

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

AXALTA COATING SYSTEMS, LLC,
Petitioner,

v.

PPG INDUSTRIES OHIO, INC.,
Patent Owner.

IPR2022-00676
Patent 7,981,505 B2

Before JON B. TORNQUIST, CHRISTOPHER M. KAISER, and
ELIZABETH M. ROESEL, *Administrative Patent Judges*.

ROESEL, *Administrative Patent Judge*.

DECISION
Denying Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

A. *Background and Summary*

Axalta Coating Systems, LLC (“Petitioner”) filed a Petition (Paper 1, “Pet.”) seeking an *inter partes* review of claims 1–19 (the “challenged claims”) of U.S. Patent No. 7,981,505 B2 (Ex. 1001, “the ’505 Patent”). PPG Industries Ohio, Inc. (“Patent Owner”) filed a Preliminary Response. Paper 9 (“Prelim. Resp.”).

We have authority to determine whether to institute an *inter partes* review. 35 U.S.C. § 314 (2018); 37 C.F.R. § 42.4(a) (2022). An *inter partes* review may not be instituted “unless . . . the information presented in the petition . . . and any response . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a). After considering the information presented in the Petition and the Preliminary Response, we determine that the reasonable likelihood standard is not met. Accordingly, we deny institution of an *inter partes* review.

B. *Related Matters*

The parties identify the following as a related matter: *PPG Industries Ohio, Inc. v. Axalta Coating Systems, LLC.*, No. 21-346 cv-00346-LPS (D. Del. filed March 5, 2021). Pet. 1; Paper 7, 2 (Patent Owner’s mandatory notices).

Petitioner filed another petition challenging the ’505 Patent in IPR2022-00675.

C. *The ’505 Patent (Ex. 1001)*

The ’505 Patent relates to multilayer coatings for consumer products such as cars, ceramic tiles, and wood flooring, including automotive refinish

coatings and aluminum beverage containers. Ex. 1001, 1:18–29, 3:34–39, 17:14–21. The background section explains that “‘tricoat’ coating systems . . . can achieve a deep transparent color effect” by including a color-imparting non-hiding layer between a pigmented basecoat layer and a clear topcoat layer. *Id.* at 1:32–42. According to the ’505 Patent, the color-imparting non-hiding coating layer provides “color depth and richness to the basecoat layer . . . known as the ‘candied’ effect.” *Id.* at 1:43–46.

The ’505 Patent discusses the disadvantages of using dyes in color-imparting non-hiding coating layers and states there is a need for “a color-imparting non-hiding coating layer that can have transparency and color comparable to that of a similar coating layer containing dyes and color persistence properties similar to conventionally pigmented coatings.” *Id.* at 2:1–21.

The ’505 Patent discloses:

[A] multi-layer coating system comprising: (a) a basecoat layer deposited from a film-forming composition comprising a resinous binder and a pigment; (b) a color-imparting non-hiding coating layer deposited over at least a portion of the basecoat layer; and (c) a clearcoat layer deposited over at least a portion of the color-imparting non-hiding layer. The color-imparting non-hiding coating layer is deposited from a protective coating composition comprising color-imparting particles having a maximum haze of about 10% and a film-forming resin.

Ex. 1001, 2:39–48. The ’505 Patent further discloses that “to achieve the desired haze (minimal scattering) of no more than 10%, the color-imparting particles have an average primary particle size of no more than 150 nanometers.” *Id.* at 4:38–41. The ’505 Patent includes working examples to illustrate the preparation of color-imparting particles, particle dispersions, and coating compositions and to illustrate the preparation and testing of coated substrates. *Id.* at 17:22–26:14.

D. Illustrative Claim

Petitioner challenges claims 1–19 (all claims) of the '505 Patent.

Pet. 1. Claim 1 is illustrative and is reproduced below.

1. A multi-layer coating system comprising:

a) a metallic basecoat layer deposited from a film-forming composition comprising a resinous binder and a metallic pigment;

b) a color-imparting non-hiding coating layer deposited over at least a portion of the basecoat layer, wherein the color-imparting non-hiding layer is deposited from a protective coating composition comprising (i) color-imparting organic pigments of one or more colors having an average primary particle size of less than 150 nanometers and having a maximum haze of about 10%; and (ii) a film-forming resin; and

c) a clearcoat layer deposited over at least a portion of the color-imparting non-hiding layer, wherein the clearcoat layer is deposited from a film-forming composition comprising a resinous binder, wherein one or more of the layers a), b) and c) is capable of ambient cure.

Ex. 1001, 26:23–39.

Independent claim 19 is similar to claim 1, except that claim 19 does not recite “wherein one or more of the layers a), b) and c) is capable of ambient cure” and instead specifies the resin composition in layers a) and b).

For layer a), claim 19 recites: “wherein the resinous binder consists essentially of a polymer selected from the group consisting of acrylic polymers, polyurethane polymers, polyether polymers, polyvinyl polymers, cellulosic polymers, acrylate polymers, silicon-based polymers, and mixtures thereof.” Ex. 1001, 28:6–11. For layer b), claim 19 recites: “wherein the film-forming resin consists essentially of a polymer selected from the group consisting of acrylic polymers, polyurethane polymers,

polyether polymers, polyvinyl polymers, cellulosic polymers, acrylate polymers, silicon-based polymers, and mixtures thereof.” *Id.* at 26:19–24.

E. Asserted Grounds and Evidence

Petitioner asserts the following grounds of unpatentability:

Ground	Claims	35 U.S.C. § ¹	Reference(s)
1	1–19	103(a)	Kasari, ² Kondo ³
2	1–19	103(a)	Kasari, EP ’931, ⁴ Kondo
3	1–19	103(a)	Hall, ⁵ EP ’931, Kondo

Petitioner submits the Declaration of Robert Iezzi, Ph.D., in support of the Petition. Ex. 1003. Patent Owner submits the Declaration of David A. Schiraldi, Ph.D., in support of the Preliminary Response. Ex. 2003.

II. ANALYSIS

A. Legal Standards

“In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (requiring *inter partes* review

¹ The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284, 287–88 (2011), amended 35 U.S.C. § 103, effective March 16, 2013. Because the ’505 Patent was filed before this date, we refer to the pre-AIA version of § 103. Ex. 1001, code (22).

² Ex. 1009, US 6,165,621, issued December 26, 2000 (“Kasari”).

³ Ex. 1006, US 5,830,568, issued November 3, 1998 (“Kondo”).

⁴ Ex. 1005, EP 0 388 931 A2, published September 26, 1990 (“EP ’931”).

⁵ Ex. 1010, US 2003/0039746 A1, published February 27, 2003 (“Hall”).

petitions to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim”)); *see also* 37 C.F.R. § 42.104(b) (requiring a petition for *inter partes* review to identify how the challenged claim is to be construed and where each element of the claim is found in the prior art patents or printed publications relied upon).

A patent claim is unpatentable under 35 U.S.C. § 103 if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved based on underlying factual determinations including (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) when presented, objective evidence of nonobviousness, i.e., secondary considerations. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

Additionally, the obviousness inquiry typically requires an analysis of “whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue.” *KSR*, 550 U.S. at 418 (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) (requiring “articulated reasoning with some rational underpinning to support the legal conclusion of obviousness”)). Petitioner cannot satisfy its burden of proving obviousness by employing “mere conclusory statements,” but “must instead articulate specific reasoning, based on evidence of record, to support the legal conclusion of obviousness.” *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016).

B. Level of Ordinary Skill in the Art

Petitioner contends that a person of ordinary skill in the art (“POSA”) would have had “at least a Bachelor’s or Master’s degree in the field of polymer chemistry, polymer coatings, materials science and/or a related field and at least two years of practical experience in the development of coating systems for consumer products.” Pet. 11.

For purposes of the Preliminary Response, Patent Owner does not dispute Petitioner’s definition of a POSA. Prelim. Resp. 8.

For purposes of this Decision, we apply Petitioner’s definition of a POSA, which is consistent with the scope and content of the ’505 Patent and the asserted prior art.

C. Claim Construction

In an *inter partes* review, we apply the same claim construction standard as would be used by a district court to construe a claim in a civil action involving the validity or infringement of a patent. 37 C.F.R. § 42.100(b). Under that standard, claim terms are given their ordinary and customary meaning, as would have been understood by a person of ordinary skill in the art at the time of the invention, in light of the language of the claims, the specification, and the prosecution history of record. *Id.*; *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–19 (Fed. Cir. 2005) (en banc); *Thorner v. Sony Comput. Entm’t Am. LLC*, 669 F.3d 1362, 1365–66 (Fed. Cir. 2012). “The Board is required to construe ‘only those terms . . . that are in controversy, and only to the extent necessary to resolve the controversy.’” *Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1375 (Fed. Cir. 2019) (quoting *Vivid Techs., Inc. v. Am. Sci. Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)).

We do not need to resolve any claim construction disputes for purposes of this Decision.

D. Petitioner's References

Below we provide an overview of Kondo, Kasari, Hall, and two other references cited by Petitioner, Grubenmann⁶ and Vernardakis.⁷ For purposes of this Decision, an overview of EP '931 is not necessary.

1. Kondo (Ex. 1006)

Kondo discloses a laminated glass including an interlayer film interposed between first and second transparent glass plates. Ex. 1006, code (57), 1:7–10, 2:4–11, 2:22–25. Dispersed in the interlayer film are “functional ultra-fine particles” having “a particle diameter of up to 0.2 μm .” *Id.* With these ultra-fine particles in the interlayer, “the laminated glass has various additional functions such as the provision of colorlessness or a certain desired color tone, heat insulation, ultraviolet ray insulation, [and] the maintenance of a sufficient radio transmittance” and is suitable as “an architectural or automotive laminated glass,” such as a front or rear windshield. *Id.* at 2:25–31, 5:46–50. Kondo discloses that the laminated glass is “well controlled in color tone, extremely low in haze value, and superior in transparency and in reduction of reflection and glare.” *Id.* at 2:39–42.

⁶ Ex. 1007, A. Grubenmann, *Particle Size Distribution and Aspect Ratio of Organic Pigments*, 3 Particle & Particle Sys. Characterization 179 (1986) (“Grubenmann”).

⁷ Ex. 1016, Theodore G. Vernardakis, *Pigment Dispersion*, ch. 72, Coatings Technology Handbook (2d ed., D. Satas & Arthur A. Tracton eds., 2001) (excerpt) (“Vernardakis”). Petitioner and its declarant, Dr. Iezzi, refer to Exhibit 1016 as “Satas & Tracton.” Pet. viii; Ex. 1003, 5.

Kondo discloses that the functional ultra-fine particles comprise metals, compounds containing the metals, or composites containing metals. *Id.* at 4:13–16. According to Kondo, antimony tin oxide (ATO) and indium tin oxide (ITO) are “particularly preferable examples as the functional ultra-fine particles for an automotive laminated glass.” *Id.* at 4:46–53, 4:67–5:2; *see also id.* at 8:28–10:39, 11:11–31, 13:6–42 (Examples 1–3, 6, 14, and 15 illustrating interlayer films containing ATO or ITO ultra-fine particles). Kondo also discloses “inorganic pigment ultra-fine particles.” *Id.* at 4:53; *see also id.* at 12:10–13:4 (Examples 11–13 illustrating interlayer films containing ultra-fine particles of inorganic pigment mixtures).

2. *Grubenmann (Ex. 1007)*

Grubenmann is a paper titled, “Particle Size Distribution and Aspect Ratio of Organic Pigments.” Ex. 1007, 1 (title).⁸ Grubenmann states that “[p]article size and aspect ratio are amongst the most important parameters which determine the application properties of pigments, fillers and powders for ceramics.” *Id.* (Abstract). Grubenmann provides a “statistical characterization of samples,” discusses “the measurement of bivariate size distributions of organic pigments,” and describes “a correction procedure for particles with interchanged crystallographic axes.” *Id.*

By way of introduction, Grubenmann explains:

Particle size and shape strongly influence the application properties of pigments. Thus, high transparency of pigmented systems, such as coatings or plastics, is achieved with particles smaller than 100 nm. For higher opacity particles between 200 and 500 nm are needed, dependent on the refractive indices of the pigment and binder. The non-coloristic properties of pigmented systems such as rheology, flocculation behaviour,

⁸ We cite Exhibit 1007 using the page numbers added by Petitioner.

weather fastness, or gloss also depend strongly on the particle size and shape. The degree of weather fastness is known to increase in going from finer to coarser particles. On the other hand, the aspect ratio plays an important role in relation to flocculation behaviour and also gloss, especially with organic pigments.

Ex. 1007, 1 (left column).

3. *Kasari (Ex. 1009)*

Kasari discloses a method for forming a multi-layer metallic coating film for metal articles such as automobiles. Ex. 1009, 1:5–15, 1:45–48, 2:42–47, 2:56–57. The method is characterized as “a 3-coat system” and comprises the sequential application of coating compositions (A), (B), and (C) to a metal substrate. Ex. 1009, 1:57–61, 11:47–52. Coating composition (A) is an organic solvent-based thermosetting metallic first base coating composition comprising a neutralized carboxyl-containing resin, an amino resin, and a metallic pigment. *Id.* at 1:61–65. Coating composition (B) is an aqueous thermosetting second base coating composition. *Id.* at 2:1–2. Coating composition (C) is an organic solvent-based thermosetting clear coating composition. *Id.* at 2:5–6.

Kasari discloses that coating composition (A) has a “high water absorbing capacity and absorbs water from the coating composition (B)” and coating composition (B) has a “high wettability” toward coating composition (A), so that “the amount of the organic solvent . . . can be reduced without degradation of esthetic property or surface smoothness of coating film due to the change of humidity.” Ex. 1009, 2:18–30.

Kasari discloses that coating composition (A) has “a substrate-hiding power corresponding to not higher than 3% transmittance of light at a wavelength of 400 to 700 nm in a 15 μ m-thick cured coating film.”

Ex. 1009, 1:65–2:1, 3:26–34.⁹ Coating composition (B) has “a transparency corresponding to 10 to 95% transmittance of light at a wavelength of 400 to 700 nm in a 15-pm thick cured coating film.” *Id.* at 2:3–5, 8:25–31.

According to Kasari, the 3-coat system “is capable of imparting markedly improved depth feeling and distinctness-of-image gloss to the coating film, resulting in the formation of an esthetically superior multi-layer metallic coating film.” *Id.* at 3:34–41.

Kasari discloses:

The second base coating composition (B) preferably contains a metallic pigment, a coloring pigment or like pigments which leads to the formation of cured coating film having a transparency corresponding to a light transmittance of 10 to 95%. Preferably the total amount of pigments is so small that the layer of the coating composition (B) is transparent with the result that the color of first base coating composition layer can be seen through the second base coating composition layer. Desirably the total amount of pigments in the second base coating composition (B) is smaller than in the first base coating composition (A).

Stated more specifically, the pigments are preferably used in an amount which brings about a light transmittance of 10 to 95%, preferably 20 to 90% in a cured layer of second base coating composition (B).

Ex. 1009, 9:50–64. According to Kasari, “[u]seful metallic pigments are, for example, aluminum powders, bronze powders, copper powders, tin powders, lead powders, zinc powders, iron phosphate powders, micaceous iron oxide

⁹ Kasari provides inconsistent and confusing disclosures regarding the thickness of a sample used to measure light transmittance, referring variously to a “15 am-thick” film (Ex. 1009, 2:1), a “15-pm thick” film (*id.* at 2:5), a “15 Mm” film thickness (*id.* at 3:31–34), a “15 Am” film thickness (*id.* at 7:24–27), and a “15 µm thick” film (*id.* at 14:27–29 (Table 1), 15:47–49 (Table 2), 20:1, 20:5 (claim 1)).

particles and titanium oxide-coated mica particles” and “[e]xamples of useful coloring pigments are titanium dioxide, carbon black, Phthalocyanine Blue, Phthalocyanine Green, Carbazole Violet, anthrapyridine, Azo Orange, Flavanthrone Yellow, Isoindoline Yellow, Azo Yellow, Indanthrone Blue, Dibromoanthanthrone Red, Perylene Red, Azo Red, Anthraquinone Red and Quinacridone Red.” *Id.* at 6:60–7:5.

According to Kasari, the method may be conducted according to a “3-coat 1-bake system” or a “3-coat 2-bake system.” Ex. 1009, 11:52–54. In the first case, layers (A), (B), and (C) are heated to cure them at the same time (*id.* at 11:55–64), and in the second case, layers (A) and (B) are simultaneously cured, and a second cure is conducted after layer (C) is applied (*id.* at 12:24–35). In both cases, coating composition (B) is applied to an uncured coating layer (A). *Id.* at 11:65–12:1, 12:24–28.

4. *Hall (Ex. 1010)*

Hall discloses a retroreflective coating system and a method of providing the retroreflective coating system on a substrate, such as an automotive body panel. Ex. 1010 ¶¶ 1, 5, 6. Petitioner relies on the embodiment shown in Figure 1, which is reproduced below.

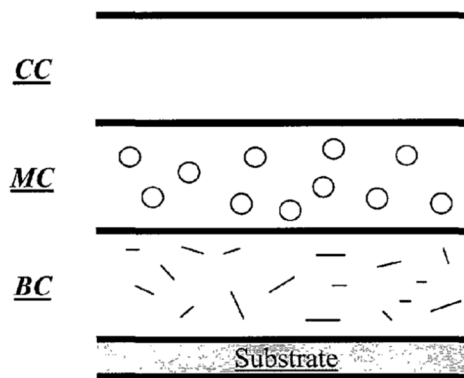


Fig. 1

Hall Figure 1 illustrates a retroreflective coating system including retroreflective microspheres disposed in a mid-coat film layer (MC) between a pigmented basecoat film layer (BC) and a clearcoat film layer (CC) of the coating system. Ex. 1010 ¶¶ 10, 30, 32, 33. The pigmented basecoat (BC) corresponds to a first color-providing composition, and the mid-coat film layer (MC) corresponds to a second color-providing composition. *Id.* ¶¶ 30, 32. The mid-coat composition includes a polymer, retroreflective microspheres, and optionally other pigments, both organic and inorganic. *Id.* ¶ 32. The pigmented basecoat composition includes flake-like aluminum pigment that reflects light, functioning as a “backdrop” that causes light to interact with the retroreflective microspheres. *Id.* ¶ 30. The pigmented basecoat may also include other pigments, both organic and inorganic. *Id.* ¶ 31. Each layer is applied wet-on-wet, and the uncured film layers are simultaneously cured, so that at least one of the compositions cross-links. *Id.* ¶¶ 29, 32–34.

5. *Vernardakis (Ex. 1016)*

Vernardakis is a chapter of a Coatings Technology Handbook titled “Pigment Dispersion.” Ex. 1016, 4.¹⁰ In a subsection titled, “Pigment Definition,” Vernardakis provides the following description:

Organic pigments are highly colored, inert synthetic compounds that are usually brighter, purer, and richer in color than inorganic pigments. Generally, however, they are less resistant to sunlight (some fade badly on exposure to light), to chemicals (greater tendency to bleed in solvents), and to high processing temperatures (lower heat stability); quite often too, they are more expensive than inorganic pigments.

Ex. 1016, 5.

¹⁰ We cite Exhibit 1016 using the page numbers added by Petitioner.

In a subsection titled, “Pigment Particles,” Vernardakis states:

Pigments in the presscake or dry powder form are composed of fine particles, normally in the submicrometer size range. Their color properties are generally influenced by particle size and particle size distribution; therefore an assessment on the degree of dispersion must, above all, be considered in terms of these critical measurements. . . . In general, color properties, such as strength, transparency, gloss, rheology, and lightfastness of all pigmented systems, are affected to a greater or lesser extent by the size and distribution of the pigment particles in the dispersion. For example, phthalocyanine blue is first prepared commercially in a “crude” pigment form having a large particle size, up to 25 μm . As such, it has little color value and must therefore be reduced to smaller, finer particles to enhance its coloristic properties. After partic[le] size reduction (down to 0.03–0.15 μm), an excellent pigment is obtained, which exhibits a high degree of tinctorial strength, transparency, and gloss.

Ex. 1016, 5 (footnote omitted).

E. Petitioner’s Obviousness Grounds

Petitioner contends that claims 1–19 are unpatentable as obvious based on (1) Kasari and Kondo; (2) Kasari, EP ’931, and Kondo; and (3) Hall, Kondo, and EP ’931. Pet. 6, 13–71. Patent Owner opposes. Prelim. Resp. 22–46.

Independent claims 1 and 19 each recite that “the color-imparting non-hiding layer is deposited from a protective coating composition comprising (i) color-imparting organic pigments of one or more colors having an average primary particle size of less than 150 nanometers and having a maximum haze of about 10%.” Ex. 1001, 26:28–34, 28:13–18. Our analysis focuses on the claim requirement that the organic pigments have “an average primary particle size of less than 150 nanometers” (hereinafter, the “particle size limitation”).

Petitioner contends that Kasari and Hall each disclose a three-layer coating that meets most of the limitations claims 1 and 19. Pet. 20–30, 51–64. Petitioner concedes that neither Kasari nor Hall discloses the particle size limitation. Pet. 19, 49, 54. For that limitation, Petitioner relies on Kondo and the knowledge of a POSA. Pet. 22–24, 54–56. To show the knowledge of a POSA, Petitioner and its declarant rely on Grubenmann and Vernardakis. Pet. 22, 49, 54; Ex. 1003 ¶¶ 85, 187, 209. Petitioner asserts that a POSA would have been motivated to combine the teachings of Kasari and Kondo “to achieve ‘superior’ transparency and ‘an extremely low haze value’ . . . [and] to achieve greater transparency, opacity, and deep rich colors for esthetic appearance.” Pet. 19 (quoting Ex. 1006, 2:39–42). When addressing the particle size limitation, Petitioner asserts that a POSA would have been motivated to combine the teachings of Kasari and Kondo “to increase transparency and allow more light to travel through the pigmented middle layer.” Pet. 23. Petitioner asserts a similar motivation for combining the teachings of Hall and Kondo. Pet. 49, 55–56.

Patent Owner argues that Kondo is non-analogous prior art because it relates to car windshields, not paint coatings, and is not reasonably pertinent to the problem addressed by the ’505 Patent. Prelim. Resp. 22–26. Among other things, Patent Owner argues that Petitioner fails to provide a reason a POSA would combine Kasari and Kondo and that the proposed combination is based on impermissible hindsight. *Id.* at 31–38. Patent Owner argues that the teachings of Hall and Kondo are inconsistent, and there would have been no motivation to combine them without improper hindsight reconstruction. *Id.* at 41–43. Patent Owner also argues that Grubenmann teaches away from the claimed subject matter. *Id.* at 42, 44–45.

After considering the parties' arguments and evidence, we agree with Patent Owner that Petitioner does not make a sufficient showing of obviousness. Our reasoning is two-fold. First, Petitioner's obviousness challenges are based on unsupported assertions about the teachings of Kondo and hindsight-biased view of Grubenmann and Vernardakis, the references Petitioner and Dr. Iezzi rely on to show the knowledge of a POSA. Second, Petitioner fails to provide a sufficient, non-hindsight biased rationale for combining the three-layer coating of Kasari or Hall with the teachings of Kondo and the knowledge of a POSA regarding particle size in a manner that would have led a POSA to the claimed invention. We address each of these shortcomings below.

1. Prior art teachings

Petitioner asserts that Kondo teaches a glass laminate having "superior" transparency and that "such superior transparency is achieved by the very small particle size of the pigment (from 1 to 150 nm) present in the intermediate layer." Pet. 18. We disagree. Contrary to Petitioner's assertion, Kondo does not attribute the transparency of the laminate to the small size of the particles in the interlayer, but instead teaches that such transparency is achieved "in spite of" such particles. Specifically, Kondo teaches:

In spite of the fact that the interlayer film contains the functional ultra-fine particles, it has been unexpectedly found that the laminated glass has an extremely low haze value, a good radio transmittance and a sufficient transparency and that the interlayer film is sufficient in bond strength against the first and second glass plates, in transparency, durability and the like.

Ex. 1006, 3:2–9. Petitioner asserts that Kondo teaches that "smaller particle size increases transparency and lowers haze" (Pet. 23) but does not direct us

to disclosures in Kondo sufficient to support that assertion. Kondo makes no comparison between large and small size particles and provides no teaching about how particle size affects transparency.

Petitioner's declarant, Dr. Iezzi, relies on Grubenmann's disclosure that "high transparency of pigmented systems, such as coatings or plastics, is achieved with particles smaller than 100 nm." Ex. 1003 ¶¶ 32, 87, 209 (quoting Ex. 1007, 1). Dr. Iezzi fails to mention Grubenmann's competing teaching that, for organic pigmented systems, "[t]he degree of weather fastness is known to increase in going from finer to coarser particles." Ex. 1007, 1. As discussed below, Petitioner does not adequately account for this competing teaching when relying on Grubenmann's teachings about organic pigment particle size.

Dr. Iezzi relies on Vernardakis's disclosure concerning the organic pigment phthalocyanine blue that "[a]fter particle size reduction (down to 0.03–0.15 μm [30–150 nm]), an excellent pigment is obtained, which exhibits a high degree of tinctorial strength, transparency, and gloss." Ex. 1003 ¶¶ 32, 87, 209 (quoting Ex. 1016, 5 with bracketed material added by Dr. Iezzi). Dr. Iezzi fails to mention Vernardakis's teaching that, as compared with inorganic pigments, organic pigments "are less resistant to sunlight" and that "some fade badly on exposure to light." Ex. 1016, 5. As discussed below, Petitioner does not adequately account for this teaching when relying on Vernardakis's teachings about organic pigments.

2. Rationale for combining prior art teachings

Petitioner fails to present a sufficient, non-hindsight biased rationale for combining the teachings of either Kasari or Hall with Kondo in a manner that would result in the claimed invention. Petitioner does not show

sufficiently that a POSA looking to improve a three-layer coating for automobiles as disclosed in Kasari or Hall would have looked to Kondo, which teaches laminated glass for windshields. Although Petitioner asserts that “[Kasari] and Kondo each teach multi-layer systems with a transparent colored middle layer that can be used in the automobile industry” (Pet. 20) and makes a similar assertion about Hall and Kondo (Pet. 48), such high-level similarity is not a sufficient obviousness rationale. *See Securus Techs., Inc. v. Glob. Tel*Link Corp.*, 701 F. App’x 971, 977 (Fed. Cir. 2017) (“We agree with the Board that a broad characterization of [asserted references] as both falling within the same alleged field . . . without more, is not enough for [petitioner] to meet its burden of presenting a sufficient rationale to support an obviousness conclusion.”).

Petitioner fails to show that Kondo’s interlayer for bonding two glass plates is sufficiently relevant to the intermediate coating layer of Kasari or Hall that a POSA would have applied Kondo’s teachings to the organic pigments that may be used in the intermediate coating layer. Kondo teaches a glass-bonding interlayer containing ultra-fine inorganic particles for providing colorlessness or a color tone, heat insulation, and ultraviolet ray insulation, without adversely affecting the bond strength of the interlayer or the haze, radio transmittance, transparency, and durability of the glass laminate. Ex. 1006, 2:25–31, 2:39–47, 3:2–9. In contrast, Kasari and Hall both teach an intermediate coating layer that may contain an organic or inorganic pigment. Ex. 1009, 9:50–64; Ex. 1010 ¶ 32. Petitioner does not provide a sufficient reason why a POSA would consider Kondo’s teaching about ultra-fine inorganic particles for providing colorlessness or a color tone, heat insulation, and ultraviolet ray insulation in a glass-bonding layer, when selecting organic pigments for use in the intermediate coating layer of

Kasari or Hall. Petitioner also does not explain why a POSA would rely on the particle size of Kondo's particles in isolation from Kondo's teaching of inorganic pigments as the ultra-fine particles. *See In re Wesslau*, 353 F.2d 238, 241 (CCPA 1965) ("It is impermissible within the framework of section 103 to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art.").

Even if a POSA were to consider Kondo in combination with Kasari or Hall, Petitioner does not explain sufficiently why a POSA would consider the particle size of Kondo's *inorganic* pigments when selecting *organic* pigments for the intermediate coating layer of Kasari or Hall. This gap in reasoning is particularly troublesome because each combination of references relied upon by Petitioner discloses overlapping sets of *inorganic* pigments. *Compare* Ex. 1006, 4:13–18, 4:31–34 (disclosing ultra-fine particles of metals such as tin (Sn), zinc (Zn), aluminum (Al), and copper (Cu) and metal oxides such as titanium dioxide (TiO₂)), *with* Ex. 1009, 6:60–67 (disclosing metallic pigments such as aluminum powders, copper powders, tin powders, and zinc powders and coloring pigments such as titanium dioxide). *Compare* Ex. 1006, 4:31–34 (disclosing ultra-fine particles of metal oxides such as titanium dioxide (TiO₂), iron oxide (Fe₂O₃ and FeO), and chromium oxide (Cr₂O₃)), *with* Ex. 1010 ¶ 31 (disclosing inorganic pigments such as titanium dioxide, iron oxides, and chromium oxide). Despite these overlapping teachings, Petitioner selectively relies the organic pigments of Kasari or Hall and combines them with the particle size of Kondo's ultra-fine inorganic pigments, without a sufficient showing of why a POSA would have combined the references in this manner. Petitioner

and Dr. Iezzi assert that organic and inorganic pigments can be used interchangeably in coatings (Pet. 55; Ex. 1003 ¶ 211), but provide no objective support for that assertion. Dr. Iezzi cites Vernardakis, which discusses the differences between organic and inorganic pigments and does not support interchangeability. Ex. 1016, 5 (quoted at page 13 above).

Petitioner does not show sufficiently that a POSA would have been motivated to combine the intermediate coating layer of Kasari or Hall with the particle size of Kondo's ultra-fine inorganic particles. Although Petitioner relies on a purported desire for increased transparency and lower haze (Pet. 23, 55–56), Kasari's intermediate coating layer has a transparency corresponding to light transmittance of 10 to 95% depending on the amount of pigment. Ex. 1009, code (57), 2:1–5, 3:34–41, 8:25–31, 9:50–64. Petitioner does not explain why transparency greater than 95% would have been desirable. Petitioner contends that a POSA would understand that Hall's middle coat layer is transparent (Pet. 47) but does not explain why increased transparency or lower haze would have been desired or beneficial.

Furthermore, Petitioner asserts that, in Kondo, "superior transparency is achieved by the very small particle size of the pigment (from 1 to 150 nm) present in the intermediate layer." Pet. 18. As discussed above, that assertion is not supported by Kondo, which provides no teaching about how particle size affects transparency. Kasari teaches that the light transmission properties of a particle-containing layer are controlled by the amount of particles contained in the layer. Ex. 1009, 9:54–56 ("the total amount of pigments is so small that the layer of the coating composition (B) is transparent"). Kondo similarly teaches that, "[w]hen the laminated glass is used as an architectural glass having a visible light transmittance (Tv) of at least 35%, it is necessary to add the ultra-fine particles made of inorganic

pigment(s) in an amount within a range from about 0.1 to about 10 wt %.” Ex. 1006, 3:34–39. Although Kondo teaches ultra-fine inorganic pigment particles, Petitioner does not show sufficient support for its assertion that Kondo teaches that “smaller particle size increases transparency” (Pet. 23) or that a POSA would have been led by Kondo’s teachings to use ultra-fine organic pigment particles in an intermediate coating layer as taught by Kasari or Hall.

Petitioner asserts that a “POSA would have known that high transparency in a coating layer can be achieved not only by having a small amount of pigment in a coating layer, but also by using pigment particles that are smaller than 150 nm, or even smaller than 100 nm.” Pet. 22 (citing Ex. 1003 ¶ 85); *see also* Pet. 49, 54 (similar assertions, citing Ex. 1003 ¶¶ 187, 209). Petitioner’s declarant, Dr. Iezzi, makes the same assertions, citing Grubenmann and Vernardakis. Ex. 1003 ¶¶ 85, 187, 209 (citing Exs. 1007, 1016). Although Dr. Iezzi relies on Grubenmann’s teaching that “high transparency . . . is achieved with particles smaller than 100 nm” (Ex. 1003 ¶ 87), neither Petitioner nor Dr. Iezzi account for Grubenmann’s competing teaching that “[t]he degree of weather fastness is known to increase in going from finer to coarser particles.” Ex. 1007, 1. Similarly, although Dr. Iezzi relies on Vernardakis’s teaching about particle size reduction and high transparency of an organic pigment (Ex. 1003 ¶ 87), neither Petitioner nor Dr. Iezzi account for Vernardakis’s competing teaching that organic pigments are less resistant to fading when exposed to sunlight, as compared with inorganic pigments. Ex. 1016, 5. As discussed above, the intermediate coating layers of Kasari and Hall may contain an inorganic pigment. Ex. 1009, 9:50–64; Ex. 1010 ¶ 32.

Kasari and Hall indicate that weather durability is important for their automotive coatings. Ex. 1009, 5:61–63, 10:22–27; Ex. 1010 ¶ 3. Petitioner fails to explain why, when considering pigments for an intermediate coating layer for an automobile, a POSA would have focused on Grubenmann’s and Vernardakis’s teachings about transparency, while ignoring their competing teachings about weather and sunlight fastness. For this reason, Petitioner’s reliance on the knowledge of a POSA based on Grubenmann and Vernardakis does not cure the deficiencies in Petitioner’s combination of Kondo with the other cited art. In any event, Petitioner’s grounds rely on combining Kasari or Hall with Kondo for the particle size limitation (Pet. 22–24, 54–56), and Petitioner’s rationales for those combinations are deficient for the reasons discussed above.

F. Discretion under 35 U.S.C. § 325(d)

In view of our determination that Petitioner does not meet the threshold for instituting review on the merits, we do not need to address the parties’ dispute about whether the Board should exercise its discretion to deny the Petition under 35 U.S.C. § 325(d). Pet. 3; Prelim. Resp. 18–22.

III. CONCLUSION

For the above reasons, we determine that Petitioner does not establish a reasonable likelihood that it would prevail in showing that at least one of claims 1–19 of the ’505 Patent is unpatentable on the grounds asserted in the Petition.

IV. ORDER

It is

ORDERED that the Petition is *denied*, and no trial is instituted.

IPR2022-00676
Patent 7,981,505 B2

For PETITIONER:

William H. Mandir
David P. Emery
SUGHRUE MION PLLC
wmandir@sughrue.com
demery@sughrue.com

Sharonmoyee Goswami
Tatiana N. Alyoncheva
CRAVATH, SWAINE & MOORE LLP
sgoswami@cravath.com
talyoncheva@cravath.com

For PATENT OWNER:

Lisa A. Chiarini
Robert R. Riddle
REED SMITH LLP
lchiarini@reedsmith.com
rriddle@reedsmith.com