet 12/12/2017.
	C412	Olaplex Bond Multiplier No.1 Mix with Highlights, balayage, or high lift color label (JUNE 2014).
	C413	OLAPLEX on Instagram page, https://www.instagram.com/p/mGhswioJQ2/?hl=en , March 28, 2014.
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	C416	OLAPLEX on Instragram page, https://www.instagram.com/p/nBwLbtoJck/?hl=en , April 20 2014.
	C417	OLAPLEX, Apparent description of booth presentation during Bronner Bros. show in Atlanta http://www.instagram.com/p/zacpQulJfn/ , Instagram post February 22, 2015.
	C418	OLAPLEX, Material Safety Data Sheet for Olaplex Bond Multiplier No. a December 2014.
	C419	Olaplex.com, "Never break a client's hair", visited JUNE 28, 2014.
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INFORMATION DISCLOSURE STATEMENT — PTO-1449 (MODIFIED)

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Other Art (Including Author, Title, Date, Pertinent Pages, Etc.)		
Exam. Init.	Ref. Des.	Citation
	C421	Partial International Search Report for PCT/US2015/031166 mailed September 14, 2015.
	C422	PATERSON, et al., "On the synthesis of N-maleoyl amino acids in aqueous media: cautionary tales for the unwary traveller", ARKAT USA, Inc., 11-16 (2010).
	C423	PGR 2017-00011 Decision denying Institution of Post-Grant Review, by Patent Trial and Appeal Board, Paper 24 (July 19, 2017).
	C424	PGR 2017-00012 Petition for Post-Grant Review of US Patent No. 9,498,419, filed on behalf of L'Oreal USA, Inc. (Jan. 31, 2017).
	C425	PGR 2017-00012 - REDACTED version of Paper 102, Final Written Decision, JUN 27 2018 (PAPER 105).
	C426	PGR 2017-00012 Decision partial Institution of Post-Grant Review, by Patent Trial and Appeal Board, Paper 17 (July 19, 2017).
	C427	PGR 2017-00012 Liquid, Inc.'s Patent Owner Response under 37 C.F.R. §42.220, filed on OCT 20, 2017 (REDACTED)
	C428	PGR 2017-00012 Patent Owner's Supplemental Response, MAY 24 2018.
	C429	PGR 2017-00012 Petitioner's REPLY to Patent Owner's Supplemental Response MAY 31, 2018.
	C430	PGR 2017-00012 Redacted Petitioners reply to patent owner's response, pages 1-32 January 26, 2018.
	C431	PGR 2018-00023 - WICKETT, Randall Declaration dated January 31, 2018.
	C432	PGR 2018-00023 Paper 9 Institution Denied, AUG 10 2018.
	C433	PGR 2018-00023 Patent owner's preliminary response, pages 1-76, May 21, 2018.
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	C435	PGR 2018-00024 - WICKETT, Randall Declaration dated January 31, 2018.
	C436	PGR 2018-00024 Paper 12 Institution Denied, AUG 10 2018.

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	C438	PGR 2018-00024 Redacted Petition for Post-Grant review of U.S. Patent No. 9,668,954 dated January 31, 2018.
	C439	PGR 2018-00025 - WICKETT, Randall Declaration February 15, 2019.
	C440	PGR 2018-00025 Paper 12 Institution Decision, AUG 10 2018.
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	C442	PGR 2018-00025 Petition for Post-Grant review of U.S. Patent 9,668,954 (REDACTED) dated February 1, 2018.
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	C447	PRAMANIK, "10.3.7 OS-Salt Interaction", Characterization of Impurities and Degradants Using Mass Spectrometry, John Wiley & Sons, Hoboken, New Jersey, (2011).
	C448	PRESSLY, Eric D. - Declaration, signed OCT 19, 2017 (REDACTED) filed in PGR 2017-00012.
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	C450	Prior Use - documentary Evidence E36 as provided on parent case NZ725652 Evidence of public prior use before 5 May 2014
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	C454	RAMACHANDRA, et al., "Acid-based characteristics of human hair: Absorption of HCl and NaOH, and the effects on physical properties." J Soc Cosmet Chem., 32:393-405 (1981).
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	C461	ROBBINS, Chapter 4 "Bleaching Human Hair" in Chemical and Physical Behavior of Human Hair, 2002.
	C462	ROBBINS, Chapter 5 "Bleaching and Oxidation of Human Hair" in Chemical and Physical Behavior of Human Hair 2012.
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	C464	ROBBINS, Clarence R., Mouhatu no kagaku [Science of Hair], 4th edition, FragranceJournal Ltd., July 10, 2006, p.221-225 with English counterpart, p.194-198.
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	C467	ROBBINS, et al., "Polymerization into Human Hair", J. Soc. Cosmet. Chem., 25:407-421 (1974).
	C468	ROBBINS, et al., "The Physical Properties of Hair Fibers", Chemical and Physical Behavior of Human Hair, Chapter 9, Springer-Verlag, Berlin Heidelberg (2012).
	C469	ROBINSON, "A study of damaged hair", J. Soc. Cosmet. Chem., 27:155-161 (1976).
	C470	RUETSCH, et al., "Photodegradation of human air: An SEM study", J. Cosmet. Sci., 51:103-125 (2000).
	C471	SANDHU, et al., "A simple and sensitive method using protein loss measurements to evaluate damage to human hair during combing", J. Soc. Cosmet. Chem., 46:39-52 (1995).
	C472	Second Written Opinion for corresponding Singapore Application No. 11201609005Q mailed November 29, 2017.
	C473	SHANSKY, "Toning of Human Hair with Fiber Reactive Dyestuffs," Cosmetics and Toiletries, 91(11):46-48 (1976).
	C474	SHANSKY, "The Reaction Mechanism of Fiber Reactive Dye stuffs with Hair Keratin," American Perfumer and Cosmetics (1966)
	C475	SIGMA-ALDRICH website BM PEG 3 1 11 Bismaleimido Triethyleneglycol (2018).
	C476	SLAVIN, et al. "Biological surface modification by 'thiol-ene' addition of polymers synthesized by catalytic chain transfer polymerization (CCTP)," Polymer Chem., 3:1461-6 (2012).
	C477	Statement - Amended Reply Statement of Case on Validity (KR970, WO768 and Catzy), dated November 28, 2017.
	C478	Statement - Reply Statement of Case on Validity (Olaplex), dated November 28, 2017.
	C479	Statement of Case on the Term "Simple Salt", dated January 10, 2018.
	C480	Statement of Case on Validity (KR970, WO768 and Catzy), dated November 6, 2017.
	C481	Statement of Grounds and Particulars in Opposition Proceeding in AU (Australia) Application No. 2017251818 filed May 1, 2020.

202702493.1

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Exam. Init.	Ref. Des.	Citation
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	C483	SWIFT, Chapter 10, "Mechanical Properties of Hair" in Fundamentals of Human Hair Science, (1997).
	C484	SWIFT, Chapter 11, "Cosmetic Treatments of Hair" in Fundamentals of Human Hair Science, (1997).
	C485	SWIFT, Fundamentals of Human Hair Science, (1997).
	C486	Table 2 from Furia, T.E., Sequestrants in Food (Chp. 6) in CRC Handbook of Food Additives (1972).
	C487	Table 3.4, pKa values of some amino acids", From: Appendix: Acid-Base Concepts Biochemistry 5th edition. Berg JM, Tymoczko JL, Stryer L. New York: W H Freeman; (2002).
	C488	TATE, et al., "Quantification and prevention of hair damage", J. Soc. Cosmet. Chem., 44:347-371 (1993).
	C489	The Power Of One http://www.nxtbook.com/nctbooks/creativeage/Launchpad_201405/index.php?sartid,401 page, retrieved from the internet June 24, 2016
	C490	THERMO Fisher Scientific, "Bismaleimide Cross linkers (BMOE, BMBandBMH)," product instructions, pages 1-3 (2012)
	C491	Thermo Scientific, "Instructions BM (PEG) 2 and BM (PEG) 3" (2012).
	C492	Third party observation for GB 1513932.2 (January 2016).
	C493	Third Party Observation AU (Australia) 2017251818, dated JUNE 17, 2019.
	C494	Third Party Observation for JP (Japan) 2016-572832 with English Translation dated APRIL 19, 2019.
	C495	Third Party Observation AU (Australia) 2015258904 mailed December 19, 2016
	C496	Third Party Observation AU (Australia) 2017251818, dated OCTOBER 2, 2019.
	C497	Third Party Observation AU (Australia) 2017251818, filed JUNE 4, 2019.
	C498	Third Party Observation BR (Brazil) 1120160263782 Jan 9, 2018 w/Eng Summary

202702493.1

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Exam. Init.	Ref. Des.	Citation
	C499	Third Party Observation BR (Brazil) 1120160263782 Oct 23, 2018 w/Eng Summary
	C500	Third Party Observation CA (Canada) 2947303 filed Feb 19, 2019.
	C501	Third Party Observation CA (Canada) 2947303, dated January 14, 2020.
	C502	Third Party Observation CA (Canada) 2947303, dated OCTOBER 25, 2019.
	C503	Third Party Observation CA (Canada) 2947303, filed JUNE 12, 2019.
	C504	Third Party Observation EA (Eurasia) 201692315, dated SEPTEMBER 13, 2019 , with English Translation.
	C505	Third Party Observation EP (Europe) 15725209.9 filed Feb 22, 2019 with Eng Translation
	C506	Third Party Observation EP (Europe) 15725209.9 filed NOV 15, 2019.
	C507	Third Party Observation EP (Europe) 15725209.9, dated NOV 29, 2019.
	C508	Third Party Observation filed EP (Europe) 14758005.4 (May 13, 2016).
	C509	Third Party Observation filed EP14758005.4 (May 18, 2016).
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	C511	Third Party Observation filed GB1513932.2 (August 23, 2016).
	C512	Third Party Observation filed GB1513932.2 (September 22, 2016).
	C513	Third Party Observation filed GB1605346.4 (November 11, 2016).
	C514	Third Party Observation filed in AU (Australia) 2017251818, mailed JAN 17, 2018.
	C515	Third Party Observation filed in AU (Australia) Application No. 2015258904 mailed OCT 5, 2017.
	C516	Third Party Observation filed in EP (Europe) Application No. 15725209.9 mailed OCT 27, 2017.
	C517	Third Party Observation filed in GB Application No. 1513932.2 (JAN 2016).

202702493.1

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Exam. Init.	Ref. Des.	Citation
	C518	Third Party Observation filed in ID (Indonesia) Application No. 2017/09919 dated May 19, 2020.
	C519	Third Party Observation filed in IL (Israel) Application No. 265590 dated March 26, 2020.
	C520	Third Party Observation filed in JP (Japan) Application No. 2016-572832, mailed MAY 25, 2018, with English Summary).
	C521	Third Party Observation filed in JP Application No. 2016-572832 mailed SEP 29, 2017.
	C522	Third Party Observation filed in KR (Korea) 101787310 on JAN 29, 2019 (English Translation).
	C523	Third Party Observation filed in MX (Mexico) Application No. MX/a/2016/014917 mailed NOV 06, 2017.
	C524	Third Party Observation filed in NZ (New Zealand) Application No. 725652, mailed MAY 16, 2018 - PART 2 OF 2.
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	C529	Third Party Observation filed in SG (Singapore) Application No. 11201609005Q dated December 8, 2017.
	C530	Third Party Observation filed in SG (Singapore) Application No. 11201609005Q dated February 15, 2018.
	C531	Third Party Observation filed in SG (Singapore) Application No. 11201609005Q dated May 25, 2018.
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	C534	Third Party Observation filed in US Application No. 15/087,415, AUG 25, 2016.
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	C538	Third Party Observation for EP (Europe) 15725209.9 filed MAY 8, 2019.
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	C543	Third Party Observation GB 1813313.2 filed APR 2, 2019.
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	C545	Third Party Observation GB1513932.2 (June 24, 2016).
	C546	Third Party Observation ID (Indonesia) Application No. P00201608726, with English Translation, mailed MAR 6, 2018.
	C547	Third Party Observation IL (Israel) 248989 mailed JANUARY 10, 2018 (English Translation).
	C548	Third Party Observation IN (India) 2016177038524 on FEB 06, 2019 (English Translation).
	C549	Third Party Observation JP (Japan) 2016-572832 filed SEPTEMBER 2, 2019 with English summary.
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	C565	VOET, et al., Fundamentals of Biochemistry Excerpt (2008).
	C566	Webster's Third International New Dictionary 40 (3rd ed) 2002.
	C567	WENNIGER, et al., "Maleic Acid", CFA Cosmetic Ingredient Handbook, 2:226 (1992).
	C568	WHEWELL, "The chemistry of hair" pages 207-23 A lecture delivered before the Society December 14 (1960).
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202702493.1

EXAMINER:	DATE CONSIDERED:
EXAMINER: INITIAL IF REFERENCE CONSIDERED, WHETHER OR NOT CITATION IS IN CONFORMANCE WITH MPEP609; DRAW LINE THROUGH CITATION IF NOT IN CONFORMANCE AND NOT CONSIDERED. INCLUDE COPY OF THIS FORM WITH NEXT COMMUNICATION TO APPLICANT.	

INFORMATION DISCLOSURE STATEMENT — PTO-1449 (MODIFIED)



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PATENT AND TRADEMARK OFFICE

P.O. Box 1450
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ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
18/811,158	09/09/2024 12:32:49 PM Z ET	OLAP.P0007USC9/1001313621

Title of Invention

METHODS FOR FIXING HAIR AND SKIN

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	1437	FILED BY	Zion Stewart
PATENT CENTER #	67095077	FILING DATE	08/21/2024
CUSTOMER #	32425	FIRST NAMED INVENTOR	Eric D. PRESSLY
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Michael KrawzseneK

Documents

TOTAL DOCUMENTS: 1

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
OLAP.P0007US.C9 - IDS.pdf	47	Information Disclosure Statement (IDS) Form (SB08)	772 KB

Warning: This is not a USPTO supplied IDS fillable form. Data in the form cannot be automatically loaded to other USPTO systems.

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
OLAP.P0007US.C9 - IDS.pdf	509537DFF0C9E3D0B0A56847870BC5C34CB66A68B7002519E F6FE10927091215E0470729FD2434916FFAF52AB69F9B2E8D4 9CE7D11D82B85582600D4104F1E47

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized

by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
18/811,158	08/21/2024	Eric D. PRESSLY	OLAP.P0007USC9/1001313621	1437

32425	7590	09/25/2024
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Norton Rose Fulbright US LLP
98 San Jacinto Blvd
Suite 1100
Austin, TX 78701

EXAMINER	
CENTRAL, DOCKET	

ART UNIT	PAPER NUMBER
OPAP	

NOTIFICATION DATE	DELIVERY MODE
09/25/2024	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

aoipdocket@nortonrosefulbright.com

<i>Decision Granting Request for Prioritized Examination (Track I)</i>	Application No. 18/811,158	Applicant(s) PRESSLY et al.	
	Examiner CHERYL P GIBSON BAYLOR	Art Unit OPET	AIA (FITF) Status Yes
<p>1. THE REQUEST FILED <u>21 August 2024</u> IS GRANTED .</p> <p>The above-identified application has met the requirements for prioritized examination</p> <p>A. ☒ for an original nonprovisional application (Track I).</p> <p>B. ☐ for an application undergoing continued examination (RCE).</p> <p>2. The above-identified application will undergo prioritized examination. The application will be accorded special status throughout its entire course of prosecution until one of the following occurs:</p> <p>A. filing a <u>petition for extension of time</u> to extend the time period for filing a reply;</p> <p>B. filing an <u>amendment to amend the application to contain more than four independent claims, more than thirty total claims</u>, or a multiple dependent claim;</p> <p>C. filing a <u>request for continued examination</u> ;</p> <p>D. filing a notice of appeal;</p> <p>E. filing a request for suspension of action;</p> <p>F. mailing of a notice of allowance;</p> <p>G. mailing of a final Office action;</p> <p>H. completion of examination as defined in 37 CFR 41.102; or</p> <p>I. abandonment of the application.</p> <p>Telephone inquiries with regard to this decision should be directed to CHERYL GIBSON BAYLOR at (571)272-3213. In his/her absence, calls may be directed to Petition Help Desk at (571) 272-3282.</p>			
/CHERYL GIBSON BAYLOR/ Paralegal Specialist, OPET			

Notice of References Cited	Application/Control No. 18/811,158	Applicant(s)/Patent Under Reexamination PRESSLY et al.	
	Examiner NICOLE P BABSON	Art Unit 1619	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date YYYY-MM-DD	Name	CPC Classification	US Classification
	A					
	B					
	C					
	D					
	E					
	F					
	G					
	H					
	I					
	J					
	K					
	L					
	M					

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date YYYY-MM-DD	Country	Name	CPC Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	Softer Hair < https://softerhair.com/the-importance-of-using-a-ph-balanced-shampoo/ >; 7/12/19. (Year: 2019)
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in YYYY-MM-DD format are publication dates. Classifications may be US or foreign.

U.S. Patent and Trademark Office
PTO-892 (Rev. 11-2023)

Notice of References Cited

Part of Paper No. 20241009

<i>Search Notes</i> 	Application/Control No. 18/811,158	Applicant(s)/Patent Under Reexamination PRESSLY et al.
	Examiner NICOLE P BABSON	Art Unit 1619

CPC - Searched*		
Symbol	Date	Examiner

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
PDP Inventor search	10/10/2024	NPB
PE2E Search	10/10/2024	NPB
Search histories of parent cases	10/10/2024	NPB

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner

/NICOLE P BABSON/ Primary Examiner, Art Unit 1619	
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Bibliographic Data

Application No: 18/811,158

Foreign Priority claimed: ☐ Yes ☒ No

35 USC 119 (a-d) conditions met: ☐ Yes ☒ No ☐ Met After Allowance

Verified and Acknowledged: /NICOLE P BABSON/

Examiner's Signature

Initials

Title:

METHODS FOR FIXING HAIR AND SKIN

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
08/21/2024	424	1619	OLAP.P0007USC9/10013136 21
RULE			

APPLICANTS

OLAPLEX, INC., Santa Barbara, CA, UNITED STATES

INVENTORS

Eric D. PRESSLY, Santa Barbara, CA, UNITED STATES

Craig J. Hawker, Santa Barbara, CA, UNITED STATES

CONTINUING DATA

This application is a CON of 18177011 03/01/2023

18177011 is a CON of 17941675 09/09/2022

17941675 is a CON of 16830789 03/26/2020 PAT 11446525

16830789 is a CON of 15854504 12/26/2017 PAT 10639505

15854504 is a CON of 14835223 08/25/2015 PAT 9855447

14835223 is a CON of 14748831 06/24/2015 PAT 9144537

14748831 is a CON of 14459012 08/13/2014 PAT 9095518

14459012 is a CIP of PCT/US2014/049388 08/01/2014

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PCT/US2014/049388 is a CIP of 14257076 04/21/2014ABN

PCT/US2014/049388 is a CIP of 14257089 04/21/2014ABN

PCT/US2014/049388 is a CIP of 14257056 04/21/2014ABN

PCT/US2014/049388 has PRO of 61903239 11/12/2013

PCT/US2014/049388 has PRO of 61885898 10/02/2013

PCT/US2014/049388 has PRO of 61867872 08/20/2013

PCT/US2014/049388 has PRO of 61861281 08/01/2013

FOREIGN APPLICATIONS

IF REQUIRED, FOREIGN LICENSE GRANTED**

08/30/2024

STATE OR COUNTRY

UNITED STATES

ADDRESS

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98 San Jacinto Blvd
Suite 1100
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UNITED STATES

FILING FEE RECEIVED

\$6,160

PATENT**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Title: METHODS FOR FIXING HAIR AND SKIN
 Appl. No.: 18/811,158
 Applicant: OLAPLEX, INC.
 Filed: 08/21/2024
 Group Art Unit: To Be Assigned
 Examiner: To Be Assigned
 Docket No.: OLAP.P0007USC9/1001313621
 Confirmation No.: 1437

CERTIFICATE OF ELECTRONIC TRANSMISSION (37 C.F.R. § 1.8)
 I, Zion Stewart, hereby certify that this correspondence is being electronically filed with the United States Patent and Trademark Office via Patent Center on September 9, 2024. Signed: /Zion Stewart/

INFORMATION DISCLOSURE STATEMENT

In compliance with the duty of disclosure under 37 C.F.R. § 1.56, it is respectfully requested that this Information Disclosure Statement be entered and the documents listed on attached Form PTO-1449 be considered by the Examiner and made of record.

In accordance with 37 C.F.R. §§ 1.97(g), (h), this Information Disclosure Statement is not to be construed as a representation that a search has been made, and is not to be construed to be an admission that the information cited is, or is considered to be, material to patentability as defined in 37 C.F.R. § 1.56(b).

Timing and Fees

- ☒ Under 37 C.F.R. § 1.97(b), **no fee or statement is required** for filing this Information Disclosure Statement because it is filed:
- ☒ within three months of the filing date of a national application other than a CPA under § 1.53(d); **OR**
 - ☐ within three months of the actual filing date of the national phase of a PCT application; **OR**
 - ☐ before the mailing of a first substantive office action (including after filing of an RCE).
- ☐ Under 37 C.F.R. § 1.97(c), this Information Disclosure Statement is filed after the periods specified in 37 C.F.R. § 1.97(b), but **before** the mailing date of:
- ☐ a final rejection under 37 C.F.R. § 1.113; **OR**
 - ☐ termination of prosecution, e.g. Ex Parte Quayle, M.P.E.P. § 609(B)(2); **OR**
 - ☐ a notice of allowance under 37 C.F.R. § 1.311;
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- ☐ the statement as specified in 37 C.F.R. § 1.97(e) set out below; **OR**
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- ☐ Under 37 C.F.R. § 1.97(d), this Information Disclosure Statement is filed **after** the mailing date of the following actions which have not been withdrawn:
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 - ☐ termination of prosecution; e.g. Ex Parte Quayle, M.P.E.P. § 609(B)(2); **OR**
 - ☐ a notice of allowance under 37 C.F.R. § 1.311 and is filed on or before payment of the issue fee;
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Statements Under 37 C.F.R. § 1.97(e) (if applicable)

- ☐ Each item of information contained in this Information Disclosure Statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the present Information Disclosure Statement;

Copies of Cited Materials (if applicable)

- ☒ Copies of materials listed but not attached were cited in benefit (35 U.S.C. § 120) ancestor application Serial No. 18/177011, Serial No. 17/941,674, Serial No. 16/830,789, Serial No. 15/854,504, Serial No. 14/835,223, Serial No. 14/748,831, and Serial No. 14/459,012 on Form 892 by the Examiner and/or Form 1449 by the applicant; see 37 C.F.R. § 1.98(d).
- ☐ This application may be related by inventorship and/or subject matter to co-pending U.S. application Serial No. _____, filed _____.

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- ☒ The Commissioner is hereby authorized to charge or credit any overpayment direct to this Information Disclosure Statement to Deposit Account 50-1212/1001313621.

Respectfully submitted,

/Michael R. Krawzsenek/

Michael R. Krawzsenek
Reg. No. 51,898
Attorney

NORTON ROSE FULBRIGHT US LLP
Phone: 512-536-5267
Date: September 6, 2024

Page 1 of 45

Form PTO-1449 (modified)	Atty. Docket No.: OLAP.P0007USC9/1001313621	Serial No.: 18/811,158
List of Patents and Publications for Applicant's INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)	Applicant: OLAPLEX, INC.	
	Filing Date: August 21, 2024	Group: Not Yet Assigned
U.S. Patent Documents <i>See Page 1-6</i>	Foreign Patent Documents <i>See Page 7-10</i>	Other Art <i>See Page 10-46</i>

U.S. Patent Documents

Exam. Init.	Ref. Des.	Document Number	Date	Name
	A1	2850351	09/02/1958	Moore et al.
	A2	3142623	07/28/1964	Zviak et al.
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	A5	3840656	10/08/1974	Kalopissis et al.
	A6	4007143	02/08/1977	Lyndon et al.
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	A9	4240450	12/23/1980	Grollier et al.
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	A14	4793993	12/27/1988	Siuta-Mangano et al.
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	A16	4834971	05/30/1989	Klenk et al.
	A17	5143518	09/01/1992	Madrang et al.
	A18	5200429	04/06/1993	Sato et al.
	A19	5221286	06/22/1993	Singleton et al.
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INFORMATION DISCLOSURE STATEMENT — PTO-1449 (MODIFIED)

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WELLA EXHIBIT 1003

Page 131 of 231

Form PTO-1449 (modified)	Atty. Docket No.: OLAP.P0007USC9/1001313621	Serial No.: 18/811,158
List of Patents and Publications for Applicant's INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)	Applicant: OLAPLEX, INC.	
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U.S. Patent Documents

Exam. Init.	Ref. Des.	Document Number	Date	Name
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	A24	5651960	07/29/1997	Chan et al.
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	A28	6010690	01/04/2000	Varco
	A29	6173717	01/16/2001	Schonert et al.
	A30	6358502	03/19/2002	Tanabe et al.
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U.S. Patent Documents <i>See Page 1-6</i>	Foreign Patent Documents <i>See Page 7-10</i>	Other Art <i>See Page 10-46</i>

U.S. Patent Documents

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INFORMATION DISCLOSURE STATEMENT — PTO-1449 (MODIFIED)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /N.P.B/

Form PTO-1449 (modified)	Atty. Docket No.: OLAP.P0007USC9/1001313621	Serial No.: 18/811,158
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U.S. Patent Documents <i>See Page 1-6</i>	Foreign Patent Documents <i>See Page 7-10</i>	Other Art <i>See Page 10-46</i>

U.S. Patent Documents

Exam. Init.	Ref. Des.	Document Number	Date	Name
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	A70	20040034944	02/26/2004	Legrand et al.
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	A87	20080138309	06/12/2008	Malle et al.
	A88	20080141468	06/19/2008	Cotteret

202702493.1

EXAMINER: /NICOLE P BABSON/

DATE CONSIDERED: 10/10/2024

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INFORMATION DISCLOSURE STATEMENT — PTO-1449 (MODIFIED)

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Page 5 of 45

Form PTO-1449 (modified)		Atty. Docket No.: OLAP.P0007USC9/1001313621	Serial No.: 18/811,158
List of Patents and Publications for Applicant's INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)		Applicant: OLAPLEX, INC.	
		Filing Date: August 21, 2024	Group: Not Yet Assigned
U.S. Patent Documents <i>See Page 1-6</i>	Foreign Patent Documents <i>See Page 7-10</i>	Other Art <i>See Page 10-46</i>	

U.S. Patent Documents

Exam. Init.	Ref. Des.	Document Number	Date	Name
	A89	20080187506	08/07/2008	Carballada et al.
	A90	20090022681	01/22/2009	Carballada et al.
	A91	20090126756	05/21/2009	Syed et al.
	A92	20090252697	10/08/2009	Barbarat et al.
	A93	20100004391	01/07/2010	Haddleton et al.
	A94	20100015253	01/21/2010	Benjamin
	A95	20100202998	08/12/2010	Ramos-Stanbury et al.
	A96	20110038818	02/17/2011	Onyebuagu et al.
	A97	20110097293	04/28/2011	Grey et al.
	A98	20110250153	10/13/2011	Owen et al.
	A99	20110256084	10/20/2011	Dixon et al.
	A100	20120024309	02/02/2012	Pratt et al.
	A101	20120114584	05/10/2012	Woghiren et al.
	A102	20120145477	06/14/2012	Peaslee
	A103	20120148517	06/14/2012	Gilmore et al.
	A104	20120180807	07/19/2012	Flohr
	A105	20120225106	09/06/2012	Ross et al.
	A106	20120244082	09/27/2012	Sulzbach et al.
	A107	20130034515	02/07/2013	Stone et al.
	A108	20130078205	03/28/2013	Dayan
	A109	20130152959	06/20/2013	Genain et al.
	A110	20130172518	07/04/2013	Huang et al.

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WELLA EXHIBIT 1003

Page 135 of 231

Page 6 of 45

Form PTO-1449 (modified) List of Patents and Publications for Applicant's INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)	Atty. Docket No.: OLAP.P0007USC9/1001313621	Serial No.: 18/811,158
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U.S. Patent Documents

Exam. Init.	Ref. Des.	Document Number	Date	Name
	A111	20130309190	11/21/2013	Dimotakis et al.
	A112	20130340785	12/26/2013	Baum et al.
	A113	20140125452	05/08/2014	Josefiak et al.
	A114	20140186283	07/03/2014	Cabourg et al.
	A115	20140196741	07/17/2014	Cabourg et al.
	A116	20150034117	02/05/2015	Pressly et al.
	A117	20150034119	02/05/2015	Pressly et al.
	A118	20150174023	06/25/2015	Washington et al.
	A119	20150297496	10/22/2015	Kroon et al.
	A120	20150320658	11/12/2015	Flohr et al.
	A121	20150328102	11/19/2015	Pressly et al.
	A122	20160081899	03/24/2016	Pressly et al.
	A123	20160193129	07/07/2016	Pressly et al.
	A124	20160263003	09/15/2016	Pressly et al.
	A125	20160310394	10/27/2016	Pressly et al.
	A126	20200009035	01/09/2020	Pressly et al.
	A127	20220218579	07/14/2022	Pressly
	A128	20230010188	01/12/2023	Pressly

Exam. Init.	Ref. Des.	Document Number	Date	Country
	B1	CN105431128	03/23/2016	China

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WELLA EXHIBIT 1003

Page 136 of 231

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Exam. Init.	Ref. Des.	Document Number	Date	Country
	B2	CN105640790	06/08/2016	China
	B3	CN1334718	02/06/2002	China
	B4	DE10051773	04/25/2002	German
	B5	DE10051774	04/25/2002	German
	B6	DE102004052480	05/04/2006	German
	B7	DE1220969	07/16/1966	German
	B8	DE202015104742	10/08/2015	German
	B9	DE4300320	07/14/1994	German
	B10	EC055712	03/30/2005	Ecuador
	B11	EC993171	10/08/1999	Ecuador
	B12	EP0298684	04/21/1993	Europe
	B13	EP0299764	01/18/1989	Europe
	B14	EP0609796	08/10/1994	Europe
	B15	EP0978272	02/09/2000	Europe
	B16	EP1174112	01/23/2002	Europe
	B17	EP1726289	11/29/2006	Europe
	B18	EP1779896	05/02/2007	Europe
	B19	EP2295029	03/16/2011	Europe
	B20	EP2478892	07/25/2012	Europe
	B21	FR1356138	03/20/1964	France
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	B23	FR2975900	12/07/2012	France
	B24	GB1125794	08/28/1968	United Kingdom

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Exam. Init.	Ref. Des.	Document Number	Date	Country
	B25	GB1260451	01/19/1972	United Kingdom
	B26	GB1584364	02/11/1981	United Kingdom
	B27	GB713675	08/18/1954	United Kingdom
	B28	GB741307	11/30/1955	United Kingdom
	B29	GB773559	04/24/1957	United Kingdom
	B30	JP2006045223	02/16/2006	Japan
	B31	JP2006327994	12/07/2006	Japan
	B32	JP2007045802	02/22/2007	Japan
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	B34	JP2009007283	01/15/2009	Japan
	B35	JP2009120563	06/04/2009	Japan
	B36	JP2010155823	07/15/2010	Japan
	B37	JPH02138110	05/28/1990	Japan
	B38	KR1020030003970	01/14/2003	South Korea
	B39	KR1020060059564	06/02/2006	South Korea
	B40	KR20010039848	07/04/2001	South Korea
	B41	KR20040098688	11/29/2004	South Korea
	B42	KR830002888	12/30/1983	South Korea
	B43	WO1993000882	01/21/1993	WIPO
	B44	WO1993008787	05/01/1993	WIPO
	B45	WO1995000107	01/05/1995	WIPO
	B46	WO1995001152	01/12/1995	WIPO
	B47	WO1997024106	07/10/1997	WIPO

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Exam. Init.	Ref. Des.	Document Number	Date	Country
	B48	WO2000032158	06/08/2000	WIPO
	B49	WO2001047486	07/05/2001	WIPO
	B50	WO2002032383	04/25/2002	WIPO
	B51	WO2002032386	04/25/2002	WIPO
	B52	WO2002074272	09/26/2002	WIPO
	B53	WO2006011771	02/02/2006	WIPO
	B54	WO2006051287	05/18/2006	WIPO
	B55	WO2008072672	06/19/2008	WIPO
	B56	WO2009024936	02/26/2009	WIPO
	B57	WO2010049434	05/06/2010	WIPO
	B58	WO2011134785	11/03/2011	WIPO
	B59	WO2012080321	06/21/2012	WIPO
	B60	WO2012084532	01/19/2012	WIPO
	B61	WO2012122457	09/13/2012	WIPO
	B62	WO2012164064	01/19/2012	WIPO
	B63	WO2012164065	12/06/2012	WIPO
	B64	WO2014016407	01/30/2014	WIPO
	B65	WO2014118212	08/17/2014	WIPO
	B66	WO2014125452	08/21/2014	WIPO
	B67	WO2014167508	10/16/2014	WIPO
	B68	WO2014207097	12/31/2014	WIPO
	B69	WO2015017768	02/05/2015	WIPO
	B70	WO2015026994	02/26/2015	WIPO

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Page 10 of 45

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Exam. Init.	Ref. Des.	Document Number	Date	Country
	B71	WO2015175986	11/19/2015	WIPO
	B72	WO2016207840	12/29/2016	WIPO
	B73	WO2017041908	03/16/2017	WIPO

Other Art (Including Author, Title, Date, Pertinent Pages, Etc.)

Exam. Init.	Ref. Des.	Citation
	C1	"ThatBlondeGirl Mandie" - Youtube video: Brunette Goes Blonde No Damage, No.1, retrieved online from, < https://www.youtube.com/watch?v=7fIFBmxJk8s > (January 11, 2015), retrieved December 13, 2022.
	C2	"ThatBlondeGirl Mandie" - Youtube video: Olaplex Platinum Blonde, No.2, retrieved online from, < https://www.youtube.com/watch?v=jNGFI8vYeMY > (January 20, 2015), retrieved December 13, 2022.
	C3	"ThatBlondeGirl Mandie" - Youtube video: Olaplex Tutorial, No.3, retrieved online, < https://www.youtube.com/watch?v=kixvDdMi9n4 > (December 30, 2014), retrieved December 13, 2022.
	C4	2019Heo3618 appeal of Korean Patent Cancellation Defendant-Inventor Reference Brief (with English Translation) filed November 12, 2020.
	C5	2019Heo3618 Appeal of Korean Patent Cancellation Defendant-Intervenor Reference Brief (with English translation) filed November 16, 2020
	C6	2019Heo3618 Appeal of Korean Patent Cancellation, Defendant-Intervenor Presentation (with English translation) dated September 23, 2020.
	C7	2019Heo3618 Appeal of Korean Patent Cancellation, Defendant-Intervenor Reference Brief (with English translation) filed October 27, 2020.
	C8	2019Heo3618 Appeal of Korean Patent Cancellation, Expert Declaration of Dr. Steve Rannard signed December 25, 2019.
	C9	2019Heo3618 Appeal of Korean Patent Cancellation, Expert Declaration of Dr. Steve Rannard signed June 9, 2020.

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WELLA EXHIBIT 1003

Page 140 of 231

Page 11 of 45

Form PTO-1449 (modified)		Atty. Docket No.: OLAP.P0007USC9/1001313621	Serial No.: 18/811,158
List of Patents and Publications for Applicant's INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)		Applicant: OLAPLEX, INC.	
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Other Art (Including Author, Title, Date, Pertinent Pages, Etc.)		
Exam. Init.	Ref. Des.	Citation
	C10	2019Heo3618 Appeal of Korean Patent Cancellation, Expert Declaration of Dr. Steve Rannard signed November 4, 2020.
	C11	2019Heo3618 Appeal of Korean Patent Cancellation, KIPO Defendant Brief (with English translation) dated September 18, 2020 .
	C12	2019Heo3618 Appeal of Korean Patent Cancellation, KIPO Defendant Presentation (with English Translation) dated September 23, 2020 .
	C13	2019Heo3618 Korean Court Decision (with English Translation) dated February 3, 2021.
	C14	Amazon.com Joico Vero K Pak Veroxide Developer Cream 32 ounce Beauty, filed January 29, 2019.
	C15	Amended Statement of Case on Validity (Olaplex) REDACTED Version filed November 6, 2017.
	C16	Aparecida Da Franca, et al., "Types of Hair Dye and Their Mechanisms of Action", Cosmetics, 2:110-126 (2015).
	C17	ASQUITH, et al., Chemistry of Natural Protein Fibers (1977).
	C18	Australian Examination Report Examination Report AU2015058904 mailed November 2, 2016
	C19	B(l)ack to blonde article, behindthechair.com accessed JANUARY 01, 2019.
	C20	BARRADAS, et al., "The hydrolysis of maleimide in alkaline solution", Can. J. Chem, 54, 1400-1404 (1976).
	C21	BERTH and REESE, "Veränderung des haarkeratins durch kosmetische behandlung und naturlche umwelteinflusse", J Soc Cos Chem., 15:659-66 (1964)
	C22	BOLDUC, C. et al., "Hair Care Products: Waving, Straightening, Conditioning, and Coloring" Clinics in Dermatology 19:431-436 (2001).
	C23	BORISH Declaration - REDACTED version of Exhibit 2025, dated Oct 20 2017 (Exhibit 2049) filed in PGR 2017-00012
	C24	BORISH, Edward T. - Declaration, signed OCT 18, 2017 (REDACTED, non-confidential version).

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WELLA EXHIBIT 1003

Page 141 of 231

Page 12 of 45

Form PTO-1449 (modified)		Atty. Docket No.: OLAP.P0007USC9/1001313621	Serial No.: 18/811,158
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Other Art (Including Author, Title, Date, Pertinent Pages, Etc.)		
Exam. Init.	Ref. Des.	Citation
	C25	BORISH, Edward T. - Deposition transcript, pages 1-204, January 5, 2018.
	C26	BORISH, Edward T. CV filed Nov 16, 2018.
	C27	BOUILLON and WILKINSON, Chapter 1, "Hair Structure, Function, and Physicochemical Properties" in The Science of Hair Care, (2005).
	C28	BOUILLON and WILKINSON, Chapter 12, "Evaluation of Product Efficacy" in The Science of Hair Care, (2005).
	C29	Brief English Summary of Office Action IL (Israel) Application No. 265590 mailed September 23, 2020.
	C30	BROWN and POHL, "Permanent Hair Dyes", Society of Cosmetic Chemists, 1-41, (1996).
	C31	BROWN, Excerpts from the 5th Edition of Organic Chemistry, (2011).
	C32	BROWN, Hair Coloring, Clairol, Inc., Stamford, Connecticut (1997).
	C33	Canadian Office Action 2,947,303 mailed December 28, 2016.
	C34	Canadian Protest Application 2,947,303 mailed February 8, 2017.
	C35	CANARI, "Effect of pH on Dicarboxylic Acids Extraction by Amine-Based Extractants", Ind. Eng. Chem. Res., 42:1293-1300 (2003).
	C36	Catzy Blonde Statement of the use of Maleic Acid, dated DECEMBER 01, 2017.
	C37	Catzy Blonde translation filed February 2, 2018.
	C38	Central Role Presentation, dated JANUARY 26, 2015.
	C39	Certified English Translation of DE1220969 dated December 13, 2016.
	C40	Certified English Translation of KR2006-0059564 dated December 30, 2016.
	C41	CHAN, "Nucleophile-Initiated Thiol-Michael Reactions: Effect of Organocatalyst, Thiol, and Ene", Macromolecule, 13:6381-6388 (2010).
	C42	CHRISTAL, Dean - Declaration, signed OCT 18, 2017(REDACTED) filed in PGR 2017-00012.

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WELLA EXHIBIT 1003

Page 142 of 231

Page 13 of 45

Form PTO-1449 (modified)		Atty. Docket No.: OLAP.P0007USC9/1001313621	Serial No.: 18/811,158
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Exam. Init.	Ref. Des.	Citation
	C43	CHROMASTICS, "The evolution of hair color", Technical ad training manual, pages 1-32 (2009).
	C44	CIR Safety Report "Final Report on the Safety Assessment of Maleic Acid", International Journal of Toxicology, 26 (Suppl.2); 125-131, (2007).
	C45	Citraconic Acid, C5H6O4-PubChem, accessed DECEMBER 21, 2018.
	C46	Claims of GB1605346.4 submitted on September 7, 2018.
	C47	Combined Search and Examination Report for GB 1523109.5 mailed February 4, 2016.
	C48	Combined Search and Examination Report GB 1513932.2 mailed September 24, 2015.
	C49	Combined Search and Examination Report GB 1618423.6 mailed November 29, 2016.
	C50	CORBETT, et al., "Hair Colorants: Chemistry and toxicology", Cosmetic Science Monographs, (1998).
	C51	CTFA Cosmetic Ingredient handbook, pages 1023-1 thru 1023-8, John Wenninger Editor, (1992).
	C52	DAVIES and EVANS, "The isomerization of maleic acid in aqueous solutions", Transactions of Faraday Society, 52:74-80 (1956).
	C53	DAVIS, et al., Excerpts from Modern Chemistry, pages 214,215, and 454 (1999).
	C54	Declaration by Dr. Hefford dated January 7, 2020 filed in KR Appeal No. 2019Heo3618.
	C55	Declaration by Prof. Steve Rannard dated December 25, 2019 filed in KR Appeal No. 2019Heo3618.
	C56	Declaration of Arun Nandagiri dated Jan. 30, 2017, with curriculum vitae.
	C57	Declaration of Arun Nandagiri dated Jan. 31, 2017, with curriculum vitae.
	C58	Declaration of Dr. Robert J.W. Hefford filed in Application No. AU2017251818 signed July 27, 2020.
	C59	Declaration of Dr. Robert J.W. Hefford filed in Application No. EP3142637 signed April 10, 2020.

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WELLA EXHIBIT 1003

Page 143 of 231

Page 14 of 45

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Other Art (Including Author, Title, Date, Pertinent Pages, Etc.)		
Exam. Init.	Ref. Des.	Citation
	C60	Declaration of Dr. Steve Rannard filed in Application No. AU2017251818 signed December 9, 2020.
	C61	Declaration of Dr. Steve Rannard filed in Application No. AU2017251818 signed November 9, 2020.
	C62	Declaration of Edward T. Borish in Support of Olaplex's Motion for a Preliminary Injunction, filed January 18, 2017, with curriculum vitae.
	C63	Declaration of Hiroshi J. Sheraton filed in Application No. AU2017251818 signed July 28, 2020.
	C64	Declaration of Hiroshi J. Sheraton filed in Application No. EP3142637 signed July 8, 2020.
	C65	Declaration of Prof. Steve Rannard dated October 27, 2019 filed in EP 15725209.9.
	C66	Declaration of Robert Vernon Law filed in Application No. AU2017251818 signed July 20, 2020.
	C67	Defendant-Intervenor brief in Appeal No. 2019Heo3618, KR (Korea) 1787310, dated OCTOBER 23, 2019.
	C68	Defendant's Brief- REDACTED version - in Opposition to Plaintiff's Motion for Preliminary Injunction, by L'Oreal USA Products, Inc., et al., filed in Liqwd, Inc. et al. v. L'Oreal USA, Inc. et al., U.S. District Court for the District of Delaware, Civil Action No. 1:17-cv-00014 on April 17, 2017.
	C69	DISPENZA License status webpage, https://aca.licensecenter.ny.gov/aca/GeneralProperty/LicenseeDetail , retrieved from the internet 12/12/2017.
	C70	DISPENZA, Thomas - Declaration, signed OCT 17, 2017 filed in PGR 2017-00012
	C71	DISPENZA, Thomas - Deposition transcript, pages 1-125, December 13, 2017.
	C72	DMUCHOVSKY, et al., "The Mechanism of the Base-Catalyzed Addition of Thiols to Maleic Anhydride", Free-Radical Addition of Thiols to Maleic Anhydride, 86:2875-2877 (1964).
	C73	DOERING, et al., "Super mild oxidation coloring: preventing hair damage at the molecular lever", IFSCC Magazine, 10(4):323-9 (2007).

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WELLA EXHIBIT 1003

Page 144 of 231

Page 15 of 45

Form PTO-1449 (modified)		Atty. Docket No.: OLAP.P0007USC9/1001313621	Serial No.: 18/811,158
List of Patents and Publications for Applicant's INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)		Applicant: OLAPLEX, INC.	
		Filing Date: August 21, 2024	Group: Not Yet Assigned
U.S. Patent Documents <i>See Page 1-6</i>	Foreign Patent Documents <i>See Page 7-10</i>	Other Art <i>See Page 10-46</i>	

Other Art (Including Author, Title, Date, Pertinent Pages, Etc.)		
Exam. Init.	Ref. Des.	Citation
	C74	DOMBRINK and TANIS "pH & hair shampoo," Chem Matters, 8 (1983).
	C75	E-mail correspondence regarding documentary evidence as provided by the third party (EX 36), filed May 16, 2018.
	C76	ENGEL, et al., "Fumaric acid production by fermentation", App Microbial Biotechnol, 78:379-89 (2008).
	C77	English Summary of Examination Report CN (China) 201480042200.1, dated January 29, 2020.
	C78	English Summary of Examination Report QA (Qatar) QA/201601/00021, dated December 12, 2019.
	C79	English Summary of IL (Israel) Application No. 265590 dated March 13, 2020.
	C80	English Summary of MY (Malaysia) Application No. PI 2016704186 Office Action dated October 26, 2020.
	C81	English Summary of Notice of Re-examination CN (China) Application No. 201580026038.9 dated November 25, 2020.
	C82	English Summary of Office Action HN (Honduras) 2016002313, dated February 11, 2020.
	C83	English Summary of Office Action ID (Indonesia) POD 201608726, dated October 17, 2019.
	C84	English Summary of Office Action IL 248989 (with Third Party Submission) mailed September 6, 2017.
	C85	English Summary of Office Action MX (Mexico) MX/a/2016/014917, dated February 25, 2020.
	C86	English Translation of 2019Heo3618 Appeal of Korean Patent Cancellation, Defendant-Inventor Brief dated September 16, 2020.
	C87	English Translation of Defendant-Intervenor brief in Appeal No. 2019Heo3618, KR (Korea) 1787310, dated OCTOBER 23, 2019.
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202702493.1

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INFORMATION DISCLOSURE STATEMENT — PTO-1449 (MODIFIED)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /N.P.B/

WELLA EXHIBIT 1003

Page 145 of 231

Page 16 of 45

Form PTO-1449 (modified)	Atty. Docket No.: OLAP.P0007USC9/1001313621	Serial No.: 18/811,158
List of Patents and Publications for Applicant's INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)	Applicant: OLAPLEX, INC.	
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	C89	English Translation of KIPO Response Correction in Appeal No. 2019Heo3618, KR (Korea) 1787310, dated OCTOBER 22, 2019.
	C90	English Translation of KIPO Response in Appeal No. 2019Heo3618, KR (Korea) 1787310 dated OCTOBER 15, 2019.
	C91	English Translation of MX (Mexico) Application No. MX/a/2020/011029 Office Action dated September 24, 2021.
	C92	ENGLISH TRANSLATION OF PACKAGING IN MINTEL DATABASE, RECORD ID 743114, CATZY HAIR COLOURANT, PUBLISHED JULY 2007. Translation Filed February 2, 2018.
	C93	English Translation of PE (Peruvian) Office Action Application No. 002238-2016/DIN dated September 7, 2020.
	C94	English Translation of PE (Peruvian) Office Action Application No. 002238-2016/DIN dated February 19, 2021.
	C95	English Translation of Third Party Observation BR (Brazil) Application No. 1120160263782 dated March 17, 2020.
	C96	English Translation of VN (Vietnam) Application No. 1-2016-04522 Office Action dated September 9, 2021.
	C97	EVANS, "Fatigue testing of hair-A statistical approach to hair breakage", J Cosmet. Sci., 60:599-616 (2009).
	C98	EVANS, et al., "A statistical analysis of hair breakage. II. Repeated grooming experiments", J. Cosmet. Sci., 61:440-455 (2010).
	C99	EX 1048, PGR 2018-00025, Public version of Ex 1036, Laboratory Notebook, filed Oct 10, 2018.
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INFORMATION DISCLOSURE STATEMENT — PTO-1449 (MODIFIED)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /N.P.B/

Page 17 of 45

Form PTO-1449 (modified)	Atty. Docket No.: OLAP.P0007USC9/1001313621	Serial No.: 18/811,158
List of Patents and Publications for Applicant's INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)	Applicant: OLAPLEX, INC.	
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	C103	EX 2004 - TRIAL TESTIMONY IN LIQWD, INC. ET AL. V. L'OREAL (UK) LTD. ET AL., EQHC PATENTS COURT, CLAIM NO. HP-2016-000056, APRIL 26, 2018.
	C104	EX 2010, pGR 2018-00023, Joico Bleach Powder label with instructions and ingredients, filed May 21, 2018.
	C105	Ex 2011, PGR 2018-00023, Clairol Professional Basic White Powder Lightener label with instructions and ingredients filed May 21, 2018.
	C106	EX 2024, PGR 2018-00023, Matrix Light Master Bleach Powder label and instructions, filed May 21, 2018.
	C107	EX 2025, PGR 2018-00023, Redken Flash Lift Lightening Power label and instructions, filed May 21, 2018.
	C108	EX 2026, PGR 2018-00023, Redken Up to 7 Bleach Powder, label and instructions, filed May 21, 2018.
	C109	EX 2027, PGR 2018-00023, L'Oreal Quick Blue Bleach Powder label and instructions, filed May 21, 2018.
	C110	Ex 2034 - Felthouse, et al., "Maleic Anhydride, Maleic Acid, And Fumaric Acid", - Kirk-Othmer Encyclopedia Of Chemical Technology (First Published Oct 18, 2001).
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	C112	Ex 2043 - Excerpt From Youtube Video Entitled "How Does Smartbond Technology Work?" By L'Oreal Professionnel, Available At https://youtu.be/Lmyb5fiel1g?T=31 (Visited 10/18/2018).
	C113	Ex 2044 - Redken Ph-Bonder Technical Guide - August 2016.
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	C115	EX 2047, PGR 2018-00025, Matrix Bond Ultim8 bottle instructions, filed Nov 16, 2018.
	C116	EX 2048, pGR 2018-00025, Matrix Bond Ultim8 package instructions, filed Nov 16, 2018.
	C117	EX 2049, PGR 2018-00025, Lab report from Analyze Inc., filed Nov 16, 2018.
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WELLA EXHIBIT 1003

Page 147 of 231

Page 18 of 45

Form PTO-1449 (modified)		Atty. Docket No.: OLAP.P0007USC9/1001313621	Serial No.: 18/811,158
List of Patents and Publications for Applicant's INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)		Applicant: OLAPLEX, INC.	
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Exam. Init.	Ref. Des.	Citation
	C119	EX 2051, PGR 2018-00025, Redken pH Bonder package instructions, filed Nov 16, 2018.
	C120	EX 2052, PGR 2018-00025, L'Oreal Professional Smartbond bottle instructions, filed Nov 16, 2018.
	C121	EX 2053, PGR 2018-00025, L'Oreal Professional Smartbond package instructions, filed Nov 16, 2018.
	C122	Ex 2055 - Wolfram, "The Reactivity Of Human Hair. A Review", Hair Research, (1981).
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	C126	Ex 2063 - Harris, Chpt. 9, "Monoprotic Acid-Base Equilibria", The Science Of Hair Care, Bouillon C, Wilkinson J, Eds., 2d Ed., (2005).
	C127	Ex 2066 - Harris, Chpt. 10, "Polyprotic Acid-Base Equilibria", Quantitative Chemical Analysis, 7th Ed., (2007).
	C128	Ex 2073 - (PGR 2018-00025) - Redacted Declaration Of Dean Christal, Dated Oct 31, 2018.
	C129	Ex 2074 - (PGR 2018-00025) -Redacted Declaration Of Edward T. Borish, Phd Dated Nov 16, 2018.
	C130	EX 2075, PGR 2018-00025, Redacted LIQWD Inc. Patent Owner Response under 37 CFR 42.220, dated Nov 16, 2018.
	C131	Examination Report GB1513932.2 mailed September 26, 2016.
	C132	Examination Report GB1605346.4 mailed January 11, 2017.
	C133	Examination Report PH (Philippines) 1-2016-500132, dated OCT 29, 2019
	C134	Examination report regarding GB (Great Britain) 1605346.4, dated November 13, 2018.

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INFORMATION DISCLOSURE STATEMENT — PTO-1449 (MODIFIED)

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WELLA EXHIBIT 1003

Page 148 of 231

Page 19 of 45

Form PTO-1449 (modified)		Atty. Docket No.: OLAP.P0007USC9/1001313621	Serial No.: 18/811,158
List of Patents and Publications for Applicant's INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)		Applicant: OLAPLEX, INC.	
		Filing Date: August 21, 2024	Group: Not Yet Assigned
U.S. Patent Documents <i>See Page 1-6</i>	Foreign Patent Documents <i>See Page 7-10</i>	Other Art <i>See Page 10-46</i>	

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Exam. Init.	Ref. Des.	Citation
	C135	Examination report regarding GB (Great Britain) 1813313.2, dated January 14, 2019.
	C136	EXPERT VILLAGE, Hair color mixing and application techniques: Mixing bleach for highlights, https://www.youtube.com/watch?v=nOE_BaC57mw , 3 pages, retrieved from the internet 05/17/2016.
	C137	Extended European Search Report EP (Europe) Application No. 20178358.6 dated January 13, 2021.
	C138	Facebook page, https://www.facebook.com/behindthechair/photos/a.153398501906.116563.44389181906/10152417864161907/?type=3&theater , May 13, 2014.
	C139	Facebook page, https://www.facebook.com/GuyTangHairArtist/photos/a.254923251198058.69129.214382105252173/762062380484140/?type=3&theater , April 17, 2014a.
	C140	Facebook page, https://www.facebook.com/GuyTangHairArtist/photos/a.254923251198058.69129.214382105252173/762551773768534/?type=3&theater , April 17, 2014b.
	C141	Facebook page, https://www.facebook.com/GuyTangHairArtist/photos/a.254923251198058.69129.214382105252173/767530266604018/?type=3&theater , April 26, 2014.
	C142	Facebook page, https://www.facebook.com/GuyTangHairArtist/photos/a.254923251198058.69129.214382105252173/772484942775217/?type=3&theater , May 7, 2014.

202702493.1

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WELLA EXHIBIT 1003

Page 149 of 231

Page 20 of 45

Form PTO-1449 (modified)		Atty. Docket No.: OLAP.P0007USC9/1001313621	Serial No.: 18/811,158
List of Patents and Publications for Applicant's INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)		Applicant: OLAPLEX, INC.	
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	C143	Facebook page, https://www.facebook.com/olaplex/photos/a.541423639298984.1073741828.347578558683494/574713415970006/?type=3&theater , April 11, 2014.
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	C151	FMC Webinar - The Science of Persulfate Activation, APR 24, 2013.
	C152	Fragrance Journal, 49-56 (January 1997).
	C153	FUEGHELMAN, et al., "Morphology and Properties of Hair", Hair and Hair Care: Cosmetic Science and Technology Series, 17(1): 1-15 (1997).
	C154	GAMEZ-GARCIA, et al., "Patterns of Light Interference", Journal of Cosmetic Science, 58(4): 269-282 (2007).
	C155	GAMEZ-GARCIA, et al., "Understanding Properties of Hair Cuticle", Journal of Cosmetic Science, 423-424 (2006).
	C156	GOBBO, et al., "Improved Methodology for the Preparation of Water-Soluble, Maleimide-Functionalized Small Gold Nanoparticles", Langmuir, ACS Publications, 28:12357-12363 (2012).
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202702493.1

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WELLA EXHIBIT 1003

Page 150 of 231

Page 21 of 45

Form PTO-1449 (modified)		Atty. Docket No.: OLAP.P0007USC9/1001313621	Serial No.: 18/811,158
List of Patents and Publications for Applicant's INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)		Applicant: OLAPLEX, INC.	
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	C158	Guy Tang on Instagram page, https://www.instagram.com/p/nPmHn7mnA6/ April 26, 2014.
	C159	HAAKE, et al., "Hair breakage-How to measure and counteract", J. Cosmet. Sci., 60:143-151 (2009).
	C160	HADDLETON CV JAN 02, 2018.
	C161	HADDLETON report dated February 2, 2018 (REDACTED).
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	C163	HADDLETON report, dated APR 24, 2018.
	C164	HALAL "The Chemistry of Haircolor," Slide 36, http://chemistrysimplified.com/wp-content/uploads/2015/07/CEA-2015-Chemistry-of-Haircolor.pdf (2015).
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	C166	Hall and WOLFRAM, "Application of the theory of hydrophobic bonds to hair treatments," J Soc Cosmet Chem., 28:231-41 (1977).
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	C170	HEFFORD, Robert - report, dated APR 25, 2018.
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202702493.1

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WELLA EXHIBIT 1003

Page 151 of 231

Page 22 of 45

Form PTO-1449 (modified)	Atty. Docket No.: OLAP.P0007USC9/1001313621	Serial No.: 18/811,158
List of Patents and Publications for Applicant's INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)	Applicant: OLAPLEX, INC.	
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	C173	Hierarchical Structure, https://www.upload.wikimedia.org/wikipedoa/commons/thumb/5/55/Hierarchical_structure , retrieved from the internet 09-22-2016.
	C174	HiMedia Labs, http://www.himedialabs.com/TD/AT068.pdf , downloaded on 3/6/18, pages 1-2, (2011).
	C175	HOSHOWSKI, "Conditioning of Hair", Hair and Hair Care, 17(4):65-104 (1997).
	C176	HOYLE, et al., "Thiol-click chemistry: a multifaceted toolbox for small molecule and polymer synthesis", Chemical Society Reviews, 39:1355-1387 (2010).
	C177	IMAI, et al., "The Dyeing Mechanism of Oxidative Hair Color in White and Black Human Hair", J. Soc. Cosmet. Chem. Jpn., 44 (3):208-215 (2010) with English Abstract.
	C178	INCI listing ingredient BIS Aminopropyl Diglycol Dimaleate Cosmetics Cosing EC Regulation v2, Mar 29, 2018.
	C179	International Search Report and Written Opinion for PCT/US2015/031166 mailed January 22, 2016.
	C180	International Search Report and Written Opinion for PCT application, PCT/US2015/065032, mailed May 9, 2016.
	C181	International Search Report and Written Opinion for PCT/US2014/049388 mailed 10/29/2014.
	C182	International Search Report and Written Opinion for PCT/US2016/029215 mailed July 8, 2016.
	C183	International Search Report and Written Opinion for PCT/US2016/058432, mailed January 16, 2017.
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WELLA EXHIBIT 1003

Page 152 of 231

Page 23 of 45

Form PTO-1449 (modified)		Atty. Docket No.: OLAP.P0007USC9/1001313621	Serial No.: 18/811,158
List of Patents and Publications for Applicant's INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)		Applicant: OLAPLEX, INC.	
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	C186	JANKOWKSA, et al., "The Relations Between Ionic and Non-Ionic Diffusion of Sulfonamides Across the Rabbit Cornea", Investigative Ophthalmology & Visual Science, 27(1):29-37 (1986).
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	C188	Japanese Office Action for JP 2016-515948 mailed January 25, 2017 (with English Translation).
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	C190	John Corbett, Hair Colorants: Chemistry and Toxicology 1-54 (1998).
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	C192	JOICO Verolight Powder Bleach and Verolight Plus MSDS dated February 10, 2013.
	C193	JOKO, et al., "A Tentative Mechanism of Oxidative Dyeing for Keratin Fibers", J. Soc. Cosmet. Chem. Jpn., 42 (3):185-200 with English Abstract (2008).
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	C195	KADE, et al., "The Power of Thiol-ene Chemistry", J. Polymer Science Part A: Polym. Chem., 48:743-750 (2010).
	C196	KAMATH and ROBBINS, "Hair breakage by combing and brushing-A comment on: T.A. Evans and K. Park, A statistical analysis of hair breakage. II Repeated grooming experiments", J. Cosmet. Sci., 41:439-56 (2010).
	C197	KANG, "Hair Dyeing and Hair Damage According to the Number of Dyeing", Master's Thesis, Kwangju Women's University, 11-13 (2006) with English Translation
	C198	Keshouhin kagaku guide [Cosmetic Science Guide] 2nd edition, Fragrance Journal Ltd., May 16, 2011, p.256-257 with English description.
	C199	KIPO Brief in Appeal of Cancellation Decision with English Translation dated January 13, 2020.
	C200	KIRSCHENBAUM, et al., "Oxygen radicals from photoirradiated human hair: An ESR and fluorescence study", J Cosmetic Sci., 51:169-182 (2000).

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EXAMINER: /NICOLE P BABSON/

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INFORMATION DISCLOSURE STATEMENT — PTO-1449 (MODIFIED)

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WELLA EXHIBIT 1003

Page 153 of 231

Form PTO-1449 (modified)		Atty. Docket No.: OLAP.P0007USC9/1001313621	Serial No.: 18/811,158
List of Patents and Publications for Applicant's INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)		Applicant: OLAPLEX, INC.	
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Other Art (Including Author, Title, Date, Pertinent Pages, Etc.)		
Exam. Init.	Ref. Des.	Citation
	C201	KLINE, http://homepage.smc.edu/kline_peggy/Organic/Amino_Acid_pKa.pdf , obtained online on 3/6/19, page 1 (2006).
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	C203	KOVAL, "Reactions of Thiols," <i>Russian J Organic Chemistry</i> , 43(3):319-49 (2007)
	C204	KR 10-1787310 Decision on Cancellation Mar 5, 2019 (English Translation).
	C205	KR 20030003970 - Certified English Translation JAN 14 2003 LG Household & Health Care, Ltd.
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	C208	L'Oreal Invalidity Opinion Ex A02, filed July 26, 2018.
	C209	L'Oreal Invalidity Opinion Ex A03, filed July 26, 2018.
	C210	L'Oreal Invalidity Opinion Ex A04, filed July 26, 2018.
	C211	L'Oreal Invalidity Opinion Ex ADS, filed July 26, 2018.
	C212	L'Oreal Invalidity Opinion Ex A06, filed July 26, 2018.
	C213	L'Oreal Invalidity Opinion Ex AO?, filed July 26, 2018.
	C214	L'Oreal Invalidity Opinion Ex A08, filed July 26, 2018.
	C215	L'Oreal Invalidity Opinion Ex A09, filed July 26, 2018.
	C216	L'Oreal Invalidity Opinion Ex A10, filed July 26, 2018.
	C217	L'Oreal Invalidity Opinion Ex A11, filed July 26, 2018.
	C218	L'Oreal Invalidity Opinion Ex A12, filed July 26, 2018.
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Other Art (Including Author, Title, Date, Pertinent Pages, Etc.)		
Exam. Init.	Ref. Des.	Citation
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Exam. Init.	Ref. Des.	Citation
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	C254	Lab muffin "How Does Olaplex Hair Treatment Work?" http://www.labmuffin.com/2015/04/how-does-hair-treatment-work , 8 pages retrieved from the internet June 24, 2016
	C255	LAW, Robert - Declaration dated JUL 13 2018, Filed by third party in GB 1605346.4 and GB 1813313.2
	C256	LEWIS excerpt from Hawley's Condensed Chemical Dictionary, 5 pages (1997).
	C257	Liqwd vs. L'Oreal (UK) Ltd., Amended Invalidity Grounds November 6, 2017.
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Page 27 of 45

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	C259	MAJONIS, et al., "Dual-purpose polymer labels for fluorescent and mass cytometric affinity bioassays," Biomacromolecules, 14(5):1503-13 (2013)
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	C265	Mintel database entry for Bigen Permanent Powder Hair Colour (June 2013).
	C266	Mintel database entry for Samy Fat Foam product (October 2010).
	C267	Mintel Database Record ID 1999129, L'Oreal Preference Les Blondissimes Hair Colourant, 2013.
	C268	MINTEL DATABASE, Record ID 743114, Catzy Hair Colourant, 4 pages, Published July 23, 2007.
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	C271	MORGAN, et al., "Interaction of Maleic Acid with Thiol Compounds", Biochemical Laboratory, Cambridge, 733-742 (1983).
	C272	MSDS Olaplex No. 1 Bond Multiplier, dated JUNE 2014.

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INFORMATION DISCLOSURE STATEMENT — PTO-1449 (MODIFIED)

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WELLA EXHIBIT 1003

Page 157 of 231

Page 28 of 45

Form PTO-1449 (modified)		Atty. Docket No.: OLAP.P0007USC9/1001313621	Serial No.: 18/811,158
List of Patents and Publications for Applicant's INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)		Applicant: OLAPLEX, INC.	
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	C283	New Olaplex Usage Instructions label (JUNE 2014).
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	C287	Notice of Re-Examination CN (China) Application No. 201580026038.9 dated December 10, 2020 and English Summary Thereof.
	C288	Notice of Re-Examination CN (China) Application No. 201580026038.9 dated June 10, 2021 and English Summary Thereof.
	C289	Notification of Grant for GB 1513932.2 mailed October 4, 2016.

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INFORMATION DISCLOSURE STATEMENT — PTO-1449 (MODIFIED)

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WELLA EXHIBIT 1003

Page 158 of 231

Page 29 of 45

Form PTO-1449 (modified)		Atty. Docket No.: OLAP.P0007USC9/1001313621	Serial No.: 18/811,158
List of Patents and Publications for Applicant's INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)		Applicant: OLAPLEX, INC.	
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	C290	Office Action ARIPO AP/P/2015/008934, dated MAY 27, 2019.
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	C292	Office Action AU 2015258904 mailed NOV 2, 2016 (Examination Report).
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	C300	Office Action CL (CHILE) 201602911 - SEP 27, 2018, with English Summary.
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	C303	Office Action CN (China) 201480042200.1 mailed MAY 02, 2017 (with English summary).
	C304	Office Action CN (China) 201480042200.1 with English summary, mailed APRIL 22, 2019.
	C305	Office Action CN (CHINA) 201480042200.10 Dated AUG 03, 2018 with English Summary
	C306	Office Action CN (CHINA) 201580026038.9 - SEP 05, 2018 with English Summary
	C307	Office Action CN (China) 201580026038.9 with English summary, mailed APRIL 11, 2019.
	C308	Office Action CO (Colombia) 16-030.965 mailed JUL 28, 2017 (with English summary).
	C309	Office Action CU (Cuba) 2016-0017 mailed JAN 26, 2018 (English Translation).
	C310	Office Action CU (Cuban) 2016-0017 dated JUN 20, 2018 (English Translation).

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WELLA EXHIBIT 1003

Page 159 of 231

Page 30 of 45

Form PTO-1449 (modified)		Atty. Docket No.: OLAP.P0007USC9/1001313621	Serial No.: 18/811,158
List of Patents and Publications for Applicant's INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)		Applicant: OLAPLEX, INC.	
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Exam. Init.	Ref. Des.	Citation
	C311	Office Action DO (Dominican Republic) P20160030 mailed APR 10, 2018 (English Summary).
	C312	Office Action DO (DOMINICAN REPUBLIC) P20160030, mailed SEP 18, 2018, with English Summary.
	C313	Office Action EA (Eurasia) 201592291 mailed MAY 08, 2018, with English Translation.
	C314	Office Action EA (EURASIA) 201592291, dated AUG 30, 2018, with English Summary.
	C315	Office Action EA (Eurasia) 2016-92315 mailed JAN 30, 2019 with English Summary.
	C316	Office Action EA (Eurasia) 201692315 mailed with English translation, September 28, 2017.
	C317	Office Action EG (EGYPT) 2016111820, dated NOV 26, 2018, with English Translation.
	C318	Office Action EP (Europe) 15725209.9 dated MAY 16, 2019.
	C319	Office Action EP (Europe) 15725209.9 mailed JAN 01, 2018.
	C320	Office Action EP (Europe) 15725209.9, mailed AUG 15, 2018.
	C321	Office Action EP (Europe) 16798857.5 dated February 19, 2019.
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	C324	Office Action HN (Honduras) 2016-000236 mailed FEB 01, 2019 with English Translation.
	C325	Office Action IL (Israel) 248989 with Third Party Observation mailed SEP 06, 2017 (English Summary).
	C326	Office Action IL (Israel) 248989, mailed JUN 05, 2017 (with English summary).
	C327	Office Action IN (INDIA) 20147007019.00, mailed SEP 06, 2018, with English Translation.
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WELLA EXHIBIT 1003

Page 160 of 231

Page 31 of 45

Form PTO-1449 (modified)		Atty. Docket No.: OLAP.P0007USC9/1001313621	Serial No.: 18/811,158
List of Patents and Publications for Applicant's INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)		Applicant: OLAPLEX, INC.	
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	C332	Office Action JP (Japan) 2017-152453 dated May 14, 2019, with English summary.
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	C334	Office Action MX (Mexico) MX/a/2016/014917, mailed JUNE 20, 2018.
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	C338	Office Action SG (SINGAPORE) 11201609005Q, dated MAY 24, 2017.
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	C344	Office Action UK (United Kingdom) 1618547.2 mailed NOV 30, 2016.
	C345	Office Action US 14/713,885, dated AUG 17, 2015.
	C346	Office Action US 15/087,415, dated MAY23, 2016.
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Page 32 of 45

Form PTO-1449 (modified)	Atty. Docket No.: OLAP.P0007USC9/1001313621	Serial No.: 18/811,158
List of Patents and Publications for Applicant's INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)	Applicant: OLAPLEX, INC.	
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	C359	Office Action CA (Canada) 2947303, dated JULY 12, 2019.
	C360	Office Action CN (China) Application No. 201480042200.1 dated December 9, 2020 with English Summary.
	C361	Office Action CN (CHINA) 201480042200.10, Dated NOV 09, 2018, with English Summary
	C362	Office Action CN (China) 201580026038.90 mailed DEC 18, 2017, with English Summary.
	C363	Office Action CN (China) 201580026039, dated JULY 16, 2019 with English Summary.
	C364	Office Action CN (China) Application No. 201580026038.9 dated November 25, 2020 with English Summary.
	C365	Office Action CN (China) Application No. 201680088959.2 with English Summary dated December 3, 2021.
	C366	Office Action CR (Costa Rica) Application No. 20160053 dated December 9, 2020 with English Summary.
	C367	Office Action CU (Cuba) 2016-0017 dated JUL 03, 2018 (with English Translation).

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INFORMATION DISCLOSURE STATEMENT — PTO-1449 (MODIFIED)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /N.P.B/

WELLA EXHIBIT 1003

Page 162 of 231

Page 33 of 45

Form PTO-1449 (modified)		Atty. Docket No.: OLAP.P0007USC9/1001313621	Serial No.: 18/811,158
List of Patents and Publications for Applicant's INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)		Applicant: OLAPLEX, INC.	
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U.S. Patent Documents <i>See Page 1-6</i>	Foreign Patent Documents <i>See Page 7-10</i>	Other Art <i>See Page 10-46</i>	

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	C368	Office Action EA (Eurasia) 201592291, dated JULY 9, 2019, with English Translation.
	C369	Office Action EA (Eurasia) 201692315 mailed MAY 17, 2018, with English Translation.
	C370	Office Action EA (Eurasia) 201692315, with English Translation, dated OCTOBER 23, 2019.
	C371	Office Action EA (Eurasia)201592291 mailed AUG 01, 2017.
	C372	Office Action EP (Europe) 17163334, dated JUNE 18, 2019.
	C373	Office Action EP (Europe) 17163334.0 mailed APR 26, 2018.
	C374	Office Action EP (Europe)15725209.9, mailed MAY 18, 2017.
	C375	Office Action for KR (Republic of Korea) 10-2016-7034158 mailed MAY 17, 2018 (with English Translation).
	C376	Office Action GB (United Kingdom) 1813313.2, mailed SEP 20, 2018.
	C377	Office Action US 15/626,453 dated MAY 14, 2019.
	C378	Office Action BR (Brazil) 112016026378-2, dated AUGUST 14, 2019, with English Summary.
	C379	Office Action CA (Canada) 2947303, dated JULY 12, 2019.
	C380	Office Action HN (Honduras) Application No. 2016-002313 dated December 23, 2020 with English Summary.
	C381	Office Action ID (Indonesia) P00201600646, mailed JAN 21, 2019 with English Translation.
	C382	Office Action ID (Indonesia) Application No. POD 201608726 with English Summary dated November 17,2021.
	C383	Office Action ID (Indonesia) P00201600646, dated MAY 25, 2018,with English Translation.
	C384	Office Action IL (Israel) 248989 (with third party submission) mailed SEP 06, 2017 (English Summary)
	C385	Office Action IL (Israel) 248989 mailed MAR 04, 2018 (English Summary).
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202702493.1

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INFORMATION DISCLOSURE STATEMENT — PTO-1449 (MODIFIED)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /N.P.B/

Page 34 of 45

Form PTO-1449 (modified)		Atty. Docket No.: OLAP.P0007USC9/1001313621	Serial No.: 18/811,158
List of Patents and Publications for Applicant's INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)		Applicant: OLAPLEX, INC.	
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Exam. Init.	Ref. Des.	Citation
	C387	Office Action IN (India) 201647007019, dated AUGUST 02, 2019 with English Translation.
	C388	Office Action Japanese Appeal No. 2018-15999; JP (Japan) 2016-572832, dated NOV 19, 2019 with English Translation.
	C389	Office Action JP (Japan) 2016-572832, dated OCT 26 2017 (English Translation).
	C390	Office Action JP (Japan) 2016-515948, mailed June 27, 2017, English Translation.
	C391	Office Action JP (Japan) 2016-515948, mailed OCT 03, 2017.
	C392	Office Action JP (Japan) 2016-515948, mailed JUN 27, 2017.
	C393	Office Action JP (Japan) 2016-572832 mailed JUN 02, 2017 (with English summary).
	C394	Office Action JP (Japan) 2017-152453 with English summary, mailed October 30, 2018.
	C395	Office Action JP (Japan) Japanese Application No. 2017-555304 dated March 18, 2020 with English Summary.
	C396	Office Action JP (Japan) Japanese Office Action for Japanese Application No. 2017-555304 dated November 30, 2020 with English Summary.
	C397	Office Action MX (Mexico) MX/a/2016/014917, dated APRIL 12, 2019 with English Summary.
	C398	Office Action MX (MEXICO) MX/a/2016/014917, DEC 07, 2018, with English Summary.
	C399	Office Action MY (Malaysia) PI 2016700195 dated SEPTEMBER 30, 2019.
	C400	Office Action NZ (New Zealand) 725652 mailed OCT 13, 2017 (Examination Report).
	C401	Office Action NZ (New Zealand) 725652, mailed MAY 22, 2018 (Examination Report).
	C402	Office Action of IL (ISRAEL) 248989, Mailed OCT 07, 2018 with English Summary.
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	C404	Office Action SA (Saudi Arabia) 516370509, mailed MAY 25, 2017 (with English summary) (Examination Report).

202702493.1

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INFORMATION DISCLOSURE STATEMENT — PTO-1449 (MODIFIED)

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Page 35 of 45

Form PTO-1449 (modified)		Atty. Docket No.: OLAP.P0007USC9/1001313621	Serial No.: 18/811,158
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	C405	Office Action SV (El Salvador) Application No. 2016-0019660 dated MARCH 18, 2019 with English Summary.
	C406	Office Action SV (El Salvador) Application No. 2016-0020933 with English Summary dated April 19, 2021.
	C407	Office Action US (United States) 16/571,933 dated April 9, 2021.
	C408	Office Action US 15/854,504 dated AUGUST 8, 2019.
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	C411	OLAPLEX "The Olaplex Difference" https://olaplex.com/pages/how-it-works , retrieved from the internet 12/12/2017.
	C412	Olaplex Bond Multiplier No.1 Mix with Highlights, balayage, or high lift color label (JUNE 2014).
	C413	OLAPLEX on Instagram page, https://www.instagram.com/p/mGhswioJQ2/?hl=en , March 28, 2014.
	C414	OLAPLEX on Instagram page, https://www.instagram.com/p/mvxsbUoJSI/?hl=en , April 13, 2014.
	C415	OLAPLEX on Instagram post, February 22, 2015 http://www.instagram.com/p/zacpQulJfn/
	C416	OLAPLEX on Instagram page, https://www.instagram.com/p/nBwLbtoJck/?hl=en , April 20 2014.
	C417	OLAPLEX, Apparent description of booth presentation during Bronner Bros. show in Atlanta http://www.instagram.com/p/zacpQulJfn/ , Instagram post February 22, 2015.
	C418	OLAPLEX, Material Safety Data Sheet for Olaplex Bond Multiplier No. a December 2014.
	C419	Olaplex.com, "Never break a client's hair", visited JUNE 28, 2014.
	C420	Partial International Search Report for PCT application, PCT/US2015/065032, mailed May 9, 2016.

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WELLA EXHIBIT 1003

Page 165 of 231

Page 36 of 45

Form PTO-1449 (modified)		Atty. Docket No.: OLAP.P0007USC9/1001313621	Serial No.: 18/811,158
List of Patents and Publications for Applicant's INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)		Applicant: OLAPLEX, INC.	
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Other Art (Including Author, Title, Date, Pertinent Pages, Etc.)		
Exam. Init.	Ref. Des.	Citation
	C421	Partial International Search Report for PCT/US2015/031166 mailed September 14, 2015.
	C422	PATERSON, et al., "On the synthesis of N-maleoyl amino acids in aqueous media: cautionary tales for the unwary traveller", ARKAT USA, Inc., 11-16 (2010).
	C423	PGR 2017-00011 Decision denying Institution of Post-Grant Review, by Patent Trial and Appeal Board, Paper 24 (July 19, 2017).
	C424	PGR 2017-00012 Petition for Post-Grant Review of US Patent No. 9,498,419, filed on behalf of L'Oreal USA, Inc. (Jan. 31, 2017).
	C425	PGR 2017-00012 - REDACTED version of Paper 102, Final Written Decision, JUN 27 2018 (PAPER 105).
	C426	PGR 2017-00012 Decision partial Institution of Post-Grant Review, by Patent Trial and Appeal Board, Paper 17 (July 19, 2017).
	C427	PGR 2017-00012 Liquid, Inc.'s Patent Owner Response under 37 C.F.R. §42.220, filed on OCT 20, 2017 (REDACTED)
	C428	PGR 2017-00012 Patent Owner's Supplemental Response, MAY 24 2018.
	C429	PGR 2017-00012 Petitioner's REPLY to Patent Owner's Supplemental Response MAY 31, 2018.
	C430	PGR 2017-00012 Redacted Petitioners reply to patent owner's response, pages 1-32 January 26, 2018.
	C431	PGR 2018-00023 - WICKETT, Randall Declaration dated January 31, 2018.
	C432	PGR 2018-00023 Paper 9 Institution Denied, AUG 10 2018.
	C433	PGR 2018-00023 Patent owner's preliminary response, pages 1-76, May 21, 2018.
	C434	PGR 2018-00023 Redacted Petition for Post-Grant review of U.S. Patent 9,668,954 dated January 31, 2018.
	C435	PGR 2018-00024 - WICKETT, Randall Declaration dated January 31, 2018.
	C436	PGR 2018-00024 Paper 12 Institution Denied, AUG 10 2018.

202702493.1

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INFORMATION DISCLOSURE STATEMENT — PTO-1449 (MODIFIED)

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Page 37 of 45

Form PTO-1449 (modified)		Atty. Docket No.: OLAP.P0007USC9/1001313621	Serial No.: 18/811,158
List of Patents and Publications for Applicant's INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)		Applicant: OLAPLEX, INC.	
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	C437	PGR 2018-00024 Patent owner's preliminary response, pages 1-76, May 21, 2018.
	C438	PGR 2018-00024 Redacted Petition for Post-Grant review of U.S. Patent No. 9,668,954 dated January 31, 2018.
	C439	PGR 2018-00025 - WICKETT, Randall Declaration February 15, 2019.
	C440	PGR 2018-00025 Paper 12 Institution Decision, AUG 10 2018.
	C441	PGR 2018-00025 Patent owner's preliminary response, pages 1-51, May 21, 2018
	C442	PGR 2018-00025 Petition for Post-Grant review of U.S. Patent 9,668,954 (REDACTED) dated February 1, 2018.
	C443	PGR 2018-00025; EX 1062; Wickett Reply Declaration, Redacted, dated February 15, 2019.
	C444	Plaintiffs Opening Brief in Support of Motion for Preliminary Injunction, redacted-public version, filed January 18, 2017.
	C445	PO and Senozan article re: Henderson-Hasselbalch Equation, 2001 (Exhibit 2052).
	C446	POMOGAILO, et al., "Monomeric and Polymeric Carboxylic Acids", Springer Series in Materials Science, 138(2):7-25 (2010).
	C447	PRAMANIK, "10.3.7 OS-Salt Interaction", Characterization of Impurities and Degradants Using Mass Spectrometry, John Wiley & Sons, Hoboken, New Jersey, (2011).
	C448	PRESSLY, Eric D. - Declaration, signed OCT 19, 2017 (REDACTED) filed in PGR 2017-00012.
	C449	Printout of the webpage http://www.olaplex.com/pages/patent , taken on September 22, (2016).
	C450	Prior Use - documentary Evidence E36 as provided on parent case NZ725652 Evidence of public prior use before 5 May 2014
	C451	Product Information for Maxton Bleach Powder (May 2006).
	C452	Public Version of Final Written Decision, dated JULY 30, 2019.

202702493.1

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INFORMATION DISCLOSURE STATEMENT — PTO-1449 (MODIFIED)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /N.P.B/

WELLA EXHIBIT 1003

Page 167 of 231

Page 38 of 45

Form PTO-1449 (modified)		Atty. Docket No.: OLAP.P0007USC9/1001313621	Serial No.: 18/811,158
List of Patents and Publications for Applicant's INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)		Applicant: OLAPLEX, INC.	
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Other Art (Including Author, Title, Date, Pertinent Pages, Etc.)		
Exam. Init.	Ref. Des.	Citation
	C453	Quantitative Chemical Analysis, pgs 1027-1 thru 1027-5, Daniel Harris Editor, 3rd Ed., (1991).
	C454	RAMACHANDRA, et al., "Acid-based characteristics of human hair: Absorption of HCl and NaOH, and the effects on physical properties." J Soc Cosmet Chem., 32:393-405 (1981).
	C455	RANDEBROCK, "Neue Erkenntnisse über den morphologischen aufbau des menschlichen haares," J Soc Cos. Chem., 15:691-706 (1964).
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	C457	Refinery, "Fire Your Colorist if They Are Not Using This" http://www.refinery20.com/olaplex-hair-color , 6 pages, retrieved from the internet June 24, 2016
	C458	Relaxing agents, Milady Standard Cosmetology, pages 618-625, 13th edition, (2016).
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	C460	ROBBINS, Chapter 10, "Definitions of Consumer Relevant Hair Assembly Properties and How These are Controlled by Single Fiber Properties", Chemical and Physical Behavior of Human Hair, 5th Edition, 2012.
	C461	ROBBINS, Chapter 4 "Bleaching Human Hair" in Chemical and Physical Behavior of Human Hair, 2002.
	C462	ROBBINS, Chapter 5 "Bleaching and Oxidation of Human Hair" in Chemical and Physical Behavior of Human Hair 2012.
	C463	ROBBINS, Chapter 6 "Interactions of Shampoo and Conditioner Ingredients with Hair" in Chemical and Physical Behavior of Human Hair 2012.
	C464	ROBBINS, Clarence R., Mouhatsu no kagaku [Science of Hair], 4th edition, FragranceJournal Ltd., July 10, 2006, p.221-225 with English counterpart, p.194-198.
	C465	ROBBINS, et al., "Chemical Composition of Different Hair Types" Chemical and Physical Behavior of Human Hair ,Chapter 2:104-76, Springer-Verlag, Berlin Heidelberg (2012).
	C466	ROBBINS, et al., "Dyeing Human Hair", Chemical and Physical Behavior of Human Hair, Chapter 7, Springer-Verlag, Berlin Heidelberg (2012).

202702493.1

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INFORMATION DISCLOSURE STATEMENT — PTO-1449 (MODIFIED)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /N.P.B/

WELLA EXHIBIT 1003

Page 168 of 231

Page 39 of 45

Form PTO-1449 (modified)		Atty. Docket No.: OLAP.P0007USC9/1001313621	Serial No.: 18/811,158
List of Patents and Publications for Applicant's INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)		Applicant: OLAPLEX, INC.	
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Exam. Init.	Ref. Des.	Citation
	C467	ROBBINS, et al., "Polymerization into Human Hair", J. Soc. Cosmet. Chem., 25:407-421 (1974).
	C468	ROBBINS, et al., "The Physical Properties of Hair Fibers", Chemical and Physical Behavior of Human Hair, Chapter 9, Springer-Verlag, Berlin Heidelberg (2012).
	C469	ROBINSON, "A study of damaged hair", J. Soc. Cosmet. Chem., 27:155-161 (1976).
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	C471	SANDHU, et al., "A simple and sensitive method using protein loss measurements to evaluate damage to human hair during combing", J. Soc. Cosmet. Chem., 46:39-52 (1995).
	C472	Second Written Opinion for corresponding Singapore Application No. 11201609005Q mailed November 29, 2017.
	C473	SHANSKY, "Toning of Human Hair with Fiber Reactive Dyestuffs," Cosmetics and Toiletries, 91(11):46-48 (1976).
	C474	SHANSKY, "The Reaction Mechanism of Fiber Reactive Dye stuffs with Hair Keratin," American Perfumer and Cosmetics (1966)
	C475	SIGMA-ALDRICH website BM PEG 3 1 11 Bismaleimido Triethyleneglycol (2018).
	C476	SLAVIN, et al. "Biological surface modification by 'thiol-ene' addition of polymers synthesized by catalytic chain transfer polymerization (CCTP)," Polymer Chem., 3:1461-6 (2012).
	C477	Statement - Amended Reply Statement of Case on Validity (KR970, WO768 and Catzy), dated November 28, 2017.
	C478	Statement - Reply Statement of Case on Validity (Olaplex), dated November 28, 2017.
	C479	Statement of Case on the Term "Simple Salt", dated January 10, 2018.
	C480	Statement of Case on Validity (KR970, WO768 and Catzy), dated November 6, 2017.
	C481	Statement of Grounds and Particulars in Opposition Proceeding in AU (Australia) Application No. 2017251818 filed May 1, 2020.

202702493.1

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INFORMATION DISCLOSURE STATEMENT — PTO-1449 (MODIFIED)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /N.P.B/

Page 40 of 45

Form PTO-1449 (modified)		Atty. Docket No.: OLAP.P0007USC9/1001313621	Serial No.: 18/811,158
List of Patents and Publications for Applicant's INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)		Applicant: OLAPLEX, INC.	
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	C482	Success Stories presentation, OCTOBER 6, 2016.
	C483	SWIFT, Chapter 10, "Mechanical Properties of Hair" in Fundamentals of Human Hair Science, (1997).
	C484	SWIFT, Chapter 11, "Cosmetic Treatments of Hair" in Fundamentals of Human Hair Science, (1997).
	C485	SWIFT, Fundamentals of Human Hair Science, (1997).
	C486	Table 2 from Furia, T.E., Sequestrants in Food (Chp. 6) in CRC Handbook of Food Additives (1972).
	C487	Table 3.4, pKa values of some amino acids", From: Appendix: Acid-Base Concepts Biochemistry 5th edition. Berg JM, Tymoczko JL, Stryer L. New York: W H Freeman; (2002).
	C488	TATE, et al., "Quantification and prevention of hair damage", J. Soc. Cosmet. Chem., 44:347-371 (1993).
	C489	The Power Of One http://www.nxtbook.com/nctbooks/creativeage/launchpad_201405/index.php?srartid , 401 page, retrieved from the internet June 24, 2016
	C490	THERMO Fisher Scientific, "Bismaleimide Cross linkers (BMOE, BMBandBMH)," product instructions, pages 1-3 (2012)
	C491	Thermo Scientific, "Instructions BM (PEG) 2 and BM (PEG) 3" (2012).
	C492	Third party observation for GB 1513932.2 (January 2016).
	C493	Third Party Observation AU (Australia) 2017251818, dated JUNE 17, 2019.
	C494	Third Party Observation for JP (Japan) 2016-572832 with English Translation dated APRIL 19, 2019.
	C495	Third Party Observation AU (Australia) 2015258904 mailed December 19, 2016
	C496	Third Party Observation AU (Australia) 2017251818, dated OCTOBER 2, 2019.
	C497	Third Party Observation AU (Australia) 2017251818, filed JUNE 4, 2019.
	C498	Third Party Observation BR (Brazil) 1120160263782 Jan 9, 2018 w/Eng Summary

202702493.1

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INFORMATION DISCLOSURE STATEMENT — PTO-1449 (MODIFIED)

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WELLA EXHIBIT 1003

Page 170 of 231

Form PTO-1449 (modified)	Atty. Docket No.: OLAP.P0007USC9/1001313621	Serial No.: 18/811,158
List of Patents and Publications for Applicant's INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)	Applicant: OLAPLEX, INC.	
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U.S. Patent Documents <i>See Page 1-6</i>	Foreign Patent Documents <i>See Page 7-10</i>	Other Art <i>See Page 10-46</i>

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	C499	Third Party Observation BR (Brazil) 1120160263782 Oct 23, 2018 w/Eng Summary
	C500	Third Party Observation CA (Canada) 2947303 filed Feb 19, 2019.
	C501	Third Party Observation CA (Canada) 2947303, dated January 14, 2020.
	C502	Third Party Observation CA (Canada) 2947303, dated OCTOBER 25, 2019.
	C503	Third Party Observation CA (Canada) 2947303, filed JUNE 12, 2019.
	C504	Third Party Observation EA (Eurasia) 201692315, dated SEPTEMBER 13, 2019 , with English Translation.
	C505	Third Party Observation EP (Europe) 15725209.9 filed Feb 22, 2019 with Eng Translation
	C506	Third Party Observation EP (Europe) 15725209.9 filed NOV 15, 2019.
	C507	Third Party Observation EP (Europe) 15725209.9, dated NOV 29, 2019.
	C508	Third Party Observation filed EP (Europe) 14758005.4 (May 13, 2016).
	C509	Third Party Observation filed EP14758005.4 (May 18, 2016).
	C510	Third Party Observation filed GB1513932.2 (October 3, 2016).
	C511	Third Party Observation filed GB1513932.2 (August 23, 2016).
	C512	Third Party Observation filed GB1513932.2 (September 22, 2016).
	C513	Third Party Observation filed GB1605346.4 (November 11, 2016).
	C514	Third Party Observation filed in AU (Australia) 2017251818, mailed JAN 17, 2018.
	C515	Third Party Observation filed in AU (Australia) Application No. 2015258904 mailed OCT 5, 2017.
	C516	Third Party Observation filed in EP (Europe) Application No. 15725209.9 mailed OCT 27, 2017.
	C517	Third Party Observation filed in GB Application No. 1513932.2 (JAN 2016).

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EXAMINER: /NICOLE P BABSON/**DATE CONSIDERED:** 10/10/2024

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INFORMATION DISCLOSURE STATEMENT — PTO-1449 (MODIFIED)

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Page 42 of 45

Form PTO-1449 (modified)		Atty. Docket No.: OLAP.P0007USC9/1001313621	Serial No.: 18/811,158
List of Patents and Publications for Applicant's INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)		Applicant: OLAPLEX, INC.	
		Filing Date: August 21, 2024	Group: Not Yet Assigned
U.S. Patent Documents <i>See Page 1-6</i>	Foreign Patent Documents <i>See Page 7-10</i>	Other Art <i>See Page 10-46</i>	

Other Art (Including Author, Title, Date, Pertinent Pages, Etc.)		
Exam. Init.	Ref. Des.	Citation
	C518	Third Party Observation filed in ID (Indonesia) Application No. 2017/09919 dated May 19, 2020.
	C519	Third Party Observation filed in IL (Israel) Application No. 265590 dated March 26, 2020.
	C520	Third Party Observation filed in JP (Japan) Application No. 2016-572832, mailed MAY 25, 2018, with English Summary).
	C521	Third Party Observation filed in JP Application No. 2016-572832 mailed SEP 29, 2017.
	C522	Third Party Observation filed in KR (Korea) 101787310 on JAN 29, 2019 (English Translation).
	C523	Third Party Observation filed in MX (Mexico) Application No. MX/a/2016/014917 mailed NOV 06, 2017.
	C524	Third Party Observation filed in NZ (New Zealand) Application No. 725652, mailed MAY 16, 2018 - PART 2 OF 2.
	C525	Third Party Observation filed in NZ (New Zealand) Application No. 725652, dated March 5, 2021.
	C526	Third Party Observation filed in NZ (New Zealand) Application No. 725652, mailed MAY 16, 2018 - PART 1 OF 2.
	C527	Third Party Observation filed in SG (Singapore) Application No. 11201609005Q dated April 5, 2019.
	C528	Third Party Observation filed in SG (Singapore) Application No. 11201609005Q dated December 27, 2018.
	C529	Third Party Observation filed in SG (Singapore) Application No. 11201609005Q dated December 8, 2017.
	C530	Third Party Observation filed in SG (Singapore) Application No. 11201609005Q dated February 15, 2018.
	C531	Third Party Observation filed in SG (Singapore) Application No. 11201609005Q dated May 25, 2018.
	C532	Third Party Observation filed in US Application No. 15/087,415, AUG 29, 2016.

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INFORMATION DISCLOSURE STATEMENT — PTO-1449 (MODIFIED)

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WELLA EXHIBIT 1003

Page 172 of 231

Page 43 of 45

Form PTO-1449 (modified)		Atty. Docket No.: OLAP.P0007USC9/1001313621	Serial No.: 18/811,158
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U.S. Patent Documents <i>See Page 1-6</i>	Foreign Patent Documents <i>See Page 7-10</i>	Other Art <i>See Page 10-46</i>	

Other Art (Including Author, Title, Date, Pertinent Pages, Etc.)		
Exam. Init.	Ref. Des.	Citation
	C533	Third Party Observation filed in US Application No. 15/087,415, SEP 14, 2016.
	C534	Third Party Observation filed in US Application No. 15/087,415, AUG 25, 2016.
	C535	Third Party Observation filed in US Application No. 15/087,415, SEP 23, 2016.
	C536	Third Party Observation for EA (Eurasia) 201692315, filed NOV 01, 2017, (English Translation).
	C537	Third Party Observation for EC (Ecuador) IEPI 2016-94261, filed MAR 29, 2017, with English Summary.
	C538	Third Party Observation for EP (Europe) 15725209.9 filed MAY 8, 2019.
	C539	Third Party Observation for GB 1605346.4, dated OCT 24, 2018.
	C540	Third Party Observation for GB 1605346.4, filed NOV 30, 2018.
	C541	Third Party Observation for GB 1813313.2, dated JAN 08, 2019.
	C542	Third Party Observation for IL (Israel) 248989, mailed OCT 03, 2018 (English Translation).
	C543	Third Party Observation GB 1813313.2 filed APR 2, 2019.
	C544	Third Party Observation GB 1813313.2 filed MAR 8, 2019.
	C545	Third Party Observation GB1513932.2 (June 24, 2016).
	C546	Third Party Observation ID (Indonesia) Application No. P00201608726, with English Translation, mailed MAR 6, 2018.
	C547	Third Party Observation IL (Israel) 248989 mailed JANUARY 10, 2018 (English Translation).
	C548	Third Party Observation IN (India) 2016177038524 on FEB 06, 2019 (English Translation).
	C549	Third Party Observation JP (Japan) 2016-572832 filed SEPTEMBER 2, 2019 with English summary.
	C550	Third Party Observation JP (Japan) 2016572832 filed Mar 5, 2019 with Eng Summary.
	C551	Third Party Observation KR (Korea) 101787310 on JAN 29, 2019.

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INFORMATION DISCLOSURE STATEMENT — PTO-1449 (MODIFIED)

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Page 44 of 45

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U.S. Patent Documents <i>See Page 1-6</i>	Foreign Patent Documents <i>See Page 7-10</i>	Other Art <i>See Page 10-46</i>	

Other Art (Including Author, Title, Date, Pertinent Pages, Etc.)		
Exam. Init.	Ref. Des.	Citation
	C552	Third Party Observation mailed EP (Europe) 157250209.9 (January 10, 2017).
	C553	Third Party Observation mailed EP (Europe) 14758005.4 (December 21, 2016).
	C554	Third Party Observation New Zealand NZ (New Zealand) 725652 mailed December 19, 2016.
	C555	Third Party Observation Submitted GB 1513932.2 (April 20, 2016).
	C556	Third Party Observation, EP (Europe) 157250209.9, mailed AUG 22, 2018.
	C557	Third Party Protest filed in CA (Canada) 2,947,303, mailed DEC 7, 2017.
	C558	Third Party Protest filed in CA (Canada) 2,947,303, mailed MAY 8, 2018.
	C559	Third Party Protest for CA (Canada) 2947303, mailed FEB 08, 2017.
	C560	Third Party Submission for CA (Canada) 2,947,303, dated SEP 14, 2018.
	C561	Thomas Clausen et al., Hair Preparations, in Ullman's Encyclopedia of Industrial Chemistry (July 15, 2006).
	C562	Tracey Cunningham on Instagram page; https://www.instagram.com/p/l_mat6ig-z/ , (March 26, 2014).
	C563	Tracey Cunningham on Instagram page; https://www.instagram.com/p/11AF_Zig5e/ , (March 22, 2014).
	C564	UK HIGH COURT JUDGEMENT - JUN 11, 2018 - IN RELATIONSHIP TO GB 2525793.
	C565	VOET, et al., Fundamentals of Biochemistry Excerpt (2008).
	C566	Webster's Third International New Dictionary 40 (3rd ed) 2002.
	C567	WENNIGER, et al., "Maleic Acid", CTFA Cosmetic Ingredient Handbook, 2:226 (1992).
	C568	WHEWELL, "The chemistry of hair" pages 207-23 A lecture delivered before the Society December 14 (1960).
	C569	WHITE and EMMONS, et al., "The Chemistry of Permaleic Acid", Tetrahedron, 17:31-34, (1962).

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INFORMATION DISCLOSURE STATEMENT — PTO-1449 (MODIFIED)

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Page 174 of 231

Page 45 of 45

Form PTO-1449 (modified)	Atty. Docket No.: OLAP.P0007USC9/1001313621	Serial No.: 18/811,158
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U.S. Patent Documents <i>See Page 1-6</i>	Foreign Patent Documents <i>See Page 7-10</i>	Other Art <i>See Page 10-46</i>

Other Art (Including Author, Title, Date, Pertinent Pages, Etc.)		
Exam. Init.	Ref. Des.	Citation
	C570	WICKET and JACHOWICZ, "Measuring Hair", Handbook of Cosmetic Science and Technology pgs 694-724 Andre Barrel #rd. Ed, (2009).
	C571	WPI Accession No. 1995-355152, English abstract of JPH 07242520, 09-19-1995 (retrieved 02-02-2016).
	C572	Written Opinion for PCT/US2015/031166, mailed JULY 19, 2016.
	C573	Written Opinion for SG (Singapore) Application No. 11201609005Q dated May 7, 2020.
	C574	YAN, et al., "Cellular association and cargo release of redox-responsive polymer capsules mediated by exofacial thiols," Adv. Mater. 23:3916-3921 (2011).
	C575	YANG, et al., "In-Situ Polymerization of Maleic Acid and Itaconic Acid and Crosslinking of Cotton Fabric", Textile Res. J., 69(10):782-789 (1999).
	C576	YANG, et al., "Polymerization of Maleic Acid and Itaconic Acid Studied by FT-Raman Spectroscopy", J. Applied Polymer Science, 81:223-228 (2001).
	C577	ZHAO, et al., "Preparation of peracetic acid from hydrogen peroxide Part I: Kinetics for peracetic acid synthesis and hydrolysis" Journal of Molecular Catalysis A: Chemical, 271:246-252 (2007).
	C578	ZUMDAHL, Chemistry Excerpt, 15:621-622 (1986).
	C579	ZVIAK "The Science of Hair Care," Marcel Dekker, Inc., pp 263-279(1986).
	C580	ZVIAK & MILLEQUANT Chapter 7, "Hair Bleaching" in The Science of Hair Care, (2005) (Exhibit DH 3).
	C581	ZVIAK & MILLEQUANT Chapter 9 "Oxidation Colouring", The Science of Hair Care, Informa Healthcare USA, Inc (2008).
	C582	ZVIAK, et al., "Hair Structure, Function, and Physicochemical Properties", The Science of Hair Care, Chapter 1, 1-48 (1986).

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INFORMATION DISCLOSURE STATEMENT — PTO-1449 (MODIFIED)

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WELLA EXHIBIT 1003

Page 175 of 231

PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L1	195	((("PRESSLY") near3 ("Eric")) OR ((("HAWKER") near3 ("Craig"))).INV.	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	ADJ	ON	ON	2024/10/03 04:23 PM
L2	207	((("PRESSLY") near3 ("Eric")) OR ((("HAWKER") near3 ("Craig"))).INV. OR olaplex.as.	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	ADJ	ON	ON	2024/10/03 04:23 PM
L3	99	((("PRESSLY") near3 ("Eric")) OR ((("HAWKER") near3 ("Craig"))).INV. OR olaplex.as.	(USPAT; DERWENT)	ADJ	ON	ON	2024/10/08 05:37 PM
L4	199	((("PRESSLY") near3 ("Eric")) OR ((("HAWKER") near3 ("Craig"))).INV. OR olaplex.as. AND keratin	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	ADJ	ON	ON	2024/10/09 12:29 PM
L5	195	((("PRESSLY") near3 ("Eric")) OR ((("HAWKER") near3 ("Craig"))).INV. OR olaplex.as. AND kthiol	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	ADJ	ON	ON	2024/10/09 12:35 PM
L6	107	((("PRESSLY") near3 ("Eric")) OR ((("HAWKER") near3 ("Craig"))).INV. OR olaplex.as.) AND thiol	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	ADJ	ON	ON	2024/10/09 12:35 PM
L7	18	((("PRESSLY") near3 ("Eric")) OR ((("HAWKER") near3 ("Craig"))).INV. OR olaplex.as.) AND thiol AND di-maleate	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	ADJ	ON	ON	2024/10/09 12:36 PM
L8	1	((("PRESSLY") near3 ("Eric")) OR ((("HAWKER") near3 ("Craig"))).INV. OR olaplex.as.) AND skin.clm.	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	ADJ	ON	ON	2024/10/09 03:30 PM
L9	5	"9855447".pn.	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	ADJ	ON	ON	2024/10/09 03:32 PM
L10	15	((("PRESSLY") near3 ("Eric")) OR ((("HAWKER") near3 ("Craig"))).INV. OR olaplex.as.) AND thiol	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	ADJ	ON	ON	2024/10/10 12:58 PM

L11	5	AND shampoo.clm. "9717668".pn.	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	ADJ	ON	ON	2024/10/10 01:52 PM
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PE2E SEARCH - Search History (Interference)

There are no Interference searches to show.



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
18/811,158	08/21/2024	Eric D. PRESSLY	OLAP.P0007USC9/1001313621	1437
32425	7590	10/16/2024		
Norton Rose Fulbright US LLP 98 San Jacinto Blvd Suite 1100 Austin, TX 78701			EXAMINER BABSON, NICOLE PLOURDE	
			ART UNIT	PAPER NUMBER
			1619	
			NOTIFICATION DATE	DELIVERY MODE
			10/16/2024	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

aoipdocket@nortonrosefulbright.com

Notice of Pre-AIA or AIA Status

The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

DETAILED ACTION

Claims 1-17 are pending.

Information Disclosure Statement

Acknowledgement is made of Applicant's information disclosure statements (IDS) submitted on 9/9/24. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement has been considered by the examiner.

Claim Objections

Claim 10 is objected to because of the following informalities:

In claim 10, line 3 "emollients" should read "emollient".

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of 35 U.S.C. 112(b):

(B) CONCLUSION.—The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the inventor or a joint inventor regards as the invention.

The following is a quotation of 35 U.S.C. 112 (pre-AIA), second paragraph:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 16 is rejected under 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the inventor or a joint inventor, or for pre-AIA the applicant regards as the invention.

Claim 16 recites the limitation "the water, and the alcohol" in lines 1-2. There is insufficient antecedent basis for this limitation in the claim. Water and alcohol are not recited in claim 1.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on nonstatutory double patenting provided the reference application or patent either is shown to be commonly owned with the

examined application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement. See MPEP § 717.02 for applications subject to examination under the first inventor to file provisions of the AIA as explained in MPEP § 2159. See MPEP §§ 706.02(l)(1) - 706.02(l)(3) for applications not subject to examination under the first inventor to file provisions of the AIA. A terminal disclaimer must be signed in compliance with 37 CFR 1.321(b).

The USPTO Internet website contains terminal disclaimer forms which may be used. Please visit www.uspto.gov/patent/patents-forms. The filing date of the application in which the form is filed determines what form (e.g., PTO/SB/25, PTO/SB/26, PTO/AIA/25, or PTO/AIA/26) should be used. A web-based eTerminal Disclaimer may be filled out completely online using web-screens. An eTerminal Disclaimer that meets all requirements is auto-processed and approved immediately upon submission. For more information about eTerminal Disclaimers, refer to www.uspto.gov/patents/process/file/efs/guidance/eTD-info-I.jsp.

Claims 1-13 and 15-17 are rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-10 of U.S. Patent No. 9,095,518 as evidenced Softer Hair (<<https://softerhair.com/the-importance-of-using-a-ph-balanced-shampoo/>>; 7/12/19).

Although the claims at issue are not identical, they are not patentably distinct from each other because the patented claims require a method of using a compound of Formula I:



wherein

A, B, C, and D are reactive moieties capable of reacting with the free thiol groups and contain one or more charges, and wherein each of A, B, C, and D independently contains a moiety selected from the group consisting of a vinyl sulfone, an acrylate group, a methacrylate group, a styrene group, an acryl amide group, a methacryl amide group, a maleate group, a fumarate group, and an itaconate group;

R is a linker that contains two or more charges, wherein the charges are opposite to the charges on the reactive moieties, wherein $n=1-10$, and wherein R is not a polymer, and

wherein the sum of the charges is zero; and

wherein the reactive moieties are ionically bound to the linker;

wherein each occurrence of p, q, r, and s is independently an integer from 0 to 25, wherein the sum of $p+q+r+s$ is equal to or greater than 2.

of which the instant compound of claim 1 belongs.

Instant claims 1, 11-13 are met by '518 claim 1.

Instant claims 2-4, 10 and 16 are met by '518 claim 7 and 9.

Instant claims 5-9 are met by '518 claim 10.

Instant claim 15 is met by '518 claim 8.

Instant claim 17 is met by '518 claims 1 and 10, as evidenced by Softer Hair, which teaches that the pH for shampoo is between 5-7 (e.g. page 4).

Claims 1-13 and 15-17 are rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-12 of U.S. Patent No. 9,144,537 as evidenced Softer Hair (<<https://softerhair.com/the-importance-of-using-a-ph-balanced-shampoo/>>; 7/12/19).

Although the claims at issue are not identical, they are not patentably distinct from each other because the patented claims require a compound of Formula I:



wherein

A, B, C, and D are reactive moieties capable of reacting with the free thiol groups and contain one or more charges, and wherein each of A, B, C, and D independently contains a moiety selected from the group consisting of a vinyl sulfone, an acrylate group, a methacrylate group, a styrene group, an acryl amide group, a methacryl amide group, a maleate group, a fumarate group, and an itaconate group;

R is a linker that contains two or more charges, wherein the charges are opposite to the charges on the reactive moieties, wherein $n=1-10$, and wherein R is not a polymer, and

wherein the sum of the charges is zero; and

wherein the reactive moieties are ionically bound to the linker;

wherein each occurrence of p, q, r, and s is independently an integer from 0 to 25, wherein the sum of $p+q+r+s$ is equal to or greater than 2.

in an effective amount to covalently bind free thiol groups in hair, of which the instant compound of claim 1 belongs.

Instant claims 1, 11-13 are met by '537 claim 1.

Instant claims 2-4, 10 and 16 are met by '537 claims 7 and 9.

Instant claims 5-9 are met by '537 claim 12.

Instant claim 15 is met by '537 claim 8.

Instant claim 17 is met by '537 claims 1 and 12, as evidenced by Softer Hair, which teaches that the pH for shampoo is between 5-7 (e.g. page 4).

Claims 1, 5-9, 11-13, and 15 are rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-8 of U.S. Patent No. 9,717,668.

Although the claims at issue are not identical, they are not patentably distinct from each other because the patented claims require a method of using compound of Formula I:



wherein

A, B, C, and D are reactive moieties capable of reacting with the free thiol groups and contain one or more charges, and wherein each of A, B, C, and D independently contains a moiety selected from the group consisting of a vinyl sulfone, an acrylate group, a methacrylate group, a styrene group, an acryl amide group, a methacryl amide group, a maleate group, a fumarate group, and an itaconate group;

R is a linker that contains two or more charges, wherein the charges are opposite to the charges on the reactive moieties, wherein n=1-10, and wherein R is not a polymer, and

wherein the sum of the charges is zero; and

wherein the reactive moieties are ionically bound to the linker;

wherein each occurrence of p, q, r, and s is independently an integer from 0 to 25, wherein the sum of p+q+r+s is equal to or greater than 2,

of which the instant compound of claim 1 belongs.

Instant claims 1 and 11-13 are met by '668 claim 1.

Instant claims 5-9 are met by '668 claim 1 because the claims are directed to an intended use of the composition and no additional method steps for composition structure is set forth in the claims.

Instant claim 15 is met by '668 claims 3-6.

Claims 1-13 and 15-17 are rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-11 and 17-19 of U.S. Patent No. 9,855,447 as evidenced Softer Hair (<<https://softerhair.com/the-importance-of-using-a-ph-balanced-shampoo/>>; 7/12/19).

Although the claims at issue are not identical, they are not patentably distinct from each other because the patented claims require a compound of Formula I:



wherein

A, B, C, and D are reactive moieties capable of reacting with the free thiol groups and contain one or more charges, and wherein each of A, B, C, and D independently contains a moiety selected from the group consisting of a vinyl sulfone, an acrylate group, a methacrylate group, a styrene group, an acryl amide group, a methacryl amide group, a maleate group, a fumarate group, and an itaconate group;

R is a linker that contains two or more charges, wherein the charges are opposite to the charges on the reactive moieties, wherein $x=1-10$, and wherein R is not a polymer, and

wherein the sum of the charges is zero; and

wherein the reactive moieties are ionically bound to the linker;

wherein each occurrence of p, q, z, and s is independently an integer from 0 to 25, wherein the sum of $p+q+r+s$ is equal to or greater than 2,

in an effective amount to covalently bind free thiol groups in hair, of which the instant compound of claim 1 belongs.

Instant claims 1, 11-13 are met by '447 claim 1.

Instant claims 2-4, 10 and 16 are met by '447 claims 17 and 18

Instant claims 5-9 are met by '447 claims 2-11.

Instant claim 15 is met by '447 claims 5-7.

Instant claim 17 is met by '447 claims 1 and 10, as evidenced by Softer Hair, which teaches that the pH for shampoo is between 5-7 (e.g. page 4).

Claims 1-13 and 15-17 are rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1, 5-10 and 20 of U.S. Patent No. 11,446,525 as evidenced Softer Hair (<<https://softerhair.com/the-importance-of-using-a-ph-balanced-shampoo/>>; 7/12/19).

Although the claims at issue are not identical, they are not patentably distinct from each other because the patented claims require a compound of Formula I:



wherein

A, B, C, and D are reactive moieties capable of reacting with the free thiol groups and contain one or more charges, and wherein each of A, B, C, and D independently contains a moiety selected from the group consisting of a vinyl sulfone, an acrylate group, a methacrylate group, a styrene group, an acryl amide group, a methacryl amide group, a maleate group, a fumarate group, and an itaconate group;

R is a linker that contains two or more charges, wherein the charges are opposite to the charges on the reactive moieties, wherein $n=1-10$, and wherein R is not a polymer, and

wherein the sum of the charges is zero; and

wherein the reactive moieties are ionically bound to the linker;

wherein each occurrence of p, q, r, and s is independently an integer from 0 to 25, wherein the sum of $p+q+r+s$ is equal to or greater than 2,

of which the instant compound of claim 1 belongs.

Instant claims 1, 11-13 are met by '525 claims 1, 10 and 20.

Instant claims 2-4, 10 and 16 are met by '525 claims 8 and 9.

Instant claims 5 and 7-9 are met by '525 claim 10.

Instant claims 6-9 are met by '525 claim 20.

Instant claim 15 is met by '525 claims 5-7.

Instant claim 17 is met by '525 claims 1 and 10, as evidenced by Softer Hair, which teaches that the pH for shampoo is between 5-7 (e.g. page 4).

Allowable Subject Matter

Claim 14 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

No claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NICOLE PLOURDE BABSON whose telephone number is (571)272-3055. The examiner can normally be reached M-Th 8-4:30; F 8-12:30.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at <http://www.uspto.gov/interviewpractice>.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Blanchard can be reached on 571-272-0827. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of published or unpublished applications may be obtained from Patent Center. Unpublished application information in Patent Center is available to registered users. To file and manage patent submissions in Patent Center, visit: <https://patentcenter.uspto.gov>. Visit <https://www.uspto.gov/patents/apply/patent-center> for more information about Patent Center and <https://www.uspto.gov/patents/docx> for information about filing in DOCX format. For additional questions, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/NICOLE P BABSON/
Primary Examiner, Art Unit 1619



UNITED STATES
PATENT AND TRADEMARK OFFICE

P.O. Box 1450
Alexandria, VA 22313 - 1450
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TERMINAL DISCLAIMER TO OBVIATE A DOUBLE PATENTING REJECTION OVER A PRIOR PATENT

APPLICATION #	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET #
18811158	08/21/2024	Eric PRESSLY	OLAP.P0007USC9/1001313621

Title of Invention

METHODS FOR FIXING HAIR AND SKIN



Filing of terminal disclaimer does not obviate requirement for response under 37 CFR 1.111 to outstanding Office Action



This electronic Terminal Disclaimer is not being used for a Joint Research Agreement.

Owner	Percent interest
OLAPLEX, INC.	100%
Total	100%

The owner(s) of percent interest listed above in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application which would extend beyond the expiration date of the full statutory term of any patent granted on pending reference Application Number(s)

Application #	Filing Date
---------------	-------------

as the term of any patent granted on said reference application may be shortened by any terminal disclaimer filed prior to the grant of any patent on the pending reference application. The owner hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and any patent granted on the reference application are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.

In making the above disclaimer, the owner does not disclaim the terminal part of any patent granted on the instant application that would extend to the expiration date of the full statutory term of any patent granted on said reference application, "as the term of any patent granted on said reference application may be shortened by any terminal disclaimer filed prior to the grant of any patent on the pending reference application," in the event that any such patent granted on the pending reference application: expires for failure to pay a maintenance fee, is held unenforceable, is found invalid by a court of competent jurisdiction, is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321, has all claims canceled by a reexamination certificate, is reissued, or is in any manner terminated prior to the expiration of its full statutory term as shortened by any terminal disclaimer filed prior to its grant.

The owner(s) of percent interest listed above in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application which would extend beyond the expiration date of the full statutory term of prior patent number(s)

Patent #
9095518
9144537
9717668
9855447
11446525

as the term of said prior patent is presently shortened by any terminal disclaimer. The owner hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and the prior patent are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.

In making the above disclaimer, the owner does not disclaim the terminal part of the term of any patent granted on the instant application that would extend to the expiration date of the full statutory term of the prior patent, "as the term of said prior patent is presently shortened by any terminal disclaimer," in the event that said prior patent later:

- expires for failure to pay a maintenance fee;
- is held unenforceable;
- is found invalid by a court of competent jurisdiction;
- is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321;
- has all claims canceled by a reexamination certificate;
- is reissued; or

- is in any manner terminated prior to the expiration of its full statutory term as presently shortened by any terminal disclaimer.



Terminal disclaimer fee under 37 CFR 1.20(d) included with Electronic Terminal Disclaimer request.

Applicant claims the following entity status:

Regular Undiscounted

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

I certify, in accordance with 37 CFR 1.4(d)(4) that I am: An attorney or agent registered to practice before the Patent and Trademark Office who is of record in this application

Signature	Name	Registration #
/Michael Krawzsenek/	Michael Krawzsenek	51898

* Statement under 37 CFR 3.73(b) is required if terminal disclaimer is signed by the assignee (owner). Form PTO/SB/96 may be used for making this certification. See MPEP 324.



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APPROVAL LETTER

APPLICATION #
18/811,158

FILING DATE
08/21/2024

APPLICANT/PATENT UNDER REEXAMINATION
Eric PRESSLY

Title of Invention

METHODS FOR FIXING HAIR AND SKIN

Electronic terminal disclaimer filed on 10/21/2024

 Approved

This patent is subject to a Terminal Disclaimer

Approved / Disapproved by: Electronic Terminal Disclaimer automatically approved



ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
18/811,158	10/21/2024 11:53:22 AM Z ET	OLAP.P0007USC9/1001313621

Title of Invention

METHODS FOR FIXING HAIR AND SKIN

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	1437	FILED BY	Michael KrawzseneK
PATENT CENTER #	67647479	FILING DATE	08/21/2024
CUSTOMER #	32425	FIRST NAMED INVENTOR	Eric D. PRESSLY
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	-

Documents

TOTAL DOCUMENTS: 2

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
petition-request.pdf	3	Terminal Disclaimer-Filed (Electronic)	46 KB
grantLetter.pdf	1	Terminal Disclaimer-Electronic-Approved	18 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
petition-request.pdf	A84C90BA5B7FF9C41DF2C84DAD79DE1C3EDFEAFCEE131287EBFB0C1EF5A1BD2CABA02D2E158FF0EE8BF1DDA1FC44144855CC852D9A1908251157D2905EB7A4DC
grantLetter.pdf	597438CEFCB16DDEB88F1E7BC91B6A5739B51BAD14D221A6

7BA422A36F8B91EE55492F6B581735BA95EF7BF45750D9772
BFE6B4B4486EFFB8353BA6C03B0C633

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.



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Page 1 of 2
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ELECTRONIC PAYMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
18/811,158	10/21/2024 11:53:22 AM Z ET	OLAP.P0007USC9/1001313621

Title of Invention

METHODS FOR FIXING HAIR AND SKIN

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	1437	FILED BY	Michael Krawzsenek
PATENT CENTER #	67647479	AUTHORIZED BY	-
CUSTOMER #	32425	FILING DATE	08/21/2024
CORRESPONDENCE ADDRESS	-	FIRST NAMED INVENTOR	Eric D. PRESSLY

Payment Information

PAYMENT METHOD	PAYMENT TRANSACTION ID	PAYMENT AUTHORIZED BY
DA / 501212	E20240KB53328226	Michael Krawzsenek

FEE CODE	DESCRIPTION	ITEM PRICE(\$)	QUANTITY	ITEM TOTAL(\$)
1814	STATUTORY DISCLAIMER, INCLUDING TERMINAL DISCLAIMER	170.00	1	170.00
TOTAL AMOUNT:				\$170.00

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New Applications Under 35 U.S.C. 111

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371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

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ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
18/811,158	10/21/2024 11:56:51 AM Z ET	OLAP.P0007USC9/1001313621

Title of Invention

METHODS FOR FIXING HAIR AND SKIN

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	1437	FILED BY	Pam Gerik
PATENT CENTER #	67647654	FILING DATE	08/21/2024
CUSTOMER #	32425	FIRST NAMED INVENTOR	Eric D. PRESSLY
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Michael KrawzseneK

Documents

TOTAL DOCUMENTS: 3

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
OLAP.P0007US.C9 - Response.pdf	5	-	126 KB
OLAP.P0007US.C9 - Response-A....pdf	(1-1) 1	Amendment/Request for Reconsideration-After Non-Final Rejection	96 KB
OLAP.P0007US.C9 - Response-CLM.pdf	(2-3) 2	Claims	89 KB
OLAP.P0007US.C9 - Response-REM.pdf	(4-5) 2	Applicant Arguments/Remarks Made in an Amendment	97 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
OLAP.P0007US.C9 - Response.pdf	729B1E77E1EDAC1EDA334AE689E88F96E01EE74DFDEAD0A 5E1B0F0E77EBEEB994A32E73C27DE942EA78249A958598FA1 798DF08751655CD26D588594E4C253B4
OLAP.P0007US.C9 - Response-A....pdf	7750E0B2D4992B9A8038A53FC3328430F97223A40E46BD74C EE5A83C0FE4E57B7718F1D8847BA275495C37F300E06E5EE1 CB0F106A80760FD9A182D0F9767173
OLAP.P0007US.C9 - Response-CLM.pdf	2AB76EBD96FE01E815EE15831EC09234995D311EBC7502260 61A3A541869FF25B7474655976139DD1189F593FBA722274DE 0A467FE1398B6FB927112B128844A
OLAP.P0007US.C9 - Response-REM.pdf	2F53DDD5EFECE5EF531AC1453A1BA559C22C05F952E03CB9 472166967D6BA5DE00F88BC8E8AC69606255AB4EF91123780 D3A87925BDFAA29895A414F33F98CF3

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Title: METHODS FOR FIXING HAIR AND SKIN
App. No.: 18/811,158
Applicant: Olaplex, Inc.
First named inventor: Eric D. PRESSLY
Filed: October 16, 2024
Art Unit: 1619
Examiner: Nicole Plourde Babson
Docket No.: OLAP.P0007US.C9/1001313621
Customer No.: 32425
Confirmation No.: 1437

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

CERTIFICATE OF ELECTRONIC TRANSMISSION 37 C.F.R. § 1.8	
I hereby certify that this correspondence is being electronically filed with the United States Patent and Trademark Office via EFS-Web on the date below:	
October 21, 2024	/Michael R. Krawzsenek/
Date	Michael R. Krawzsenek

RESPONSE TO THE OFFICE ACTION OF OCTOBER 16, 2024

Commissioner:

This paper is submitted in response to the non-final Office Action of October 16, 2024 (“Action”). Although no fees are believed to be due, the Commissioner is authorized to withdraw deficient fees from Norton Rose Fulbright US LLP deposit account no. 50-1212.

Amendments to the Claims are reflected in the listing of claims beginning on page 2.

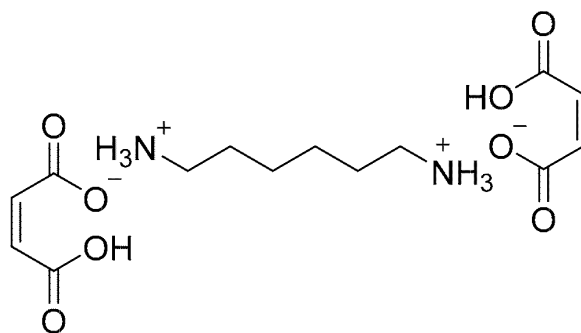
Remarks begin on page 4.

Amendments to the Claims

This listing of claims will replace all prior versions of claims in the application.

Listing of the Claims:

1. (original) A method of treating keratin of a person, the method comprising contacting the keratin with a composition comprising a compound having a chemical structure of:



2. (original) The method of claim 1, wherein the composition further comprises water and an alcohol.
3. (original) The method of claim 2, wherein the composition comprises greater than 1 wt. % water.
4. (original) The method of claim 2, wherein the alcohol comprises ethyl alcohol.
5. (original) The method of claim 1, wherein the composition is in the form of a shampoo.
6. (original) The method of claim 1, wherein the composition is in the form of a conditioner.
7. (original) The method of claim 1, wherein the composition is in the form of a gel.
8. (original) The method of claim 1, wherein the composition is in the form of a cream.
9. (original) The method of claim 1, wherein the composition is in the form of a liquid.
10. (currently amended) The method of claim 1, wherein the composition further comprises a cosmetically acceptable excipient comprising a surfactant, a vitamin, a preservative, an antioxidant, an ~~emollients~~ emollient, or a pH adjusting agent, or any combination thereof.

11. (original) The method of claim 1, wherein the compound binds to a free thiol in the keratin.
12. (original) The method of claim 1, wherein the compound binds to the keratin through a covalent bond.
13. (original) The method of claim 1, wherein the keratin is comprised in the person's hair and the composition is applied to the person's hair.
14. (original) The method of claim 1, wherein the keratin is comprised in the person's skin and the composition is applied to the person's skin.
15. (original) The method of claim 1, wherein the composition comprises 0.01 wt. % to 25 wt. % of the compound.
16. (currently amended) The method of claim 1, wherein the composition consists of the compound, ~~[[the]]~~ water, and ~~[[the]]~~ an alcohol.
17. (original) The method of claim 1, wherein the composition has a pH of 5 to 8.

Remarks

A. Status of the Claims

Claim 10 is revised by changing “emollients” to “emollient” in view of the Examiner’s suggestion.

Claim 16 is revised to provide antecedent basis for water and alcohol.

Applicant respectfully submits that non-limiting support for these revisions can be found throughout the specification and claims as originally filed. No new matter is added with these revisions.

Claims 1-17 are pending.

B. Allowable Subject Matter

Applicant appreciates the Examiner’s indication at page 10 of the Office Action that claim 14 includes allowable subject matter. Applicant respectfully submits that all of the pending claims are allowable for at least the following reasons.

C. Claim Objection

Applicant respectfully requests that the objection of claim 10 be withdrawn in view of the revisions made to this claim.

D. Indefiniteness Rejection

Claim 16 is rejected under 35 U.S.C. § 112 (b) for allegedly being indefinite. Applicant respectfully submits that this rejection is moot in view of the revisions made to claim 16. Applicant requests that this rejection be withdrawn for at least this reason.

E. Obviousness-Type Double Patenting Rejections

The following obviousness-type double patenting rejections are presented:

- (1) Claims 1-13 and 15-17 are rejected in view of claims 1-10 of US Pat. 9,095,518;
- (2) Claims 1-13 and 15-17 are rejected in view of claims 1-12 US Pat. 9,144,537;

- (3) Claims 1, 5-9, 11-13, and 15 are rejected in view of claims 1-8 of US Pat. 9,717,668;
- (4) Claims 1-13 and 15-17 are rejected in view of claims 1-11 and 17-19 of US Pat. 9,855,447; and
- (5) Claims 1-13 and 15-17 are rejected in view of claims 1, 5-10, and 20 of US Pat. 11,446,525.

Applicant respectfully notes that a terminal disclaimer is being filed herewith in a separate paper identifying each of the referenced patents. In view of the terminal disclaimer, Applicant respectfully requests withdrawal of this rejection.

F. Conclusion

Applicant respectfully submits that this case is in a condition for allowance. The Examiner is invited to contact Applicant's representative with any questions, comments or suggestions relating to the referenced patent application.

Date: October 21, 2024

Respectfully submitted,
/Michael R. Krawzsenek/
Michael R. Krawzsenek
Reg. No. 51,898
Attorney for Applicant

NORTON ROSE FULBRIGHT US LLP
98 San Jacinto Blvd, Suite 1100
Austin, Texas 78701
(512) 536-3020 (voice)

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875			Application or Docket Number 18/811,158		Filing Date 08/21/2024		☐ To be Mailed	
ENTITY: ☒ LARGE ☐ SMALL ☐ MICRO								
APPLICATION AS FILED - PART I								
		(Column 1)	(Column 2)					
FOR		NUMBER FILED	NUMBER EXTRA		RATE (\$)		FEE (\$)	
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))		N/A	N/A		N/A			
☐ SEARCH FEE (37 CFR 1.16(k), (l), or (m))		N/A	N/A		N/A			
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))		N/A	N/A		N/A			
TOTAL CLAIMS (37 CFR 1.16(i))		minus 20 =	*		x \$100 =			
INDEPENDENT CLAIMS (37 CFR 1.16(h))		minus 3 =	*		x \$480 =			
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))		If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))								
* If the difference in column 1 is less than zero, enter "0" in column 2.					TOTAL			
APPLICATION AS AMENDED - PART II								
		(Column 1)	(Column 2)		(Column 3)			
AMENDMENT	10/21/2024	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)	
	Total (37 CFR 1.16(i))	* 17	Minus	** 20	= 0	x \$100 =	0	
	Independent (37 CFR 1.16(h))	* 1	Minus	*** 3	= 0	x \$480 =	0	
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
						TOTAL ADD'L FEE	0	
AMENDMENT		(Column 1)		(Column 2)	(Column 3)			
		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)	
	Total (37 CFR 1.16(i))	*	Minus	**	=	x \$0 =		
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x \$0 =		
	☐ Application Size Fee (37 CFR 1.16(s))							
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))								
						TOTAL ADD'L FEE		
* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.						PARALEGAL		
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".						/MANUEL SALDANA JR/		
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".								
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.								

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**
If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.



United States Patent and Trademark Office

Office of the Commissioner for Patents

Dear Applicant,

You recently received an Office action from your examiner. Review of your patent application is under way! You can continue to advertise or mark any products covered by your application for your invention as "Patent Pending" for as long as this application is pending. This letter provides information about how to continue through the patent application process and the help available to you on your journey.

Where are you in the patent application process? Your patent application is now in step 3, Application Prosecution (www.uspto.gov/UtilityPatentGuide.) Though the Office action includes a "rejection," that does not mean that you don't have a good idea you can patent. It means your examiner believes your application is not yet ready for allowance.

Ready to respond? Responding to the Office action is your opportunity to address the issues raised by your examiner. Responses must be timely, complete, and in writing. In your response, you may want to consider amending your application (www.uspto.gov/patents/maintain/responding-office-actions).

We provide Pro Se Assistance, support specifically geared for independent inventors without an agent or attorney. Visit www.uspto.gov/ProSePatents for a consolidated list of resources, including a sample amendment format. Full description of amendment formatting can be found at www.uspto.gov/web/offices/pac/mpep/s714.html. Call us at 866-767-3848, or email proseassistancecenter@uspto.gov.

Have questions about the Office action? Contact your examiner! A conversation with your examiner (called an "interview") may help clarify and resolve any issues and possibly identify what you can patent. While an interview does not stop the clock for your official response or substitute for a response, there is no fee for an interview. To schedule a call or video, you can:

1. use the USPTO's Automated Interview Request (AIR) form (www.uspto.gov/patents/uspto-automated-interview-request-air-form);
2. file the Applicant Initiated Interview Request form (PTOL-413A) (www.uspto.gov/sites/default/files/documents/PTOL413A.pdf); or
3. contact your examiner directly via telephone (contact information is provided at the end of your Office action).

Need help near you? We have regional offices across the country (www.uspto.gov/locations), as well as Patent and Trademark Resource Centers in libraries in nearly every state (www.uspto.gov/ptrc), with specialists standing by to help you at no cost.

Become a registered electronic filer (registered eFiler). As a registered eFiler, you can electronically view your submission, track progress of your application, and respond to USPTO correspondence. (www.uspto.gov/NewPatentFilers)

Contact us

- General information: USPTO Contact Center — 800-786-9199 • TTY/TDD 800-877-8339 • www.uspto.gov/help
- Patent Center: Patent Electronic Business Center www.uspto.gov/EBC
- Inventors Assistance Center www.uspto.gov/inventorassistance

Want to learn more?

- Hear about resources for startups, inventors, and entrepreneurs, as well as our initiatives engaging women, the military community, and others. These programs offer helpful tips and tricks on identifying and managing your IP, finding options for funding, and expanding your network to support your business.
 - www.uspto.gov/startups
 - www.uspto.gov/inventors
 - www.uspto.gov/initiatives
- Access our free services all in one spot. Find all of our contact centers, nationwide services, events, education and training. (www.uspto.gov/FreeServices)
- Connect with us on Instagram, LinkedIn, Twitter, Facebook, and YouTube.
- Hear about the great things we are doing by subscribing at www.uspto.gov/subscribe.

Best,

Vaishali Udupa
Commissioner for Patents
United States Patent and Trademark Office

<i>Search Notes</i> 	Application/Control No. 18/811,158	Applicant(s)/Patent Under Reexamination PRESSLY et al.
	Examiner NICOLE P BABSON	Art Unit 1619

CPC - Searched*		
Symbol	Date	Examiner

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

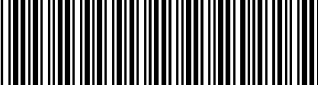
US Classification - Searched*			
Class	Subclass	Date	Examiner

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
PDP Inventor search	10/10/2024	NPB
PE2E Search	10/10/2024	NPB
Search histories of parent cases	10/10/2024	NPB
PE2E Search	10/29/2024	NPB

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner
A61K	8/22 and 2800/94	10/29/2024	NPB

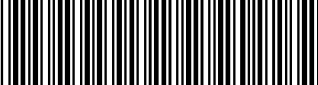
/NICOLE P BABSON/ Primary Examiner, Art Unit 1619	
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Issue Classification 	Application/Control No. 18/811,158	Applicant(s)/Patent Under Reexamination PRESSLY et al.
	Examiner NICOLE P BABSON	Art Unit 1619

CPC						
Symbol					Type	Version
A61Q	/	5	/	12	F	2013-01-01
A61Q	/	5	/	10	I	2013-01-01
A61K	/	8	/	45	I	2013-01-01
A61K	/	8	/	365	I	2013-01-01
A61Q	/	19	/	007	I	2013-01-01
A61K	/	8	/	41	I	2013-01-01
A61K	/	8	/	0204	I	2013-01-01
A61Q	/	5	/	08	I	2013-01-01
A61K	/	8	/	36	I	2013-01-01
A61Q	/	5	/	02	I	2013-01-01
A61K	/	8	/	0216	I	2013-01-01
A61Q	/	5	/	04	I	2013-01-01
A61K	/	8	/	362	I	2013-01-01
A61Q	/	5	/	004	I	2013-01-01
A61Q	/	5	/	002	I	2013-01-01
A61K	/	8	/	46	I	2013-01-01
A61K	/	8	/	40	I	2013-01-01
A61K	/	8	/	22	I	2013-01-01
A61K	/	8	/	447	I	2013-01-01
A61K	/	2800	/	70	A	2013-01-01
A61K	/	2800	/	94	A	2013-01-01
A61K	/	2800	/	596	A	2013-01-01
A61K	/	2800	/	884	A	2013-01-01
A61K	/	2800	/	42	A	2013-01-01

CPC Combination Sets				
Symbol	Type	Set	Ranking	Version
/				

Use images from artifact folder? ☒ Yes ☐ No			
NONE (Assistant Examiner)		Total Claims Allowed: 17	
/NICOLE P BABSON/ Primary Examiner, Art Unit 1619 (Primary Examiner)		29 October 2024 (Date)	O.G. Print Claim(s) 1
			O.G. Print Figure -

Issue Classification 	Application/Control No. 18/811,158	Applicant(s)/Patent Under Reexamination PRESSLY et al.
	Examiner NICOLE P BABSON	Art Unit 1619

INTERNATIONAL CLASSIFICATION				
CLAIMED				
A61K8/45	/	8	/	45
A61K8/365	/	8	/	365
A61Q19/00	/	19	/	00
A61K8/41	/	8	/	41
A61K8/36	/	8	/	36
A61K8/362	/	8	/	362
A61Q5/00	/	5	/	00
A61K8/40	/	8	/	40
A61K8/22	/	8	/	22
A61K8/44	/	8	/	44

NON-CLAIMED				
A61Q5/12	/	5	/	12
A61Q5/10	/	5	/	10
A61K8/02	/	8	/	02
A61Q5/08	/	5	/	08
A61Q5/02	/	5	/	02
A61Q5/04	/	5	/	04
A61K8/46	/	8	/	46

US ORIGINAL CLASSIFICATION	
CLASS	SUBCLASS

CROSS REFERENCES(S)						
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)					

Use images from artifact folder? ☒ Yes ☐ No			
NONE		Total Claims Allowed:	
(Assistant Examiner)		17	
/NICOLE P BABSON/ Primary Examiner, Art Unit 1619		29 October 2024	
(Primary Examiner)		O.G. Print Claim(s)	O.G. Print Figure
		1	-

Issue Classification 	Application/Control No. 18/811,158	Applicant(s)/Patent Under Reexamination PRESSLY et al.
	Examiner NICOLE P BABSON	Art Unit 1619

☒ Claims renumbered in the same order as presented by applicant ☐ CPA ☒ T.D. ☐ R.1.47															
CLAIMS															
Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original

Use images from artifact folder? ☒ Yes ☐ No			
NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	17	
/NICOLE P BABSON/ Primary Examiner, Art Unit 1619	29 October 2024	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	-

PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L1	195	((("PRESSLY") near3 ("Eric")) OR ((("HAWKER") near3 ("Craig"))).INV.	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	ADJ	ON	ON	2024/10/03 04:23 PM
L2	207	((("PRESSLY") near3 ("Eric")) OR ((("HAWKER") near3 ("Craig"))).INV. OR olaplex.as.	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	ADJ	ON	ON	2024/10/03 04:23 PM
L3	99	((("PRESSLY") near3 ("Eric")) OR ((("HAWKER") near3 ("Craig"))).INV. OR olaplex.as.	(USPAT; DERWENT)	ADJ	ON	ON	2024/10/08 05:37 PM
L4	199	((("PRESSLY") near3 ("Eric")) OR ((("HAWKER") near3 ("Craig"))).INV. OR olaplex.as. AND keratin	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	ADJ	ON	ON	2024/10/09 12:29 PM
L5	195	((("PRESSLY") near3 ("Eric")) OR ((("HAWKER") near3 ("Craig"))).INV. OR olaplex.as. AND kthiol	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	ADJ	ON	ON	2024/10/09 12:35 PM
L6	107	((("PRESSLY") near3 ("Eric")) OR ((("HAWKER") near3 ("Craig"))).INV. OR olaplex.as.) AND thiol	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	ADJ	ON	ON	2024/10/09 12:35 PM
L7	18	((("PRESSLY") near3 ("Eric")) OR ((("HAWKER") near3 ("Craig"))).INV. OR olaplex.as.) AND thiol AND di-maleate	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	ADJ	ON	ON	2024/10/09 12:36 PM
L8	1	((("PRESSLY") near3 ("Eric")) OR ((("HAWKER") near3 ("Craig"))).INV. OR olaplex.as.) AND skin.clm.	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	ADJ	ON	ON	2024/10/09 03:30 PM
L9	5	"9855447".pn.	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	ADJ	ON	ON	2024/10/09 03:32 PM
L10	15	((("PRESSLY") near3 ("Eric")) OR ((("HAWKER") near3 ("Craig"))).INV. OR olaplex.as.) AND thiol	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	ADJ	ON	ON	2024/10/10 12:58 PM

L11	5	AND shampoo.clm. "9717668".pn.	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	ADJ	ON	ON	2024/10/10 01:52 PM
L12	17	((("PRESSLY") near3 ("Eric")) OR (("HAWKER") near3 ("Craig"))).INV. OR olaplex.as.) AND (bind SAME thiol)	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	ADJ	ON	ON	2024/10/29 11:58 AM
L13	515	A61K2800/94.cpc.	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	ADJ	ON	ON	2024/10/29 12:03 PM
L14	207	A61K2800/94.cpc. AND thiol	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	ADJ	ON	ON	2024/10/29 12:04 PM
L15	0	A61K8/22.cpc. AND A621K2800/94.cpc.	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	ADJ	ON	ON	2024/10/29 12:06 PM

PE2E SEARCH - Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
N1	0	A61K8/22.cpc. AND A621K2800/94.cpc.	(US-PGPUB; USPAT)	ADJ	ON	ON	2024/10/29 12:06 PM
N2	18	A61K8/22.cpc. AND A61K2800/94.cpc.	(US-PGPUB; USPAT)	ADJ	ON	ON	2024/10/29 12:06 PM

Bibliographic Data

Application No: 18/811,158

Foreign Priority claimed: ☐ Yes ☒ No

35 USC 119 (a-d) conditions met: ☐ Yes ☒ No ☐ Met After Allowance

Verified and Acknowledged: /NICOLE P BABSON/

Examiner's Signature

Initials

Title:

METHODS FOR FIXING HAIR AND SKIN

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
08/21/2024	424	1619	OLAP.P0007USC9/10013136 21
RULE			

APPLICANTS

OLAPLEX, INC., Santa Barbara, CA, UNITED STATES

INVENTORS

Eric D. PRESSLY, Santa Barbara, CA, UNITED STATES

Craig J. Hawker, Santa Barbara, CA, UNITED STATES

CONTINUING DATA

This application is a CON of 18177011 03/01/2023

18177011 is a CON of 17941675 09/09/2022

17941675 is a CON of 16830789 03/26/2020 PAT 11446525

16830789 is a CON of 15854504 12/26/2017 PAT 10639505

15854504 is a CON of 14835223 08/25/2015 PAT 9855447

14835223 is a CON of 14748831 06/24/2015 PAT 9144537

14748831 is a CON of 14459012 08/13/2014 PAT 9095518

14459012 is a CIP of PCT/US2014/049388 08/01/2014

PCT/US2014/049388 has PRO of 62000340 05/19/2014

PCT/US2014/049388 is a CIP of 14257076 04/21/2014ABN

PCT/US2014/049388 is a CIP of 14257089 04/21/2014ABN

PCT/US2014/049388 is a CIP of 14257056 04/21/2014ABN

PCT/US2014/049388 has PRO of 61903239 11/12/2013

PCT/US2014/049388 has PRO of 61885898 10/02/2013

PCT/US2014/049388 has PRO of 61867872 08/20/2013

PCT/US2014/049388 has PRO of 61861281 08/01/2013

FOREIGN APPLICATIONS

IF REQUIRED, FOREIGN LICENSE GRANTED**

08/30/2024

STATE OR COUNTRY

UNITED STATES

ADDRESS

Norton Rose Fulbright US LLP
98 San Jacinto Blvd
Suite 1100
Austin, TX 78701
UNITED STATES

FILING FEE RECEIVED

\$6,160



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

32425 7590 11/12/2024
Norton Rose Fulbright US LLP
98 San Jacinto Blvd
Suite 1100
Austin, TX 78701

EXAMINER

BABSON, NICOLE PLOURDE

ART UNIT

PAPER NUMBER

1619

DATE MAILED: 11/12/2024

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
18/811,158	08/21/2024	Eric D. PRESSLY	OLAP.P0007USC9/1001313621	1437

TITLE OF INVENTION: METHODS FOR FIXING HAIR AND SKIN

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$1200	\$0.00	\$0.00	\$1200	02/12/2025

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 40% the amount of undiscounted fees, and micro entity fees are 20% the amount of undiscounted fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Maintenance fees are due in utility patents issuing on applications filed on or after Dec. 12, 1980. It is patentee's responsibility to ensure timely payment of maintenance fees when due. More information is available at www.uspto.gov/PatentMaintenanceFees.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via the USPTO patent electronic filing system.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications. **Because electronic patent issuance may occur shortly after issue fee payment, any desired continuing application should preferably be filed prior to payment of this issue fee in order not to jeopardize copendency.**

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

32425 7590 11/12/2024
Norton Rose Fulbright US LLP
98 San Jacinto Blvd
Suite 1100
Austin, TX 78701

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being transmitted to the USPTO via the USPTO patent electronic filing system or by facsimile to (571) 273-2885, on the date below.

(Typed or printed name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
18/811,158	08/21/2024	Eric D. PRESSLY	OLAP.P0007USC9/1001313621	1437

TITLE OF INVENTION: METHODS FOR FIXING HAIR AND SKIN

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$1200	\$0.00	\$0.00	\$1200	02/12/2025

EXAMINER	ART UNIT	CLASS-SUBCLASS
BABSON, NICOLE PLOURDE	1619	424-062000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/AIA/122 or PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/AIA/47 or PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) The names of up to 3 registered patent attorneys or agents OR, alternatively, 1 _____

(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 _____

3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. Fees submitted: ☐ Issue Fee ☐ Publication Fee (if required)

4b. Method of Payment: (Please first reapply any previously paid fee shown above)

☐ Electronic Payment via the USPTO patent electronic filing system ☐ Enclosed check ☐ Non-electronic payment by credit card (Attach form PTO-2038)

☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. _____

5. Change in Entity Status (from status indicated above)

☐ Applicant certifying micro entity status. See 37 CFR 1.29

☐ Applicant asserting small entity status. See 37 CFR 1.27

☐ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____

Date _____

Typed or printed name _____

Registration No. _____



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
18/811,158	08/21/2024	Eric D. PRESSLY	OLAP.P0007USC9/1001313621	1437
32425 7590 11/12/2024 Norton Rose Fulbright US LLP 98 San Jacinto Blvd Suite 1100 Austin, TX 78701			EXAMINER BABSON, NICOLE PLOURDE	
			ART UNIT 1619	PAPER NUMBER
DATE MAILED: 11/12/2024				

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. The United States Patent and Trademark Office (USPTO) collects the information in this record under authority of 35 U.S.C. 2. The USPTO's system of records is used to manage all applicant and owner information including name, citizenship, residence, post office address, and other information with respect to inventors and their legal representatives pertaining to the applicant's/owner's activities in connection with the invention for which a patent is sought or has been granted. The applicable Privacy Act System of Records Notice for the information collected in this form is COMMERCE/PAT-TM-7 Patent Application Files, available in the Federal Register at 78 FR 19243 (March 29, 2013).

<https://www.govinfo.gov/content/pkg/FR-2013-03-29/pdf/2013-07341.pdf>

Routine uses of the information in this record may include disclosure to:

- 1) law enforcement, in the event that the system of records indicates a violation or potential violation of law;
- 2) a federal, state, local, or international agency, in response to its request;
- 3) a contractor of the USPTO having need for the information in order to perform a contract;
- 4) the Department of Justice for determination of whether the Freedom of Information Act (FOIA) requires disclosure of the record;
- 5) a Member of Congress submitting a request involving an individual to whom the record pertains, when the individual has requested the Member's assistance with respect to the subject matter of the record;
- 6) a court, magistrate, or administrative tribunal, in the course of presenting evidence, including disclosures to opposing counsel in the course of settlement negotiations;
- 7) the Administrator, General Services Administration (GSA), or their designee, during an inspection of records conducted by GSA under authority of 44 U.S.C. 2904 and 2906, in accordance with the GSA regulations and any other relevant (i.e., GSA or Commerce) directive, where such disclosure shall not be used to make determinations about individuals;
- 8) another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c));
- 9) the Office of Personnel Management (OPM) for personnel research purposes; and
- 10) the Office of Management and Budget (OMB) for legislative coordination and clearance.

If you do not furnish the information requested on this form, the USPTO may not be able to process and/or examine your submission, which may result in termination of proceedings, abandonment of the application, and/or expiration of the patent.

Notice of Allowability	Application No. 18/811,158	Applicant(s) PRESSLY et al.	
	Examiner NICOLE P BABSON	Art Unit 1619	AIA (FITF) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 10/21/24.
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

3. ☒ The allowed claim(s) is/are 1-17. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:
a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)
1. ☐ Notice of References Cited (PTO-892)
2. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____.
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material _____.
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____.
5. ☐ Examiner's Amendment/Comment
6. ☒ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

/NICOLE P BABSON/ Primary Examiner, Art Unit 1619	
--	--

Notice of Pre-AIA or AIA Status

The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

DETAILED ACTION

The Applicant's reply filed on 10/21/24 is acknowledged. Claims 1-17 are pending and are under consideration.

Terminal Disclaimer

The terminal disclaimer filed on 10/21/24 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of **9,095,518; 9,144,537; 9,717,668; 9,855,447; and 11,446,525** has been reviewed and is accepted. The terminal disclaimer has been recorded.

REASONS FOR ALLOWANCE

The following is an examiner's statement of reasons for allowance: The claimed methods are novel and non-obvious over the teachings of the prior art. The Examiner was unable to find prior art including the method step of contacting keratin with the claimed compound.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Claims 1-17 are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NICOLE PLOURDE BABSON whose telephone number is (571)272-3055.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at <http://www.uspto.gov/interviewpractice>.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Blanchard can be reached on 571-272-0827. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of published or unpublished applications may be obtained from Patent Center. Unpublished application information in Patent Center is available to registered users. To file and manage patent submissions in Patent Center, visit: <https://patentcenter.uspto.gov>. Visit <https://www.uspto.gov/patents/apply/patent-center> for more information about Patent Center and <https://www.uspto.gov/patents/docx> for information about filing in DOCX format. For additional questions, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/NICOLE P BABSON/
Primary Examiner, Art Unit 1619



UNITED STATES
PATENT AND TRADEMARK OFFICE

Page 1 of 2
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ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
18/811,158	11/19/2024 07:57:49 PM Z ET	OLAP.P0007USC9/1001313621

Title of Invention

METHODS FOR FIXING HAIR AND SKIN

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	1437	FILED BY	Pam Gerik
PATENT CENTER #	68030922	FILING DATE	08/21/2024
CUSTOMER #	32425	FIRST NAMED INVENTOR	Eric D. PRESSLY
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Michael Krawzsenek

Documents

TOTAL DOCUMENTS: 1

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
OLAP.P0007US.C9 - issue fee.pdf	1	Issue Fee Payment (PTO-85B)	182 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
OLAP.P0007US.C9 - issue fee.pdf	B288AD20DE70008C5F40311E8F1FCDA866B44C6B758F67487 F72F39E03132E5A30C2FF3458FA82AD8EBAA584C86649E77A B9940DA7AD81D3080A179E53A653A8

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.



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ELECTRONIC PAYMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
18/811,158	11/19/2024 07:57:49 PM Z ET	OLAP.P0007USC9/1001313621

Title of Invention

METHODS FOR FIXING HAIR AND SKIN

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CONFIRMATION #	1437	FILED BY	Pam Gerik
PATENT CENTER #	68030922	AUTHORIZED BY	Michael Krawzseneck
CUSTOMER #	32425	FILING DATE	08/21/2024
CORRESPONDENCE ADDRESS	-	FIRST NAMED INVENTOR	Eric D. PRESSLY

Payment Information

PAYMENT METHOD	PAYMENT TRANSACTION ID	PAYMENT AUTHORIZED BY
CARD / 4885	E2024AIJ58219902	Pam Gerik

FEE CODE	DESCRIPTION	ITEM PRICE(\$)	QUANTITY	ITEM TOTAL(\$)
1501	UTILITY ISSUE FEE	1200.00	1	1200.00
TOTAL AMOUNT:				\$1,200.00

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application

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New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via the USPTO patent electronic filing system.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications. **Because electronic patent issuance may occur shortly after issue fee payment, any desired continuing application should preferably be filed prior to payment of this issue fee in order not to jeopardize copendency.**

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

32425 7590 11/12/2024
Norton Rose Fulbright US LLP
98 San Jacinto Blvd
Suite 1100
Austin, TX 78701

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being transmitted to the USPTO via the USPTO patent electronic filing system or by facsimile to (571) 273-2885, on the date below.

Pam Gerik	(Typed or printed name)
/Pam Gerik/	(Signature)
November 19, 2024	(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
18/811,158	08/21/2024	Eric D. PRESSLY	OLAP.P0007USC9/1001313621	1437

TITLE OF INVENTION: METHODS FOR FIXING HAIR AND SKIN

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$1200	\$0.00	\$0.00	\$1200	02/12/2025

EXAMINER	ART UNIT	CLASS-SUBCLASS
BABSON, NICOLE PLOURDE	1619	424-062000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/AIA/122 or PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/AIA/47 or PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,

(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 NORTON ROSE FULBRIGHT US LLP

2 _____

3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE
OLAPLEX, INC.

(B) RESIDENCE: (CITY and STATE OR COUNTRY)
SANTA BARBARA, CALIFORNIA

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☒ Corporation or other private group entity ☐ Government

4a. Fees submitted: ☒ Issue Fee ☐ Publication Fee (if required)

4b. Method of Payment: (Please first reapply any previously paid fee shown above)

☒ Electronic Payment via the USPTO patent electronic filing system ☐ Enclosed check ☐ Non-electronic payment by credit card (Attach form PTO-2038)

☒ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. _____

5. Change in Entity Status (from status indicated above)

☐ Applicant certifying micro entity status. See 37 CFR 1.29

☐ Applicant asserting small entity status. See 37 CFR 1.27

☐ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature /Michael R. Krawzsenek/

Date November 19, 2024

Typed or printed name Michael R. Krawzsenek

Registration No. 51898



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United States Patent and Trademark Office
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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
18/811,158	08/21/2024	Eric D. PRESSLY	OLAP.P0007USC9/1001313621

CONFIRMATION NO. 1437

32425
Norton Rose Fulbright US LLP
98 San Jacinto Blvd
Suite 1100
Austin, TX 78701

PUBLICATION NOTICE



OC000000081846203

Date Mailed: 12/12/2024

Title:METHODS FOR FIXING HAIR AND SKIN

Publication No.US-2024-0408419-A1

Publication Date:12/12/2024

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be viewed using the USPTO's publicly available Searchable Databases via the Patent Public Search tool at www.uspto.gov. The direct link to access the Patent Public Search tool is currently <https://ppubs.uspto.gov/pubwebapp/static/pages/ppubsbasic.html>.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Public Records Division. The Public Records Division can be reached by telephone at (571) 272-3150 or (800) 972-6382, by facsimile at (571) 273-3250, by mail addressed to the United States Patent and Trademark Office, Public Records Division, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through Patent Center, the USPTO's electronic patent application filing and management system. The direct link to access this status information is currently <https://patentcenter.uspto.gov/>. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of Patent Center.

Further assistance in electronically accessing the publication, or about Patent Center, is available by calling the Patent Electronic Business Center at 1-866-217-9197.

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101



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APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
18/811,158	02/04/2025	12214225	OLAP.P0007USC9/1001313621	1437

32425 7590 01/15/2025
Norton Rose Fulbright US LLP
98 San Jacinto Blvd
Suite 1100
Austin, TX 78701

ISSUE NOTIFICATION

The projected patent number and issue date are specified above. The patent will issue electronically. The electronically issued patent is the official patent grant pursuant to 35 U.S.C. § 153. The patent may be accessed on or after the issue date through Patent Center at <https://patentcenter.uspto.gov/>. The patent will be available in both the public and the private sides of Patent Center. Further assistance in electronically accessing the patent, or about Patent Center, is available by calling the Patent Electronic Business Center at 1-888-217-9197.

The USPTO is implementing electronic patent issuance with a transition period, during which period the USPTO will mail a ceremonial paper copy of the electronic patent grant to the correspondence address of record. Additional copies of the patent (i.e., certified and presentation copies) may be ordered for a fee from the USPTO's Certified Copy Center at <https://certifiedcopycenter.uspto.gov/index.html>. The Certified Copy Center may be reached at (800)972-6382.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)

(application filed on or after May 29, 2000)

The Patent Term Adjustment is 0 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Center (<https://patentcenter.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Patents Stakeholder Experience (OPSE), Stakeholder Support Division (SSD) at (571)-272-4200.

INVENTOR(s) (Please see PATENT CENTER site <https://patentcenter.uspto.gov> for additional inventors):

Eric D. PRESSLY, Santa Barbara, CA;
Craig J. Hawker, Santa Barbara, CA;

APPLICANT(s) (Please see PATENT CENTER site <https://patentcenter.uspto.gov> for additional applicants):

OLAPLEX, INC., Santa Barbara, CA;

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The USA offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to encourage and facilitate business investment. To learn more about why the USA is the best country in the world to develop technology, manufacture products, and grow your business, visit [SelectUSA.gov](https://selectusa.gov).



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
18/811,158	08/21/2024	Eric D. PRESSLY	OLAP.P0007USC9/1001313621	1437
32425	7590	02/04/2025		
Norton Rose Fulbright US LLP 98 San Jacinto Blvd Suite 1100 Austin, TX 78701			EXAMINER BABSON, NICOLE PLOURDE	
			ART UNIT	PAPER NUMBER
			1619	
			NOTIFICATION DATE	DELIVERY MODE
			02/04/2025	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

aoipdocket@nortonrosefulbright.com

APPLICATION NO.	ISSUE DATE	PATENT NO.
18/811,158	04-Feb-2025	12214225

Norton Rose Fulbright US LLP
98 San Jacinto Blvd
Austin, TX 78701

EGRANT NOTIFICATION

Your electronic patent grant (eGrant) is now available, which can be accessed via Patent Center at <https://patentcenter.uspto.gov>

The electronic patent grant is the official patent grant under 35 U.S.C. 153. For more information, please visit <https://www.uspto.gov/electronicgrants>