

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

REACTIVE SURFACES LTD., LLP,
Petitioner,

v.

TOYOTA MOTOR CORPORATION,
Patent Owner.

Case IPR2016-01462
Patent 8,324,295 B2

Before CHRISTOPHER M. KAISER, JEFFREY W. ABRAHAM, and
MICHELLE N. ANKENBRAND, *Administrative Patent Judges*.

KAISER, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

INTRODUCTION

A. Background

Reactive Surfaces Ltd., LLP (“Petitioner”) filed a Petition (Paper 1, “Pet.”) requesting an *inter partes* review of claims 1–27 of U.S. Patent No. 8,324,295 B2 (Ex. 1001, “the ’295 patent”). Toyota Motor Corporation (“Patent Owner”) filed a Preliminary Response (Paper 10, “Prelim. Resp.”). On February 9, 2017, we instituted trial to review the patentability of claims 1–9, 13–20, and 22–27. Paper 14 (“Inst. Dec.”); *see* Paper 16 (correcting identification of claims on which review was instituted).

Subsequently, Patent Owner filed a Response (Paper 27 (“PO Resp.”)), Petitioner filed a Reply (Paper 35), and Patent Owner filed a Sur-Reply (Paper 40). Patent Owner filed Observations on Cross-Examination (Paper 42), to which Petitioner filed a Response (Paper 47). In addition, Patent Owner filed a motion to exclude certain evidence Petitioner submitted. Paper 41. Petitioner filed an opposition to the motion to exclude. Paper 46. Patent Owner filed a reply to the opposition. Paper 48.

We have jurisdiction under 35 U.S.C. § 6, and we issue this Final Written Decision pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. We conclude that Petitioner has established by a preponderance of the evidence that claims 1–6, 9, 23–25, and 27 of the ’295 patent are unpatentable. We also conclude that Petitioner has not established by a preponderance of the evidence that claims 7, 8, 13–20, 22, or 26 are unpatentable. In addition, we dismiss as moot Patent Owner’s Motion to Exclude.

B. Related Matters

The parties have not identified any judicial or administrative matters that involve the '295 patent or that are otherwise related to this case.¹ Pet. 1; Paper 4, 1.

C. The Instituted Grounds of Unpatentability

We instituted review of claims 1–9, 13–20, and 22–27 of the '295 patent based on the following grounds:

Statutory Ground	Basis	Challenged Claim(s)
§ 103	McDaniel '853 ²	1, 2, 4, 6, 9, 23, 25, and 27
§ 103	McDaniel '853 and Fritzsche ³	3, 5, 7, 8, 13–17, 19, 20, 22, 24, and 26
§ 103	McDaniel '853, Fritzsche, and McDaniel '811 ⁴	18

D. The '295 Patent

The '295 patent is directed to “[p]rotein-polymer compositions and processes for their production.” Ex. 1001, at [57]. Specifically, these compositions “have improved resistance to ultraviolet light induced weathering and associated loss of enzyme activity.” *Id.* Coatings containing

¹ Patent Owner notes that the '295 patent was the subject of *Reactive Surfaces Ltd. LLP v. Toyota Motor Engineering & Manufacturing North America, Inc. et al.*, Case No. 1-13-CV-1098-LY (W.D. Tex.), and *Reactive Surfaces Ltd. LLP v. Toyota Motor Corporation*, Case No. 1:14-CV-1009-LY (W.D. Tex.), both of which have been dismissed. Pet. v; Paper 4, 1.

² McDaniel, US 2004/0109853 A1, published June 10, 2004 (Ex. 1007, “McDaniel '853”).

³ Fritzsche et al., WO 2008/000646 A1, published Jan. 3, 2008 (Ex. 1010, “Fritzsche”).

⁴ McDaniel et al., US 2009/0238811 A1, published Sept. 24, 2009 (Ex. 1005, “McDaniel '811”).

enzymes may be used to decompose “biological stain material such as insect stains or bird droppings” that otherwise might “deeply diffuse into the subsurface of [the] coatings.” *Id.* at 1:16–58. Such coatings, “however, are subject to polymer degradation by weathering that the prior art attributes to photolysis, photooxidation, or other scission producing chemical reactions in the structure of the polymeric material itself.” *Id.* at 1:59–63. Accordingly, the ’295 patent provides compositions that have “improved enzyme stability to ultraviolet induced weathering” by including “a polymer resin, a cross-linker, a bioactive enzyme and at least two ultraviolet light stabilizers,” where “[a]t least one light stabilizer is a sterically hindered amine, and at least one light stabilizer is a UV absorber.” *Id.* at 2:14–19. In all claims of the ’295 patent, the “UV absorber is present at a concentration in excess of 5% by weight.” *Id.* at 2:19–20; *see id.* at 23:35–26:7.

E. Illustrative Claims

We instituted trial on claims 1–9, 13–20, and 22–27. Inst. Dec. 29. Claims 1, 5, 13, 23, and 24 are independent. Ex. 1001, 23:35–26:7. Claims 1, 13, and 23 are illustrative; they recite:

1. A curable protein-polymer composition comprising:
 - a polymer resin;
 - a cross-linker;
 - a bioactive enzyme; and
 - at least two ultraviolet light stabilizers whereby at least one light stabilizer is a sterically hindered amine, and at least one light stabilizer is a UV absorber, said UV absorber present at a concentration in excess of 5% by weight.

Id. at 23:35–42.

13. A process for preparing a UV stabilized protein-polymer composite material, comprising:

providing an admixture of a polymer resin, a surfactant, a non-aqueous organic solvent, a sterically hindered amine, and a UV absorber, said UV absorber present at sufficient amounts to yield a final composition that is at least 5% by weight of said UV absorber;

mixing an aqueous solution containing isolated bioactive enzymes with the admixture, wherein said aqueous solution is substantially free of surfactant, to produce an emulsion;

and mixing the emulsion with a crosslinker to produce a curable UV stabilized protein-polymer composition.

Id. at 24:16–28.

23. A process of stabilizing enzyme activity in a protein-polymer curable composition against weathering from ultraviolet light comprising:

adding to a protein-polymer composition wherein said protein is an enzyme, at least two ultraviolet light stabilizers whereby at least one light stabilizer is a sterically hindered amine, and at least one light stabilizer is a UV absorber, said UV absorber present at a concentration in excess of 5% by weight.

Id. at 24:56–64.

ANALYSIS

A. Claim Construction

In an *inter partes* review, we construe claim terms in an unexpired patent according to their broadest reasonable construction in light of the specification of the patent in which they appear. 37 C.F.R. § 42.100(b); *see Cuozzo Speed Techs. LLC v. Lee*, 136 S. Ct. 2131, 2144 (2016) (upholding the use of the broadest reasonable interpretation standard). Claim terms generally are given their ordinary and customary meaning, as would be

understood by one of ordinary skill in the art in the context of the entire disclosure. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). The parties propose constructions for four terms: “urethane bond,” “final composition,” “in excess of 5% by weight,” and “emulsion.” Pet. 12–14; PO Resp. 13–16; Reply 6–7; Paper 40, 1–3.

1. “*Urethane Bond*”

In our Institution Decision, we construed “urethane bond” as “a chemical bond formed between hydroxyl (–OH) and isocyanate (–NCO) crosslinking moieties to form the ‘urethane’ (–NH–COO–) chemical structure.” Inst. Dec. 6–7. Patent Owner argues that we should continue to use that interpretation. PO Resp. 13. Although Petitioner argues in the Petition that “urethane bond” should be interpreted as “the chemical bond inherently formed between hydroxyl (OH) and isocyanate (NCO) crosslinking moieties to form the ‘urethane’ (–NH–COO–) chemical structure,” Pet. 12–13, we noted in the Institution Decision that Petitioner did not provide sufficient reason to adopt a construction characterizing the “urethane bond” as “inherently formed.” Inst. Dec. 6–7. Petitioner does not address this issue in the Reply. Reply 6–7. Accordingly, we maintain the construction we adopted in the Institution Decision, and we interpret “urethane bond” as “a chemical bond formed between hydroxyl (–OH) and isocyanate (–NCO) crosslinking moieties to form the ‘urethane’ (–NH–COO–) chemical structure.”

2. “*Final Composition*”

In our Institution Decision, we construed “final composition” as “the ingredient composition of the protein-polymer composition after the evaporation of volatile components such as non-aqueous organic solvent and

water.” Inst. Dec. 7. Patent Owner argues that we should continue to use that interpretation. PO Resp. 13. Although Petitioner argues in the Petition that “final composition” should be interpreted as “the ingredient composition of the protein-polymer composition after the evaporation of volatile components such as non-aqueous organic solvent and water, without regard to any possible crosslinking of any of the components,” Pet. 13–14, we noted in the Institution Decision that Petitioner did not provide sufficient explanation of how the hypothetical crosslinking of the composition components might affect the final weight of the composition. Inst. Dec. 7. Petitioner does not address this issue in the Reply. Reply 6–7. Accordingly, we maintain the construction we adopted in the Institution Decision, and we interpret “final composition” as “the ingredient composition of the protein-polymer composition after the evaporation of volatile components such as non-aqueous organic solvent and water.”

3. *“In Excess of 5% by Weight”*

Patent Owner argues that “in excess of 5% by weight” should be interpreted as “in excess of 5% by final dry weight of the composition.” PO Resp. 14–16. Petitioner does not dispute this proposed construction. Reply 6–7. Moreover, Patent Owner’s proposed construction is consistent with the construction of “final composition” as “the ingredient composition of the protein-polymer composition after the evaporation of volatile components such as non-aqueous organic solvent and water.” Accordingly, we adopt Patent Owner’s proposed construction and interpret “in excess of 5% by weight” as “in excess of 5% by final dry weight of the composition.”

4. “*Emulsion*”

The term “emulsion” appears in independent claim 13, in the limitation reciting the step of “mixing an aqueous solution containing isolated bioactive enzymes with the admixture [of polymer resin, surfactant, non-aqueous organic solvent, sterically hindered amine, and UV absorber], wherein said aqueous solution is substantially free of surfactant, to produce an emulsion.” Ex. 1001, 24:16–28. Petitioner argues that the term “emulsion” should be construed as “the composition permanently or temporarily formed in response to mixing the admixture with the aqueous solution.” Reply 6–7. Patent Owner argues that Petitioner’s proposed construction “would effectively read the term ‘emulsion’ out of the claim.” Paper 40, 1. We agree. Claim 13 requires mixing an aqueous solution with an admixture containing a non-aqueous organic solvent “to produce an emulsion.” Construing “emulsion” as Petitioner proposes, to include any composition obtained by mixing those two components, would render superfluous the additional requirement of claim 13 to produce an emulsion. “A claim construction that gives meaning to all the terms of the claim is preferred over one that does not do so.” *Merck & Co., Inc. v. Teva Pharm. USA, Inc.*, 395 F.3d 1364, 1372 (Fed. Cir. 2005).

Petitioner argues that the ’295 patent defines “emulsion” to have a meaning other than its ordinary meaning. Tr. 39:14–22 (acknowledging that the Board must “give the term its ordinary meaning” unless the patent “redefines it”). Specifically, Petitioner directs us to the use of the term “solution” in the ’295 patent to describe the composition resulting from mixing a non-aqueous solution with an aqueous enzyme solution. *Id.* at 37:8–38:5 (discussing Ex. 1001, 19:45–50). According to Petitioner,

because “solution” typically applies only to a one-phase system, and because the system described by the word “solution” in the ’295 patent is a two-phase system, we must interpret the disclosure of the ’295 patent as redefining “solution” to cover a broader range of systems than its ordinary meaning would indicate. *Id.* at 38:6–16. Further, Petitioner argues that this redefinition also operates as a redefinition of “emulsion” to cover a broader range of systems than its ordinary meaning would indicate. *Id.* at 39:23–40:11. We are not persuaded by this argument.

An inventor may define specific terms used to describe an invention, but must do so “with reasonable clarity, deliberateness, and precision” and must “‘set out his uncommon definition in some manner within the patent disclosure’ so as to give one of ordinary skill in the art notice of the change” in meaning. *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994) (quoting *Intellicall, Inc. v. Phonometrics, Inc.*, 952 F.2d 1384, 1387–88 (Fed. Cir. 1992)). Here, if there is a definition of any term in the disclosure of the ’295 patent, it is of the term “solution,” not the term “emulsion,” because “solution” is the only term used inconsistently with its ordinary meaning. Ex. 1001, 19:45–50.

Moreover, even assuming that the use of “solution” in the ’295 patent could be seen as an attempt to define “emulsion,” that use does not amount to a “reasonabl[y] cl[ear], deliberate[], and precis[e]” definition. *Paulsen*, 30 F.3d at 1480. First, Petitioner does not explain why we should interpret the use of “solution” to describe a two-phase system rather than the typical one-phase system, as an attempted definition, rather than as a simple drafting error in the patent disclosure. Second, even if it were clear that the language in question amounted to an attempt to define “solution,” Petitioner does not

explain what the boundaries of the new definition would be. Could “solution” be applied to all two-phase systems, only to all liquid-liquid two-phase systems, only to liquid-liquid two-phase systems in which one phase is aqueous and the other is non-aqueous, or to some other system? Third, even if we could discern a clear definition of “solution” from the disclosure of the ’295 patent, Petitioner does not explain how the scope of that definition would inform the scope of “emulsion,” the term of interest here. Accordingly, we are not persuaded that the ’295 patent redefines “emulsion” in the way that Petitioner argues it does.

Patent Owner argues that “‘emulsion’ should be construed as ‘a stable two-phased system in which said aqueous solution is dispersed in the admixture in the form of droplets.’” Paper 40, 1 (emphasis removed). There is evidence in the record to support this interpretation. First, “[i]t is well known . . . that emulsions are a class of disperse[d] systems that include two immiscible liquid phases” in which droplets of “the disperse[d] phase” “are dispersed in . . . the continuous phase.” Ex. 2029 ¶ 116. Second, not all mixtures of immiscible liquid phases necessarily are emulsions, because there are some factors that influence whether an emulsion will or will not form. *Id.* ¶ 119 (Patent Owner’s declarant, Jonathan Dordick, Ph.D., identifying several factors influencing emulsion formation); Ex. 1024 ¶ 33 (Ppetitioner’s declarant, Dr. Douglas M. Lamb, agreeing that the “criteria . . . to obtain a stable emulsion are well known in the art”). Third, both parties’ experts agree that the “emulsion” recited in claim 13 of the ’295 patent comprises an aqueous dispersed phase and an organic continuous phase. Ex. 2029 ¶ 108 (Dr. Dordick’s testimony that “this process includes the formation of an emulsion that contains bioactive proteins in an aqueous

solution dispersed in a continuous phase containing solvent-borne polymer resins”); Ex. 1024 ¶ 26 (Dr. Lamb’s testimony that “the ‘emulsion’ of the ’295 Patent is a ‘water in oil’ emulsion”). Accordingly, we interpret “emulsion” as “a two-phase system in which droplets of a liquid aqueous phase are dispersed in a continuous liquid phase that is immiscible with the aqueous phase.”

B. Asserted Obviousness over McDaniel ’853

We instituted trial to determine whether the subject matter of claims 1, 2, 4, 6, 9, 23, 25, and 27 would have been obvious to a person of ordinary skill in the art given the teachings of McDaniel ’853. Inst. Dec. 8–13, 29; see Pet. 21, 45–63.

1. McDaniel ’853

McDaniel ’853 “relates to proteins as . . . components of coatings.” Ex. 1007 ¶ 3. The reference teaches a coating made of “an acrylic resin and an epoxide, a polyurethane comprising an isocyanate moiety, an amino resin, or a combination thereof.” *Id.* ¶ 63. It also teaches crosslinking “an acrylic resin comprising . . . a hydroxyl moiety . . . with a[] urethane resin.” *Id.* ¶ 512. The coating that McDaniel ’853 teaches “comprises a bioactive molecule such as an enzyme composition that retains activity after being admixed with paint” and “still retains activity after the paint is applied to a surface, [rendering] the surface bioactive.” *Id.* ¶ 23. In addition, McDaniel ’853 discloses adding to its coating “0.001% to 20.0% by weight” of an additive, which can be “a light stabilizer.” *Id.* ¶ 82. The light stabilizer may be “a UV absorber, a radical scavenger, or a combination thereof.” *Id.* ¶¶ 82, 766. The radical scavenger may be “a sterically hindered amine.” *Id.* ¶ 767.

2. Analysis

Petitioner argues that McDaniel '853 teaches or suggests all limitations of claims 1, 2, 4, 6, 9, 23, 25, and 27. Pet. 45–63. Patent Owner argues that McDaniel '853 does not teach or suggest the limitation “said UV absorber present at a concentration in excess of 5% by weight,” a limitation of every independent claim. PO Resp. 19–47.

a. Claim 1

Petitioner argues, and Patent Owner does not dispute, that McDaniel '853 teaches or suggests the following limitations of claim 1: a “curable protein-polymer composition comprising a polymer resin; a cross-linker; a bioactive enzyme; and at least two ultraviolet light stabilizers whereby at least one light stabilizer is a sterically hindered amine, and at least one light stabilizer is a UV absorber.” Pet. 46–47; PO Resp. 19–47. We agree with Petitioner. McDaniel '853 teaches a composition comprising a polymer resin, Ex. 1007 ¶¶ 63, 512, a cross-linker, *id.* ¶ 512, a bioactive enzyme, *id.* ¶ 23, a sterically hindered amine light stabilizer, *id.* ¶¶ 82, 766, 767, and a UV light absorber, *id.* ¶¶ 82, 766.

The parties disagree, however, about whether McDaniel '853 teaches or suggests the UV absorber being “present at a concentration in excess of 5% by weight.” Pet. 47; PO Resp. 19–47. Petitioner’s case rests on paragraph 82 of McDaniel '853. Pet. 47. Paragraph 82 states that “the coating comprises an additive.” Ex. 1007 ¶ 82. It also states that, “[i]n some aspects, the additive comprises 0.001% to 20.0% by weight, including all intermediate ranges and combinations thereof, of the coating.” *Id.* Finally, it states that, “[i]n particular aspects, the additive comprises a light stabilizer” and that, “[i]n specific facets, the light stabilizer comprises a UV

absorber.” *Id.* Petitioner argues that this discloses a coating with 0.001% to 20.0% by weight of a UV absorber. Pet. 47.

Patent Owner argues that this disclosure does not reasonably suggest a range of compositions that include 0.001% to 20.0% by weight of a UV absorber. PO Resp. 20–29. Instead, Patent Owner argues that paragraph 82 “at most suggests that a broad 0.001–20.0% range might be suitable for *some* additives in the additive laundry list,” without specifying the additives to which this range applies. *Id.* at 21. We do not agree. Paragraph 82 teaches that “an additive” may “comprise[] 0.001% to 20.0% by weight . . . of the coating” and that “the additive [may] comprise[] a light stabilizer” that may “comprise[] a UV absorber.” Ex. 1007 ¶ 82. Although paragraph 82 discloses several possible “additives,” it contains no language limiting its concentration disclosure to any subset of those additives. *Id.* Accordingly, we agree with Petitioner that paragraph 82 reasonably would have suggested to a person of ordinary skill in the art that a coating could contain 0.001% to 20.0% by weight of a UV absorber. This range overlaps the claimed range of “present at a concentration in excess of 5% by weight.”

Patent Owner also argues that, even if McDaniel ’853 discloses a range of UV absorber concentrations that overlaps the claimed range, this overlap is insufficient to teach the claimed range without additional evidence that a person of ordinary skill in the art would have optimized the UV absorber concentration. PO Resp. 20, 29–30 (citing *In re Applied Materials, Inc.*, 692 F.3d 1289, 1295 (Fed. Cir. 2012)); Tr. 27:16–23. We do not agree with Patent Owner’s reading of *Applied Materials*. *Applied Materials* itself states that the mere existence of overlap between a prior-art range and the claimed range “provides sufficient motivation to optimize the ranges.”

Applied Materials, 692 F.3d at 1295 (citing *In re Peterson*, 315 F.3d 1325, 1330 (Fed. Cir. 2003)). Thus, there is no need for additional evidence of a motivation to optimize the variable in question, as long as there is overlap between the prior-art range and the claimed range. Instead, “[a] *prima facie* case of obviousness typically exists when the ranges of a claimed composition overlap the ranges disclosed in the prior art.” *Peterson*, 315 F.3d at 1329. Although evidence that the claimed range “is critical” may constitute strong evidence of nonobviousness, Patent Owner does not direct us to any evidence of criticality, such as evidence of unexpected results, in the present case. *In re Geisler*, 116 F.3d 1465, 1469–70 (Fed. Cir. 1997). Accordingly, given the overlap between the prior-art range of 0.001% to 20.0% and the claimed range of “present at a concentration in excess of 5% by weight,” we are not persuaded that *Applied Materials* requires any additional evidence, such as evidence that the UV absorber concentration was known to be a result-effective variable that the person of ordinary skill in the art would have been motivated to optimize, in order to prove the obviousness of the claimed range. Further, even if Patent Owner’s argument were a correct statement of the applicable law, such that evidence of a reason to optimize a prior-art range were needed to prove the obviousness of an overlapping range, the record evidence demonstrates that the concentration of UV absorber was a known result-effective variable. Ex. 1015, 2 (“The amount of [UV absorber] required for optimum performance should be determined in trials covering a concentration range.”).

Next, Patent Owner argues that the person of ordinary skill in the art would not have understood paragraph 82 of McDaniel ’853 as disclosing the

use of up to 20.0% by weight of each additive listed, because some additives would exhibit detrimental effects at levels below 20 percent. PO Resp. 22–27 (citing Ex. 2029 ¶¶ 51–56). The evidence Patent Owner cites in support of this argument establishes that some of the categories of additives listed in paragraph 82 do exhibit detrimental effects at relatively low concentrations. These categories include “preservatives, wetting agents, dispersants, catalysts, anti-skinning agents, and dehydrators.” *Id.* at 23 (citing Ex. 2029 ¶ 54). They also include “defoamers, corrosion inhibitors, and electrical additives.” *Id.* (citing Ex. 2029 ¶ 54). But none of the evidence cited relates to detrimental effects that UV absorbers exhibit at concentrations below 20 percent. Ex. 2029 ¶¶ 51–56. Patent Owner’s declarant, Dr. Dordick, testifies that “many of” the categories of additives listed in paragraph 82 of McDaniel ’853 either “are not compatible with biological molecules” or have compatibility that “is limited to very low additive concentrations.” *Id.* ¶ 51. He also testifies that among these categories of additives are “light stabilizers.” *Id.* (emphasis removed). But, although he testifies that the inclusion of “light stabilizers” in these categories is “discussed in detail below,” *id.*, Dr. Dordick provides no further explanation of the limited compatibility of light stabilizers, such as UV absorbers. Instead, Dr. Dordick’s testimony regarding limited compatibility with enzymes focuses on preservatives, wetting agents, dispersants, defoamers, catalysts, anti-skinning agents, corrosion inhibitors, dehydrators, and electrical additives. *Id.* ¶ 54. Accordingly, Dr. Dordick’s opinion that UV absorbers have limited compatibility with biological molecules is conclusory and unsupported. “Expert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight.”

37 C.F.R. § 42.65(a). Thus, Patent Owner does not direct us to evidence sufficient to conclude that the compatibility of UV absorbers and biological coating components is so limited that a person of ordinary skill in the art would have interpreted the “0.001% to 20.0%” of paragraph 82 as not applying to the “UV absorber” of paragraph 82.

Finally, Patent Owner argues that, even if a person of ordinary skill in the art would have interpreted paragraph 82 as disclosing a range of UV absorber concentrations that overlaps the claimed range, and even if this overlap were sufficient to teach or suggest the claimed range, Petitioner has not demonstrated that a person of ordinary skill in the art would have had a reasonable expectation of success in increasing the level of UV absorber above five percent by weight. PO Resp. 39–42. We do not find this argument persuasive. The record evidence demonstrates that a person of ordinary skill in the art would have undertaken experiments to determine the concentration of UV absorber needed to provide optimum performance. Ex. 1015, 2 (“The amount of [UV absorber] required for optimum performance should be determined in trials covering a concentration range.”); Ex. 1022, 132:24–133:10 (a “coatings formulation expert” “would experiment within a range” “to determine the appropriate concentration”). Further, the evidence shows it was known in the prior art that UV absorbers could be used in amounts greater than 5% by weight, although such use was “not preferred.” Ex. 2016, 5:41–50. “[A]ll disclosures of the prior art, including unpreferred embodiments, must be considered” in an obviousness analysis. *Merck & Co. v. Biocraft Labs., Inc.*, 874 F.2d 804, 807 (Fed. Cir. 1989) (internal quotation marks and citation omitted). Accordingly, we are persuaded that there is sufficient evidence to show that a person of ordinary

skill in the art would have interpreted the disclosure of paragraph 82 of McDaniel '853 as teaching or suggesting the use of 0.001% to 20.0% by weight of UV absorber and that there was a reasonable expectation of succeeding in manufacturing a coating with a UV absorber concentration falling within the portion of that range exceeding five percent by weight.

For these reasons, we determine that Petitioner has shown by a preponderance of the evidence that claim 1 is unpatentable under 35 U.S.C. § 103 as obvious over McDaniel '853.

b. Claim 2

Claim 2 of the '295 patent depends from claim 1 and adds a limitation requiring that the polymer resin be “a hydroxyl-functionalized acrylate resin.” Ex. 1001, 23:43-44. Petitioner argues that McDaniel '853 teaches this limitation, and Patent Owner does not dispute this. Pet. 54; PO Resp. 19–60. McDaniel teaches that the resin may be “an acrylic resin [that] comprises a hydroxyl moiety such as a hydroxymethyl acrylate ('HEA'), a hydroxymethyl methacrylate ('HEMA'), or a combination thereof.” Ex. 1007 ¶ 510. Petitioner has shown by a preponderance of the evidence that claim 2 is unpatentable under 35 U.S.C. § 103 as obvious over McDaniel '853.

c. Claim 4

Claim 4 depends from claim 1 and requires that “said polymer resin and said cross-linker are covalently associated by a urethane bond.” Ex. 1001, 23:47–49. As discussed above, a “urethane bond” is “a chemical bond formed between hydroxyl (–OH) and isocyanate (–NCO) crosslinking moieties to form the ‘urethane’ (–NH–COO–) chemical structure.” Petitioner argues that McDaniel '853 teaches or suggests this limitation, and

Patent Owner does not dispute this. Pet. 55–56; PO Resp. 19–60. McDaniel '853 teaches a “urethane binder” that is “prepared from compounds that comprise an isocyanate moiety.” Ex. 1007 ¶ 448. It also teaches that such an “isocyanate moiety is highly reactive (e.g., crosslinkable) with a moiety comprising a chemically reactive hydrogen,” such as “a hydroxyl moiety.” *Id.* Petitioner’s declarant, Dr. Lamb, testifies that the reaction of hydroxyl and isocyanate moieties creates a urethane bond. Ex. 1011 ¶ 99. Thus, we agree that the disclosure in McDaniel '853 of isocyanate-containing cross-linkers and hydroxyl-containing polymer resins, together with the disclosure that these moieties are “highly reactive” and “crosslinkable,” teaches or suggests the formation of urethane bonds between the resins and cross-linkers. Accordingly, Petitioner has shown by a preponderance of the evidence that claim 4 is unpatentable under 35 U.S.C. § 103 as obvious over McDaniel '853.

d. Claim 6

Claim 6 depends from claim 1 and adds a limitation requiring the “sterically hindered amine [to be] present at 1% by weight.” Ex. 1001, 23:61–62. Petitioner argues, and Patent Owner does not dispute, that McDaniel '853 teaches or suggests this limitation. Pet. 56; PO Resp. 19–60. As discussed above, McDaniel '853 teaches that an additive may be present in a coating in an amount between 0.001% and 20.0% by weight. Ex. 1007 ¶ 82; *see supra* Analysis § B.2.a. It also teaches that this additive may be “a radical scavenger,” *id.*, which may be “a sterically hindered amine,” *id.* ¶ 767. The range of 0.001% to 20.0% encompasses the claimed value of 1%. Accordingly, Petitioner has shown by a preponderance of the evidence

that claim 6 is unpatentable under 35 U.S.C. § 103 as obvious over McDaniel '853.

e. Claim 9

Claim 9 depends from claim 1 and adds a limitation narrowing the range of UV absorber content from “in excess of 5% by weight” to “8% by weight or greater.” Ex. 1001, 24:1–2. Petitioner argues that McDaniel '853 teaches or suggests this limitation. Pet. 59. Patent Owner argues, as discussed above, that McDaniel '853 does not teach or suggest even the “in excess of 5% by weight” limitation of claim 1, much less the narrower “8% by weight or greater” limitation of claim 9. PO Resp. 19–47. As discussed above with respect to claim 1, McDaniel '853 teaches a range of UV absorber concentrations between 0.001% and 20.0% by weight, which overlaps the “8% by weight or greater” range of claim 9. *See supra* Analysis § B.2.a. Accordingly, for the reasons discussed above with respect to claim 1, we determine that Petitioner has shown by a preponderance of the evidence that claim 9 is unpatentable under 35 U.S.C. § 103 as obvious over McDaniel '853.

f. Claim 23

Claim 23 is an independent claim that recites the process steps of “adding to a protein-polymer composition wherein said protein is an enzyme, at least two ultraviolet light stabilizers whereby at least one light stabilizer is a sterically hindered amine, and at least one light stabilizer is a UV absorber, said UV absorber present at a concentration in excess of 5% by weight.” Ex. 1001, 24:56–64. Petitioner argues that McDaniel '853 teaches or suggests all these limitations. Pet. 52–54. Patent Owner disputes only the argument that McDaniel '853 teaches or suggests the recited

concentration of UV absorber. PO Resp. 19–47. For the reasons discussed above with respect to claim 1, we determine that Petitioner has shown by a preponderance of the evidence that claim 23 is unpatentable under 35 U.S.C. § 103 as obvious over McDaniel ’853.

g. Claim 25

Claim 25 depends from claim 23 and adds a limitation requiring the “sterically hindered amine [to be] present at 1% by weight.” Ex. 1001, 26:1–2. For the reasons discussed above with respect to claim 6, we determine that Petitioner has shown by a preponderance of the evidence that claim 25 is unpatentable under 35 U.S.C. § 103 as obvious over McDaniel ’853. *See supra* Analysis § B.2.d.

h. Claim 27

Claim 27 depends from claim 23 and adds a limitation requiring that the “UV absorber [be] present at a final concentration of 8% by weight or greater.” Ex. 1001, 26:5–7. Petitioner argues that McDaniel ’853 teaches or suggests this limitation. Pet. 62–63. Patent Owner argues, as discussed above, that McDaniel ’853 does not teach or suggest even the “in excess of 5% by weight” limitation of claim 1, much less the narrower “8% by weight or greater” limitation of claim 27. PO Resp. 19–47. As discussed above with respect to claim 1, McDaniel ’853 teaches a range of UV absorber concentrations between 0.001% and 20.0% by weight, which overlaps the “8% by weight or greater” range of claim 27. *See supra* Analysis § B.2.a. Accordingly, for the reasons discussed above with respect to claim 1, we determine that Petitioner has shown by a preponderance of the evidence that claim 27 is unpatentable under 35 U.S.C. § 103 as obvious over McDaniel ’853.

C. Asserted Obviousness over McDaniel '853 and Fritzsche

We instituted trial to determine whether the subject matter of claims 3, 5, 7, 8, 13–17, 19, 20, 22, 24, and 26 would have been obvious to a person of ordinary skill in the art given the teachings of McDaniel '853 and Fritzsche. Inst. Dec. 13–25, 29; Paper 16, 1–3; *see* Pet. 21, 45–63.

1. Fritzsche

Fritzsche relates to “novel benzotriazole UV-absorbers” used to protect “automotive coatings.” Ex. 1010, 1:3–2:8. It teaches using any of several polymers and cross-linkers in its coatings, including “[a]lkyd resins, polyester resins and acrylate resins crosslinked with melamine resins, urea resins, isocyanates, isocyanurates, polyisocyanates or epoxy resins.” *Id.* at 24:4–7, 28:18–19. Fritzsche teaches the use of several commercially available UV absorbers, including Tinuvin 384. *Id.* at 47:6–8. It also teaches the use of several commercially available sterically hindered amines, including Tinuvin 152. *Id.* at 47:10–48:14.

2. Analysis

Petitioner argues that the combination of McDaniel '853 and Fritzsche teaches or suggestions all limitations of claims 3, 5, 7, 8, 13–17, 19, 20, 22, 24, and 26. Pet. 45–63. Patent Owner argues that McDaniel '853 does not teach or suggest the limitation “said UV absorber present at a concentration in excess of 5% by weight,” a limitation of every independent claim. PO Resp. 19–47. Patent Owner also argues that the combination of references does not teach or suggest the limitations of claims 7, 8, 20, and 26. *Id.* at 57–60.

a. Claim 3

Claim 3 depends from claim 1 and adds a limitation requiring that “the crosslinker [be] a polyisocyanate.” Ex. 1001, 23:45–46. As discussed above with respect to the obviousness of claim 1 over McDaniel ’853, we are persuaded that Petitioner has shown by a preponderance of the evidence that McDaniel ’853 teaches or suggests all the limitations of claim 1. See *supra* Analysis § B.2.a. Petitioner argues, and Patent Owner does not dispute, that the additional limitation of claim 3 is taught or suggested by Fritzsche. Pet. 54–55; PO Resp. 19–60. We agree with Petitioner, because Fritzsche teaches “resins crosslinked with . . . polyisocyanates.” Ex. 1010, 28:18–19.

Petitioner argues that a person of ordinary skill in the art would have found it obvious to combine the teachings of Fritzsche with those of McDaniel ’853 because Fritzsche “discloses the well-known use of polyisocyanate as the crosslinking material for material compositions including cross-linkable polymer resin.” Pet. 55. Although Fritzsche does not describe this crosslinking method as “well-known,” Fritzsche’s disclosure is sufficient to show that using polyisocyanates with polymer resins would lead to the predictable result of crosslinking those resins. Thus, crosslinking polymer resins with polyisocyanates was no more than “the predictable use of prior art elements according to their established functions,” which is a sufficient reason for a person of ordinary skill in the art to have used this method. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007). Accordingly, we determine that Petitioner has shown by a preponderance of the evidence that claim 3 is unpatentable under 35 U.S.C. § 103 as obvious over McDaniel ’853 and Fritzsche.

b. Claim 5

Claim 5 is an independent claim with the same limitations as claim 1, but with an additional limitation that requires the “sterically hindered amine [to be] 2,4-bis[N-Butyl-N-(1-cyclohexyloxy-2,2,6,6,-tetramethylpiperidin-4-yl)amino]-6-(2-hydroxyethylamine)-1,3,5-triazine.” Ex. 1001, 23:50–60. As discussed above with respect to the obviousness of claim 1 over McDaniel ’853, we are persuaded that Petitioner has shown by a preponderance of the evidence that McDaniel ’853 teaches or suggests all the limitations of claim 1. *See supra* Analysis § B.2.a. Petitioner argues, and Patent Owner does not dispute, that Fritzsche teaches or suggests the additional limitation of claim 5. Pet. 47–48; PO Resp. 19–60. We agree with Petitioner. Fritzsche teaches the use of Tinuvin 152 as a sterically hindered amine. Ex. 1010, 47:10–48:14. The chemical structure of Tinuvin 152 is 2,4-bis[N-Butyl-N-(1-cyclohexyloxy-2,2,6,6,-tetramethylpiperidin-4-yl)amino]-6-(2-hydroxyethylamine)-1,3,5-triazine. Ex. 1016, 1. As discussed above with respect to claim 3, the use of the chemical disclosed in Fritzsche for the purpose disclosed in Fritzsche is no more than “the predictable use of prior art elements according to their established functions,” which is a sufficient reason for a person of ordinary skill in the art would have used this method. *KSR*, 550 U.S. at 417. Accordingly, we determine that Petitioner has shown by a preponderance of the evidence that claim 5 is unpatentable under 35 U.S.C. § 103 as obvious over McDaniel ’853 and Fritzsche.

c. Claims 7 and 26

Claim 7 depends from claim 1, and claim 26 depends from claim 23. Ex. 1001, 23:63–64, 26:3–4. Each of these claims adds a limitation

requiring that the “UV absorber ha[ve] a 10% cut-off at a wavelength at or in excess of 380 nm.” *Id.* Petitioner argues that this additional limitation would have been obvious to a person of ordinary skill in the art because that person would have understood “that the recited cut-off (*e.g.*, % transmittance) at a wavelength for a given UV absorber is a function of film thickness and UV absorber concentration.” Pet. 57 (citing Ex. 1011 ¶¶ 45–55). Patent Owner argues that Petitioner’s argument is based on hindsight, because Petitioner offers no reason why a person of ordinary skill in the art would have sought to achieve the particular cut-off percentage at the particular wavelength recited in the challenged claims, but instead offers only evidence that achieving such a cut-off at the specified wavelength is possible. PO Resp. 57–60.

Petitioner argues that a person of ordinary skill in the art “would recognize that the curable protein-polymer composition of McDaniel ’853 can meet the claimed limitation by concentration of a suitable UV absorber . . . and/or by providing a suitable film thickness.” Pet. 57. We noted in the Institution Decision that this statement “borders on hindsight” because it references the claim in question instead of an independent reason to modify McDaniel ’853. Inst. Dec. 16–17. On the record developed during trial, we are not persuaded that Petitioner has shown sufficient evidence of any non-hindsight reason for a person of ordinary skill in the art to have wanted to achieve the particular parameters recited in claims 7 and 26. Petitioner argues that the prior art would have suggested the choice of a cut-off wavelength of 380 nm to a person of ordinary skill in the art because it more or less matches the wavelength of ultraviolet light from the sun that reaches the surface of the earth. Reply 26 n.17 (quoting Ex. 2016, 1:12–20).

This, perhaps, constitutes a reasonable, non-hindsight-based reason for the person of ordinary skill in the art to have chosen the particular cut-off wavelength recited in claims 7 and 26. Even if this is so, though, Petitioner does not provide a non-hindsight-based reason for the ordinary artisan to have chosen the particular transmittance value recited in those claims, rather than some other value. Reply 25–28. At most, Petitioner demonstrates that achieving 10% transmittance at the wavelengths in question was possible, without providing a reason for the person of ordinary skill in the art to have chosen that level of transmittance.

When asked at the hearing to point to its proffered reason for a person of ordinary skill in the art to have sought to achieve this transmittance level, Petitioner directed us once again to the claim language. Tr. 16:3–14 (“I don’t know if there is a technical reason of selecting 10 percent more than it being a range that was selected.”). The use of the claim language itself to provide a reason to practice the claim is the definition of improper hindsight. *In re McLaughlin*, 443 F.2d 1392, 1395 (CCPA 1971) (“knowledge gleaned only from [the challenged patent’s] disclosure” is improper hindsight). Accordingly, we are not persuaded that Petitioner has shown by a preponderance of the evidence that claims 7 and 26 are unpatentable under 35 U.S.C. § 103 as obvious over McDaniel ’853 and Fritzsche.

d. Claim 8

Claim 8 depends from claim 1 and adds a limitation requiring that the “UV absorber ha[ve] a band reject of 10% transmission or less in the wavelength range from 280 nanometers to 380 nanometers.” Ex. 1001, 23:65–67. Petitioner argues that this limitation would have been obvious for the same reasons discussed above with respect to claims 7 and 26. Pet. 58–

59. Patent Owner argues that Petitioner's obviousness argument depends on hindsight. PO Resp. 57–60. For the reasons discussed above with respect to claims 7 and 26, we are not persuaded that Petitioner has shown by a preponderance of the evidence that claim 8 is unpatentable under 35 U.S.C. § 103 as obvious over McDaniel '853 and Fritzsche.

e. Claim 13

Claim 13 is an independent claim reciting the following process steps: “providing an admixture of a polymer resin, a surfactant, a non-aqueous organic solvent, a sterically hindered amine, and a UV absorber, said UV absorber present at sufficient amounts to yield a final composition that is at least 5% by weight of said UV absorber,” “mixing an aqueous solution containing isolated bioactive enzymes with the admixture, wherein said aqueous solution is substantially free of surfactant, to produce an emulsion,” and “mixing the emulsion with a crosslinker to produce a curable UV stabilized protein-polymer composition.” Ex. 1001, 24:16–28. Petitioner argues that McDaniel '853 and Fritzsche teach or suggest all these limitations and that a person of ordinary skill in the art would have been prompted to combine the teachings of McDaniel '853 with those of Fritzsche. Pet. 48–52. Patent Owner does not dispute Petitioner's argument, with the exception of arguing (1) that the prior art does not teach or suggest the limitation “a final composition that is at least 5% by weight of said UV absorber” and (2) that the prior art does not teach or suggest the limitation “to produce an emulsion.” PO Resp. 50–53. For the reasons discussed above with respect to claims 1 and 5, we are persuaded that Petitioner has shown by a preponderance of the evidence that McDaniel '853 teaches or

suggests the 5% concentration limitation of claim 13. *See supra* Analysis §§ B.2.a, C.2.b.

We are not persuaded, however, that the combination of McDaniel '853 and Fritzsche teaches or suggests the “emulsion” limitation of claim 13. Petitioner’s argument that McDaniel '853 and Fritzsche teach or suggest this limitation relies on Petitioner’s proposed construction of “emulsion.” Reply 22–23. As discussed above, we do not adopt Petitioner’s proposed construction of “emulsion.” *See supra* Analysis § A.4. Rather than referring to any “composition permanently or temporarily formed” from the mixture of two immiscible liquids, we construe “emulsion” as “a two-phase system in which droplets of a liquid aqueous phase are dispersed in a continuous liquid phase that is immiscible with the aqueous phase.” Petitioner does not direct us to sufficient evidence to show that the disclosure in McDaniel '853 and Fritzsche of mixing an aqueous solution with an organic solution teaches producing droplets of an aqueous liquid phase that are dispersed in an immiscible continuous liquid phase. Reply 22–23 (citing Pet. 48–52); Pet. 50 (citing Ex. 1011 ¶¶ 205–09). The evidence Petitioner cites for producing an emulsion—which consists entirely of Dr. Lamb’s testimony—largely does not discuss forming an emulsion at all. Ex. 1011 ¶¶ 205–08. The only portion of Dr. Lamb’s testimony that discusses forming an emulsion states that a person of ordinary skill in the art “would have found it obvious . . . to mix the composition of Fritzsche . . . containing a surfactant . . . and aqueous . . . solution comprising bioactive enzyme of McDaniel . . . thereby producing an emulsion due to the presence of water and the surfactant.” *Id.* ¶ 209. Dr. Lamb does not explain, however, why the mere mixing of the two liquid solutions would create an emulsion as opposed to some other

form of mixture. *Id.* “Expert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight.” 37 C.F.R. § 42.65(a). Accordingly, we are not persuaded that Petitioner has shown by a preponderance of the evidence that claim 13 is unpatentable under 35 U.S.C. § 103 as obvious over McDaniel ’853 and Fritzsche.

f. Claims 14–17, 19, 20, and 22

Claims 14–17, 19, 20, and 22 all depend directly from claim 13. Ex. 1001, 23:29–55. Accordingly, each of these claims “include[s] all the limitations of” claim 13. 37 C.F.R. § 1.75(c). Because Petitioner has not shown by a preponderance of the evidence that claim 13 is unpatentable under 35 U.S.C. § 103 as obvious over McDaniel ’853 and Fritzsche, Petitioner also has not shown by a preponderance of the evidence that claims 14–17, 19, 20, and 22 are unpatentable under 35 U.S.C. § 103 as obvious over McDaniel ’853 and Fritzsche.

g. Claim 24

Claim 24 is an independent claim with the same limitations as claim 23, but with an additional limitation that requires the “sterically hindered amine [to be] 2,4-bis[N-Butyl-N-(1-cyclohexyloxy-2,2,6,6-tetramethylpiperidin-4-yl)amino]-6-(2-hydroxyethylamine)-1,3,5-triazine.” Ex. 1001, 24:65–25:9. As discussed above with respect to the obviousness of claim 23 over McDaniel ’853, we are persuaded that Petitioner has shown by a preponderance of the evidence that McDaniel ’853 teaches or suggests all the limitations of claim 23. *See supra* Analysis § B.2.f. Petitioner argues, and Patent Owner does not dispute, that Fritzsche teaches or suggests the additional limitation of claim 24. Pet. 53–54; PO Resp. 19–47. We

agree with Petitioner. Fritzsche teaches the use of Tinuvin 152 as a sterically hindered amine. Ex. 1010, 47:10–48:14. The chemical structure of Tinuvin 152 is 2,4-bis[N-Butyl-N-(1-cyclohexyloxy-2,2,6,6,-tetramethylpiperidin-4-yl)amino]-6-(2-hydroxyethylamine)-1,3,5-triazine. Ex. 1016, 1. As discussed above with respect to claim 3, the use of a chemical disclosed in Fritzsche for the purpose disclosed in Fritzsche is no more than “the predictable use of prior art elements according to their established functions,” which was a sufficient reason for a person of ordinary skill in the art to use this method. *KSR*, 550 U.S. at 417. Accordingly, we determine that Petitioner has shown by a preponderance of the evidence that claim 3 is unpatentable under 35 U.S.C. § 103 as obvious over McDaniel ’853 and Fritzsche.

D. Asserted Obviousness over McDaniel ’853, Fritzsche, and McDaniel ’811

We instituted trial to determine whether the subject matter of claim 18 would have been obvious to a person of ordinary skill in the art given the teachings of McDaniel ’853, Fritzsche, and McDaniel ’811. Inst. Dec. 25–27, 29; see Pet. 21, 61–62.

1. McDaniel ’811

McDaniel ’811 relates to “a coating . . . that includes an enzyme that degrades cell wall or cell membrane components” and to “methods of retarding or preventing microbial growth on or in a coating.” Ex. 1005, at [57]. It teaches using “an amylase” as an antimicrobial or antifouling enzyme in a coating composition. Ex. 1005 ¶ 506.

2. *Analysis*

Claim 18 depends from claim 17 and adds a limitation requiring that the “enzyme [be] α -amylase or an analogue thereof.” Ex. 1001, 24:38–39. Via its dependence from claim 17, claim 18 depends indirectly from claim 13. *Id.* at 24:36–37. Because claim 18 depends from claim 13, claim 18 “include[s] all the limitations of” claim 13. 37 C.F.R. § 1.75(c). As discussed above, Petitioner has not shown by a preponderance of the evidence that claim 13 is unpatentable, because Petitioner has not shown sufficiently that the combination of McDaniel ’853 and Fritzsche teaches or suggests the “emulsion” limitation of claim 13. Petitioner does not allege that the addition of McDaniel ’811 remedies this deficiency. Pet. 61–62. Accordingly, Petitioner has not shown by a preponderance of the evidence that claim 18 is unpatentable under 35 U.S.C. § 103 as obvious over McDaniel ’853, Fritzsche, and McDaniel ’811.

E. Motion to Exclude

Patent Owner filed a Motion to Exclude. Paper 41. The motion seeks to exclude paragraphs 7, 9, 180, 187, 200, 203, 205, 206, 209, and 212 of Exhibit 1011, Dr. Lamb’s opening declaration, as well as paragraphs 9–12, 14, 38, 41–52, and 70–72 of Exhibit 1024, Dr. Lamb’s reply declaration. *Id.* at 1. In rendering our final written decision, we do not rely at all on any of the portions of Exhibit 1024 that Patent Owner seeks to exclude. Of the challenged portions of Exhibit 1011, we rely only on paragraphs 205, 206, and 209. We rely on these portions of Exhibit 1011 only in our discussion of the asserted obviousness of claim 13 over the combination of McDaniel ’853 and Fritzsche. With respect to that asserted ground of unpatentability, we conclude that Petitioner does not show the obviousness of the claim by a

preponderance of the evidence. Accordingly, even were we to grant Patent Owner's motion to exclude, it would not change the outcome of this proceeding. Therefore, we dismiss Patent Owner's Motion to Exclude as moot.

CONCLUSION

Upon consideration of the full record after trial, we determine that Petitioner has proven by a preponderance of the evidence that claims 1, 2, 4, 6, 9, 23, 25, and 27 are unpatentable under 35 U.S.C. § 103 as obvious over McDaniel '853. We also determine that Petitioner has proven by a preponderance of the evidence that claims 3, 5, and 24 are unpatentable under 35 U.S.C. § 103 as obvious over McDaniel '853 and Fritzsche. Finally, we determine that Petitioner has not proven by a preponderance of the evidence that claims 7, 8, 13–20, 22, and 26 are unpatentable.

ORDER

It is hereby

ORDERED that claims 1–6, 9, 23–25, and 27 of U.S. Patent No. 8,324,295 B2 have been proven unpatentable;

FURTHER ORDERED that claims 7, 8, 13–20, 22, and 26 of U.S. Patent No. 8,324,295 B2 have not been proven unpatentable;

FURTHER ORDERED that, pursuant to 35 U.S.C. § 318(b), upon expiration of the time for appeal of this decision, or the termination of any such appeal, a certificate shall issue canceling claims 1–6, 9, 23–25, and 27 and confirming the patentability of claims 7, 8, 13–20, 22, and 26 of U.S. Patent No. 8,324,295 B2;

FURTHER ORDERED that Patent Owner's Motion to Exclude is dismissed as moot; and

FURTHER ORDERED that, because this is a Final Written Decision, parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

IPR2016-01462
Patent 8,324,295 B2

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