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Paper 11
Date: September 13, 2023

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

VANTAGE SPECIALTY CHEMICALS, INC.,
Petitioner,

v.

CARGILL, INC.,
Patent Owner.

IPR2023-00589
Patent 11,248,245 B2

Before SHERIDAN K. SNEDDEN, TIMOTHY G. MAJORS, and MICHAEL A. VALEK, *Administrative Patent Judges.*

MAJORS, *Administrative Patent Judge*.

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

I. INTRODUCTION

Vantage Specialty Chemicals, Inc. ("Petitioner" or "Vantage") filed a Petition (Paper 1, "Pet.") requesting *inter partes* review of claims 1–3 and 5 of U.S. Patent No. 11,248,245 B2 (Ex. 1001, "the '245 patent"). Pet. 3–4. Cargill, Inc. ("Patent Owner" or "Cargill") filed a Preliminary Response (Paper 8, "Prelim. Resp.").

Under 35 U.S.C. § 314(a), an *inter partes* review may not be instituted unless it is determined that there is a reasonable likelihood that the petitioner would prevail with respect to at least one of the claims challenged in the petition. After considering the parties' arguments and evidence, for the reasons set forth below, Petitioner demonstrates a reasonable likelihood of prevailing with respect to at least one of the '245 patent's challenged claims. We decline to deny the Petition on a discretionary basis as requested by Patent Owner. *See infra* Section IV(A)-(B). We therefore institute an *inter partes* review on all challenged claims and grounds asserted in the Petition. *See SAS Inst. Inc. v. Iancu*, 138 S. Ct. 1348, 1355 (2018).

Findings and conclusions at this stage are preliminary and based on the current record. This is not a final decision on the patentability of the challenged claims. Any such final decision will be based on a complete record developed through trial.

II. BACKGROUND

A. Real Parties-in-Interest

Vantage identifies itself as the real party-in-interest. Pet. 2. Cargill identifies itself as the real party-in-interest. Paper 3, 2.

B. Related Matters

The parties identify the following lawsuit involving assertion of the '245 patent: *Cargill, Inc. v. Vantage Specialty Chemicals, Inc.*, 1:22-cv-00979 (D. Del.). Pet. 2; Paper 3, 2; *see* Ex. 1020 (complaint).

C. The '245 Patent & Background Technology

The '245 patent, titled "Processes and Systems for Catalytic Manufacture of Wax Ester Derivatives," issued on February 15, 2022. Ex. 1001, codes (45), (54). The application that matured into the '245 patent was filed December 19, 2014. *Id.* at code (22).[1]

"Wax esters are found in various animals and plants, including the jojoba plant (*Simmondsia chinensis*)." *Id.* at 1:14–16. According to the '245 patent, "[w]ax esters are used in various applications, including in cosmetic and personal care products." *Id.* at 1:16–18. "A wax ester is formed from the chemical reaction of a fatty acid and a fatty alcohol, which results in the formation of an ester group that links two carbon chains." *Id.* at 1:12–14.

The '245 patent describes processes for "transesterifying" wax esters. *Id.* at Abstr., 1:22–2:41 (Summary of Invention). The wax esters, which are provided as "feedstock" to the transesterification process may include jojoba wax esters and hydrogenated jojoba wax esters. *Id.* at 1:29–45, 12:26–14:23 (example disclosing jojoba oil and hydrogenated jojoba oil as feedstock).[2]

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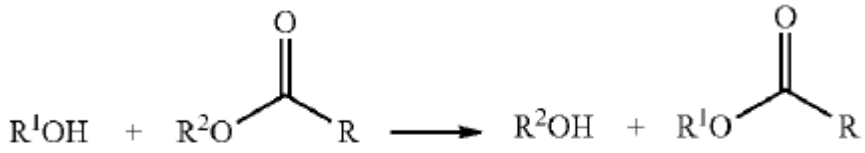
[1] For purposes of this decision and analyzing the state of the art, we apply December 19, 2014, as the putative priority date. Pet. 11 n.2 (asserting priority "no earlier than December 19, 2014").

[2] As described in certain prior art, the hydrogenation state of lipid materials relates to the extent to which lipids (e.g., oils) are unsaturated (include carbon-carbon (C=C) double bonds in the lipid chain) or fully saturated (no carbon-carbon double bonds). *See, e.g.*, Ex. 1005, 2 ("The double bonds of

As described in the '245 patent, "[t]ransesterification involves the process of exchanging acyl groups located on each side of a[n] ester group with an acyl group contained in an alcohol group." *Id.* at 3:28–30. That reaction is illustrated below.



Id. at 3:31–37. The image above is a schematic of the chemical reaction where the R^1 group of the alcohol and the R^2 group of the ester reactants on the left side of the arrow are exchanged, resulting in an alcohol product R^2OH and an ester product R- COO-R^1 on the right side. According to the '245 patent, "[t]ransesterification for naturally occurring or structured or synthetic esters permits altering of various physical properties of the transesterified product when compared to the original feedstock." *Id.* at 3:38–41. Further, the patent explains, "physical properties such as viscosity, dropping point, oil (oxidative) stability index (OSI), carbon chain distribution, and other properties of the transesterified product may be greater, equal to, or less than the corresponding values of the original wax-ester containing feedstocks." *Id.* at 3:41–51 ("These changes take place at least in part because the chain lengths of the resulting ester products are

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a fully hydrogenated lipid have been eliminated by completely 'saturating' the molecule with hydrogen."); *see also id.* at 2–3 (discussing whether the C=C double bond of the lipid molecule is in a *cis* configuration (hydrogens of the double bond on the same side of the molecule chain) or *trans* configuration (hydrogens of the double bond on opposite sides of the chain)); Ex. 1006, 1 ("The majority of all lipids produced by nature contain only 'cis' isomers.").

randomized compared to the distribution in the original wax ester feedstock.").

According to the '245 patent, "conventional transesterification reactions use a chemical catalyst, such as sodium methylate (methoxide) or sodium hydroxide." *Id.* at 3:66–4:1. However, "[i]n this document [(the '245 patent)], . . . processes for transesterifying wax esters are disclosed that use enzymes to catalytically facilitate the transesterification reaction." *Id.* at 4:57–59; *see also id.* at Figs. 4–7 (depicting wax ester distributions of chemically and enzymatically transesterified jojoba wax esters). "In particular implementations, the enzymes are lipases, which are proteins that various biological organisms use to catalyze the hydrolysis and/or esterification of various compounds, such as lipids." *Id.* at 4:59–62.

D. Illustrative Claims

Claim 1, the only independent claim of the '245 patent, is illustrative of the challenged claims. It reads:

> 1. [preamble] A process for transesterifying wax esters, the process comprising:
>
> [1a] providing a feedstock comprising jojoba wax esters and hydrogenated jojoba wax esters, wherein the amount of hydrogenated jojoba wax esters is 20% to 50% by weight of the feedstock;
>
> [1b] contacting the feedstock with a lipase; and transesterifying the jojoba wax esters and the hydrogenated jojoba wax esters in the feedstock with the lipase to form a transesterified product;
>
> [1c] wherein an oxidative stability index (OSI) of the transesterified product is greater than an OSI of the feedstock.

Ex. 1001, 19:8–21. (adding bracketed designations for consistency with Petitioner's annotation of claim 1). Challenged claims 2, 3, and 5 each depend from claim 1. Claim 2 adds that "the feedstock consists essentially

of the jojoba wax esters and the hydrogenated wax esters"; claim adds that "the feedstock does not comprise any free fatty alcohols"; and claim 5 adds that "the feedstock does not comprise any methyl esters." *Id.* at 20:7–19.

E. Prior Art and Asserted Grounds

Petitioner asserts that claims 1–3 and 5 are unpatentable on the following grounds:

Claims Challenged	35 U.S.C. §[3]	References/Basis
1–3, 5	103	Cummings,[4] Xu,[5] Sessa[6]
1–3, 5	103	Trans Isomers 2,[7] Xu, Sessa
1–3, 5	103	Trans Isomers 2, Trans Isomers 1,[8] Sessa
1–3, 5	103	Brown,[9] Xu, Cummings, Sessa

Petitioner also submits testimony from David A. Rockstraw, Ph.D., P.E., in support of its challenge to the claims. Ex. 1003 (Rockstraw Decl.). Patent Owner submits testimony from Thomas Schultz, Ph.D. Ex. 2001 (Schultz Decl.).

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[3] The Leahy-Smith America Invents Act ("AIA"), Pub. L. No. 112-29, 125 Stat. 284, 285–88 (2011), revised 35 U.S.C. §§ 102, 103 effective March 16, 2013. The '245 patent claims priority to an application filed December 19, 2014, so post-AIA §§ 102 and 103 apply. Ex. 1001, code (22).

[4] Melanie Cummings et al., *A natural alternative*, Soap, Perfumery, and Cosmetics (SPC) Asia (May 1, 1999) (Ex. 1004 ("Cummings")).

[5] Xuebing Xu, *Engineering of enzymatic reactions and reactors for lipid modification synthesis*, 105 Eur. J. Lipid Sci., Technol., 289–304 (2003) (Ex. 1008 ("Xu")).

[6] David J. Sessa, *Derivation of a Cocoa Butter Equivalent from Jojoba Transesterified Ester via a Differential Scanning Colorimetry Index*, 72 J. Sci. Food Agric., 295–298 (June 3, 1996) (Ex. 1009 ("Sessa")).

[7] James Brown & Robert Kleinman, *Trans Isomers in Cosmetics*, Soap & Cosmetics (June 2001) (Ex. 1005 ("Trans Isomers 1")).

[8] James Brown & Robert Kleinman, *Trans Isomers in Cosmetics Part 2*, Soap & Cosmetics (June 2001) (Ex. 1006 ("Trans Isomers 2")).

[9] Brown, US RE38,141 E, issued June 10, 2003 (Ex. 1007 ("Brown")).

III. 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)).

A claim is unpatentable under 35 U.S.C. § 103 if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious at the time the invention was made[10] to a person having ordinary skill in the relevant art. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of 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) secondary considerations of nonobviousness when presented.[11] *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

Moreover, "[a]n obviousness determination requires finding both that a skilled artisan would have been motivated to combine the teachings of the prior art references to achieve the claimed invention, and that the skilled artisan would have had a reasonable expectation of success in doing so." *CRFD Research, Inc. v. Matal*, 876 F.3d 1330, 1340 (Fed. Cir. 2017) (internal quotation marks omitted).

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[10] The AIA version of § 103 specifies that the timing for the obviousness inquiry is "before the effective filing date" of the claimed invention, but this change in statutory language does not affect the analysis here or detract from the applicability of pre-AIA obviousness precedents.

[11] Patent Owner does not, at this stage, present argument and evidence on secondary considerations of nonobviousness. *See generally* Prelim. Resp.

B. Level of Ordinary Skill in the Art

In determining the level of skill in the art, we consider the problems encountered in the art, the art's solutions to those problems, the rapidity with which innovations are made, the sophistication of the technology, and the educational level of active workers in the field. *Custom Accessories, Inc. v. Jeffrey-Allan Indus., Inc.*, 807 F.2d 955, 962 (Fed. Cir. 1986).

Petitioner proposes that the person of ordinary skill in the art ("POSA") would have had "at least a B.S. in Chemical Engineering, Chemistry, or a related field, and three years[']work experience working in the specialty chemicals industry . . . although more education or skill might make up for less experience and vice-versa." Pet. 9 (citing Ex. 1003 ¶¶ 30–32). Patent Owner proposes essentially the same description of the POSA's qualifications, and adds that the "specialty chemicals industry" includes "the beauty, personal care, home care, food, or environmental chemical industries." Prelim. Resp. 7.

For purposes of this decision, we apply Petitioner's POSA definition with Patent Owner's further elaboration to that definition. On this record, this POSA definition appears consistent with the skill level reflected in the prior art.

C. Claim Construction

In *inter partes* review, we construe claims using the same claim construction standard used to construe the claim in a civil action before the courts under 35 U.S.C. § 282(b), including construing the claim in accordance with the ordinary and customary meaning of such claim as understood by the POSA and the patent's prosecution history. 37 C.F.R. § 42.100(b). We need only construe terms that are in controversy and only

as needed to resolve the controversy. *Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1375 (Fed. Cir. 2019).

Petitioner states that it is applying the claim terms as they would be understood by the POSA. Pet. 9–10. Petitioner does not identify any claim terms for which it is seeking a further express claim construction. *Id.* Patent Owner cites the district court's claim construction order (Ex. 2006, 1) but, like Petitioner, does not identify any terms for which it is seeking an express claim construction. Prelim. Resp. 8 ("Given the arguments before the Board at this time, it is not currently necessary to resolve the issues related to claim construction.").

We have considered the court's claim construction order. Ex. 2006, 1. However, it is not apparent at this time and on the current record that additional interpretation of the claims will be needed to resolve the controversy before us. *See Realtime Data*, 912 F.3d at 1375. Thus, for purposes of this decision, we apply the plain and ordinary meaning of the claims as written.

D. Ground 1 – Obviousness over Cummings, Xu and Sessa

Petitioner contends that claims 1–3 and 5 would have been obvious over Cummings in view of Xu and/or in further view of Sessa. Pet. 27–42.

Petitioner contends that Cummings, Xu, and Sessa are prior art to the '245 patent and Patent Owner provides no counterargument. *Id.* at 10–11, 23, and 26. We agree that Cummings, Xu, and Sessa qualify as prior art under 35 U.S.C. § 102(a).

We briefly summarize the asserted prior art below before turning to the parties' arguments and our analysis.

1. Cummings (Ex. 1004)

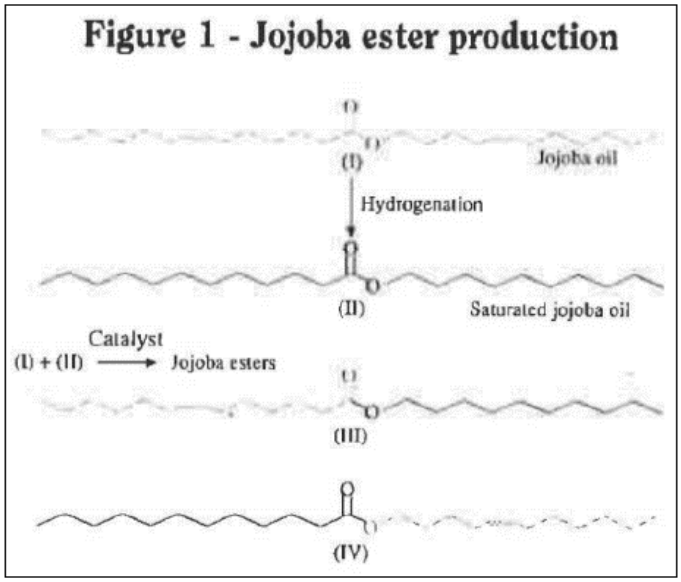
Cummings is an article entitled "*A natural alternative*" that published in May 1999. Ex. 1004, 1. Cummings relates, in general, to "Jojoba esters," which are described as new, "naturally derived, oil free emollients" that "offer good properties for a wide variety of cosmetic products." *Id.*

Cummings provides background about the jojoba plant, its harvesting, and the oil that it produces, which Cummings describes as a "unique oil that is chemically a wax ester." *Id.* According to Cummings, "[j]ojoba oil is oxidatively stable and a popular cosmetic ingredient known for its non-greasy skin feel." *Id.* Cummings discloses that "[j]ojoba oil is a complex mixture consisting predominantly of 40 and 42 carbon straight-chain monoesters composed of C20 and C22 fatty alcohols and fatty acids." *Id.* at 2 (teaching that each fatty acid and alcohol of the jojoba oil "has a double bond located between the ninth and tenth carbon position from the ends of the carbon chain.").

Cummings further teaches a "new family" of jojoba ester products, which Cummings describes as "unique compositions of a broad range of saturated, partially saturated and unsaturated wax esters." *Id.* at 1 (describing products from "Floraesters (INCI name: jojoba esters)"). Moreover, Cummings explains, "jojoba esters are a new creation of oxidatively stable, plant-derived, oil-free emollients shown to be non-toxic, non-comedogenic, hypoallergenic and biodegradable." *Id.* "The jojoba ester family presently consists of the following five products: jojoba esters (15), (20), (30), (60), and (70)." *Id.* at 2; *see also id.* (Fig. 2, detailing the jojoba ester composition of, e.g., jojoba esters (15) and (20)). Cummings teaches that the jojoba esters have shown improved cosmetic, functional, and structural properties in a broad array of personal care products. *Id.* at 1

(noting that these jojoba esters have provided "distinct utility" in pigmented systems "where emolliency and oxidative stability is sometimes lacking").

Cummings also provides an overview of jojoba ester production through a process it calls "interesterification." *Id.* at 1–2. Figure 1 of Cummings is reproduced below.



Id. at 2. Figure 1 depicts an "interesterification" reaction, in which jojoba oil (I) is combined with saturated jojoba oil (II) in the presence of a catalyst, to produce illustrative jojoba esters (III) and (IV). *Id.* As shown, jojoba esters (III) and (IV), combine an unsaturated lipid chain component from the jojoba oil (faint, hashed line and including C=C double bond) and a saturated lipid chain component (bold, unbroken line without a C=C double bond) from a fully saturated (fully hydrogenated) jojoba oil to form new esters.[12] *Id.* As Cummings further explains:

> Jojoba oil is converted to jojoba esters through a process known as interesterification. In this process, different ratios of

[12] Cummings's Figure 1 is somewhat lacking in image quality. A similar reaction schema is shown more clearly in, for example, Exhibit 1014, 6 (Fig. 4); *see also* Ex. 1003 ¶ 65 (discussing Trans Isomers 2).

> unsaturated jojoba oil are combined with fully saturated jojoba oil and then interesterified. The process results in jojoba esters engineered to deliver specific physical, functional and chemical characteristics.

Id. This process "produces jojoba esters engineered to contain different ratios of molecules with either no double bonds (fully saturated), one double bond (monounsaturated) or two double bonds (fully unsaturated)." *Id.* ("[T]hese compositional differences within the family of jojoba esters . . . create their expanded utility in cosmetic preparations.").

Cummings teaches that "[j]ojoba esters are more oxidatively stable than most similar cosmetic ingredients." *Id.* According to Cummings, "[o]xidative stability of many cosmetic ingredients can be measured to determine an Oxidative Stability Index (OSI)." Further, Cummings teaches, "Jojoba esters demonstrate remarkable stability with OSI values of all jojoba esters greater than 100 hours and as high as 675 hours. The OSI of refined jojoba oil is around 35 hours." *Id.*

2. Xu (Ex. 1008)

Xu is journal article titled "*Engineering of enzymatic reactions and reactors for lipid modification and synthesis*," which published in 2003. Ex. 1008, 289.

Xu teaches that "enzymes can also be used for the catalysis of . . . esterification," which "opens up a variety of potential applications in the lipid area." *Id.* According to Xu, "a reaction such as interesterification (acidolysis, alcoholysis, and ester-ester exchange) is also possible with the catalysis of lipases." *Id.* "Thus chemical interesterification, which has been implemented in the current industry can be fully replaced." *Id.*; *see also id.* at 301 ("In principle, many chemical methods can be replaced by enzymatic ones."); *id.* at 298–299 (noting that "[e]nzymatic ester-ester exchange is an

alternative to the chemical method for the modification of oils and fats" and depicting a method using a lipase (Fig. 18)).

Xu discloses several factors contributing to the interest in enzymatic processing. Among others, Xu lists "improvement of product quality refereeing to mild conditions," "reduction in enzyme price," and "environmental considerations," among others. *Id.* at 289. According to Xu, "[t]his list can be prolonged: 'image' strategy by using enzyme technology is important for many industrial companies; energy-efficiency of the technology is also often mentioned." *Id.*

Xu teaches that "[t]he major enzymatic reactions for the modification of lipids are often referring to hydrolysis, esterification acidolysis, alcoholysis, and ester-ester exchange from the reaction mechanisms." *Id.* at 290. As Xu explains, "[i]nteresterification or transesterification is also commonly used in literature to describe some of the above reactions." *Id.* Xu further explains that both interesterification and transesterification are often used in the literature to describe "ester-ester exchange." *Id.*

3. Sessa (Ex. 1009)

Sessa is a journal article titled "*Derivation of a Cocoa Butter Equivalent from Jojoba Transesterified Ester via a Differential Scanning Calorimetry Index*," which published in 1996. Ex. 1009, 295.

Sessa teaches that "[a] series of wax ester blends was constructed by transesterifying native jojoba oil with 50–500 g kg^{-1} completely hydrogenated jojoba wax esters." *Id.* at Abstr. According to Sessa, "[n]atural cocoa butter and the calibration sets consisting of native jojoba wax esters that were transesterified with proportionate blends of completely hydrogenated wax esters to give a series of 50, 100, 150, 200, 300, 400 and 500 g kg^{-1} saturated esters were provided." *Id.* at 296.

Sessa further teaches that the series of wax ester blends were subjected to a standardized DSC method to generate thermograms. *Id.* at 295–296. Then, through mathematical and statistical techniques, Sessa describes devising chemometric indices to estimate the level of saturation of the blends. *Id.* (noting that the study aimed to use the derived indices to select a jojoba saturation blend that most closely mimics thermal properties of cocoa butter); *see also id.* at 298 ("We devised mathematical indices . . . to define the level of saturation needed for obtaining a cocoa butter equivalent.").

Sessa discloses that "[t]he wax ester blend with 400 g kg^{-1} saturation most closely resembled the thermal properties of cocoa butter." *Id.* at Abstr.; *see also id.* at 296–298 (discussing results).

4. Analysis

Our analysis for this ground focuses on claim 1. Patent Owner does not provide separate argument for any of the challenged dependent claims at this stage. *See, e.g.*, Prelim. Resp. 8–9, 28–29 (arguing, for each of Grounds 1–4, that Petitioner has not established that the art teaches or suggests certain limitations of claim 1).

a) Claim 1

Petitioner contends that the combination of Cummings, Xu, and Sessa teaches or suggests the recited steps, and renders obvious the method of claim 1. Pet. 27–41. Patent Owner does not presently contest that Cummings, Xu, and Sessa disclose claim 1's preamble or limitation [1b] (relating to the steps of contacting the feedstock with a "lipase" and transesterifying the feedstock components to form a transesterified product). Patent Owner's argument, at this stage, focuses on whether Petitioner has shown that limitations [1a] (related to the feedstock having 20–50% by

weight hydrogenated jojoba wax esters), and [1c] (related to the OSI of transesterified product being greater than the OSI of the feedstock) would have been obvious. *See, e.g.*, Prelim. Resp. 8–19 (addressing limitation [1c] for Ground 1), 28–35 (addressing limitation [1a] for Ground 1).

Preamble

According to Petitioner, Cummings discloses the preamble language of claim 1, whether limiting or not, reciting "[a] process for transesterifying wax esters." Pet. 28. Petitioner points to Cummings's teaching that jojoba oil may be converted to jojoba esters through interesterification, and that this process involves combining different ratios of unsaturated jojoba oil and fully saturated jojoba oil to produce transesterified jojoba ester products. *Id.* (citing Ex. 1004, 2, Fig. 1; Ex. 1003 ¶¶ 94–95). Petitioner also notes Xu's teaching that interesterification and transesterification are frequently used in the literature to refer to the same reactions, including alcoholysis and ester-ester exchange. *Id.* at 28–29 (citing Ex. 1008, 290; Ex. 1003 ¶ 95 (testifying a POSA "would have understood that the interesterification process disclosed in Cummings is also referred to as a transesterification process")).

We need not decide whether the preamble is limiting and find, in any event, that the preamble is disclosed in the asserted art based on the evidence and reasoning given by Petitioner at this stage.

Limitation [1a]

Claim 1 further recites "providing a feedstock comprising jojoba wax esters and hydrogenated jojoba wax esters, wherein the amount of hydrogenated jojoba wax esters is 20% to 50% by weight of the feedstock," which Petitioner has annotated limitation [1a]. Petitioner contends that Cummings, or Cummings and Sessa, discloses this limitation. Pet. 29. According to Petitioner, Cummings discloses that "different ratios" of

unsaturated and fully saturated jojoba oil are combined to form jojoba esters through interesterification and, although Cummings does not "***expressly***" disclose use of a ratio of 20–50%, "a POSA would have ***understood***" this range of ratios from Cummings's other teachings. *Id.* More specifically, Petitioner (with supporting testimony from Dr. Rockstraw) uses the iodine values (IV) for several jojoba ester products reported in Cummings to calculate the approximate weight percentage of hydrogenated jojoba esters in the feedstocks used to prepare such products. *Id.* at 29–30 (citing IV in Fig. 3 of Cummings (Ex. 1004, 1, Fig. 3)); Ex. 1003 ¶¶ 99–107 (testifying that IV is used to determine the degree of unsaturation in fats and oils, with, for example, a low IV generally correlated to highly saturated compounds (and vice-versa, with greater IVs correlating to more unsaturated materials); "the amount of iodine absorbed by the material . . . directly correlates to the average number of double bonds in the material"). Further, Dr. Rockstraw testifies, one can derive an equation that estimates a ratio of hydrogenated jojoba oil relative to untreated jojoba oil starting materials based on the IV of the product. Ex. 1003 ¶¶ 99–107. Purporting to apply this method and equation, Dr. Rockstraw estimates that the five jojoba esters for which IV was reported in Cummings would have been understood as being produced from feedstocks with hydrogenated jojoba oil content of roughly between 3.7% and 100%. *Id.* ¶ 107 (Table A (showing, e.g., estimated hydrogenated jojoba oil feedstock wt % of 29.6–31.5 for Jojoba Esters (30)); Pet. 30–31.

"Regardless," Petitioner argues, "a POSA would have found it obvious to include 20% to 50% by weight of hydrogenated jojoba wax esters in a feedstock," as such ranges are disclosed expressly in Sessa. Pet. 31–32 (citing Ex. 1009, 296; Ex. 1003 ¶¶ 108–113). Petitioner cites, for example, Sessa's disclosures about preparation of transesterified jojoba ester products

using of proportionate blends of hydrogenated wax esters, with the blends represented 5%, 10%, 15%, 20%, 30%, 40%, and 50% fully hydrogenated jojoba esters by weight of the feedstock. *Id.* at 32–33; Ex. 1003 ¶ 110. According to Petitioner, a POSA would have been motivated to use "routine optimization" to vary the amounts of hydrogenated wax ester content in the feedstock "to obtain desirable and/or improved physical properties such as oxidative stability and thermal properties" in the transesterified product as suggested in Cummings, Sessa, and other art of record. Pet. 33–35 (citing, e.g., Ex. 1004, 1–2, Ex. 1009, 298; Ex. 1012, 675; Ex. 1013, 878); Ex. 1003 ¶¶ 111–112 (testifying that such a selection would have been "nothing more than a routine variation," especially in view of the art's recognition that the ratio of saturation of the starting materials can be manipulated and engineered as desired to affect the properties of the resulting products).

Patent Owner contends that Petitioner has failed to establish a teaching or suggestion of limitation [1a] in the prior art. Prelim. Resp. 28–35. More specifically, Patent Owner argues that Petitioner's "back-calculated estimate" from the iodine value (IV) of "various commercial jojoba ester products" is "neither clear nor accurate for determining a weight percent of the reactant." *Id.* at 28, 29–33 (citing Ex. 2001 ¶¶ 84–93). Patent Owner advances four reasons that are alleged to call into question Petitioner's calculations: 1) errors in the derived equation, such as omission of the fatty-acid content from the iodine-value source equation from which Petitioner's equation is derived; 2) ambiguity about the actual compositions of the jojoba esters for which the IV measures are provided; 3) an unjustified assumption that all resulting jojoba esters are either fully saturated or fully unsaturated with ratios unchanged from the starting materials; and 4) failure to consider "other factors" that may affect a product's IV. *Id.* at 29–33.

Based on the preliminary record, we have questions regarding the accuracy of Petitioner's derived calculations and share some of the concerns raised by Patent Owner and its declarant, Dr. Schultz. For example, as pointed out by Dr. Shultz, when Petitioner's equation is used with the IVs reported in Cummings, it "results in negative values" purporting to be the respective weight percent values; but a "negative weight percent value[] would not make sense." Ex. 2001 ¶ 85. Further, it is not presently clear why Petitioner's derived equation omits the fatty acid constant, which is reported to depend on (i.e., be specific to) each particular fatty acid. *See id.* ¶ 86 (testifying that such factors are "critical" for calculation of an iodine value but inexplicably omitted and not accounted for in Dr. Rockstraw's declaration and derived equation).

In addition, we question whether it is possible to accurately calculate the ratios of saturated and unsaturated jojoba oil in a feedstock solely from the IV of a jojoba ester product without knowing more information such as the reaction yield and whether such products were further processed to, for example, eliminate reaction side products or unreacted feedstock. *Id.* ¶ 89 (testifying that "any of these scenarios could impact the estimated weight percent of the reactants estimated by the back-calculation"). As presently understood, it seems that Petitioner is assuming a certain conversion rate or yield without explaining the basis of such assumption, and why it is justified.

For at least those reasons, on the current record, we are skeptical that Petitioner is reasonably likely to prevail in establishing that, using iodine values and derived calculations, a POSA would understand Cummings as disclosing a feedstock with 20–50% by weight of hydrogenated jojoba wax

esters.[13] We will revisit this question, to the extent necessary, on a fully-developed record.

Notwithstanding our questions above about the alleged "back-calculation," Petitioner also relies on Sessa. Pet. 32–33. Patent Owner does not dispute that Sessa teaches or suggests various proportionate feedstock blends, comprising a range that substantially overlaps with the claimed range of 20–50%. *Id.* (arguing that Sessa's disclosed ratios encompass and are within the claimed range).

Patent Owner argues that Petitioner has not articulated a sufficient rationale for why a POSA "would have been motivated to use Sessa's calibration set of jojoba wax ester blends in preparing a feedstock for the preparation of the jojoba esters described in Cummings." Prelim. Resp. 33–34. On the current record, we disagree. Patent Owner queries why the POSA would have considered Sessa's calibration sets, but never grapples persuasively with Petitioner's assertion that Sessa evidences that the selection of various ratios—including ratios squarely within the scope of

[13] Regarding Patent Owner's argument that Petitioner's estimates rely on an assumption that all ester products are fully saturated or fully unsaturated and that the ratios remain unchanged (Prelim. Resp. 31–32), we do not entirely follow Patent Owner's argument. We understand that, in general, Petitioner is using IV as a measure of the double bonds in the final product and, conversely, in the feedstock. Ex. 1003 ¶¶ 101–102 (Rockstraw testimony that the amount of iodine directly correlates to the average number of double bonds and that the number of double bonds remains "constant," not changing due to transesterification). It would seem that double bonds in the final product would contribute to IV, whether the double bonds appear in monounsaturated or fully unsaturated jojoba esters. If the feedstock comprises unsaturated jojoba oil and fully saturated jojoba oil, it would, thus, seem that the source of the double bonds in the products was the unsaturated oil portion of the feedstock. As appropriate, the parties may consider developing further argument and evidence on this point at trial.

claim 1—were known and would have been obvious as a matter of routine experimentation (*see* Pet. 32–33). *Id.* Cummings discloses that interesterification involves the reaction of "different ratios" of jojoba oil and fully saturated jojoba oil but does not specify specific ratios to choose. Ex. 1004, 2 (suggesting that the ratios used for starting materials allows for the ratios of saturated, unsaturated, and monounsaturated esters in the jojoba ester products to be engineered for the characteristics desired). Sessa describes a series of blends (including 20%, 30%, 40%, and 50%) that were examined and compared to the thermal characteristics of cocoa butter. Ex. 1009, 295–296. Sessa, thus, evidences that proportional blends of jojoba wax ester (oil) and hydrogenated jojoba wax ester (oil) within the scope of claim 1 were known and subject to routine experimental inquiry and testing. *In re Aller*, 220 F.2d 454, 456 (CCPA 1955) ("[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation."); *Genentech, Inc. v. Hospira, Inc.*, 946 F.3d 1333, 1341–42 (Fed. Cir. 2020) (same, citing *In re Aller*).

And Sessa's and Cummings's teachings do not stand alone. Petitioner cites other evidence probative of "POSA's background knowledge," such as Otero[14] and Haumann[15] that recognized that properties of transesterified products are based on the amounts of the starting reagents chosen. Pet. 34–35; Ex. 1013, 878 (disclosing that "[t]he properties of the [transesterified]

[14] Otero et al., *Continuous Enzymatic Transesterification of Sesame Oil and a Fully Hydrogenated Fat: Effects of Reaction Conditions on Product Characteristics*, 94 Biotech & Bioeng'g 877 (2006) (Ex. 1013).
[15] Barbara Fitch Haumann, *Tools: hydrogenation, interesterification*, 5 Inform 668 (June 1994) (Ex. 1012).

product are in large measure governed by the convenient choice of the precursor reagents [and] their respective proportions in the starting mixture"); Ex. 1012, 675 (teaching that "melting and solidification properties [of the product] ultimately depends on the type and mixture of the starting materials"); *see also* Ex. 1007, 4:49–51 (teaching that "the properties of the [transesterified] emollient depend upon the relative amounts of IIn [(unsaturated jojoba wax esters)] and III[n] [(fully saturated jojoba wax esters)]"); Ex. 1003 ¶¶ 111–112 (testifying that "manipulating the ratio of the reacting fats and oils in a feedstock would have been within the background knowledge possessed by a [POSA] as such concepts are fundamental to the topic of chemical reaction engineering"); *see also id.* ¶¶ 42–44 (testifying no "criticality" for 20–50% range noted in the patent).

The weight of the evidence at this stage, therefore, favors Petitioner's position that modifying the weight ratio of hydrogenated jojoba oil in the feedstock to an amount within the scope of the claims would have been obvious as a matter of routine experimentation. Based on the preliminary record, we find that Petitioner has shown a reasonable likelihood that it will prevail in establishing that the prior art teaches or suggests limitation [1a].

Limitation [1b]

As annotated by Petitioner, limitation [1b] includes the steps of "contacting the feedstock with a lipase" and "transesterifying the jojoba wax esters and the hydrogenated jojoba wax esters in the feedstock . . . to form a transesterified product." Pet. 35. Petitioner contends that Cummings and Xu disclose this claimed subject matter. *Id.* at 35–38. Petitioner, cross-citing to its analysis of the preamble, argues that Cummings teaches or suggests a transesterification reaction between jojoba oil and hydrogenated jojoba oil in the presence of a catalyst. *Id.* at 35–36 (citing Ex. 1004, Fig. 1;

Ex. 1003 ¶ 116). Because Cummings "does not expressly disclose" use of a lipase to contact the feedstock and catalyze the reaction, Petitioner turns to Xu. *Id.* According to Petitioner, a POSA would have found it obvious to modify the catalyzed reaction of Cummings to use a lipase in view of Xu's teachings that lipases can catalyze interesterification / transesterification reactions. *Id.* at 36 (citing Ex. 1008, 296–299). Further, Petitioner argues, a POSA would have been motivated to make this change, and done so with a reasonable expectation of success considering several favorable attributes noted by Xu about lipases. *Id.* at 36–37; Ex. 1008, 289–301 (citing improved product quality, simplicity, and customer perception, among others); Ex. 1003 ¶¶ 118–119 (testifying that "Xu discloses that the industry has several reasons to use lipase catalysts," and listing those reasons).

Based on the present record, Petitioner persuades us that modifying the transesterification process to use a lipase (e.g., instead of a chemical catalyst) is suggested in the art and would have been obvious. Indeed, Xu appears to encourage this change explicitly—noting, for instance, the promise of "lipases" as catalysts and teaching, "[t]hus chemical interesterification, which has been implemented in the current industry can be fully replaced." Ex. 1008, 289.

Limitation [1c]

Limitation [1c] recites "wherein an oxidative stability index (OSI) of the transesterified product is greater than an OSI of the feedstock." Petitioner contends that Cummings discloses this limitation. Pet. 38 (citing Ex. 1004, 2; Ex. 1003 ¶¶ 122–124). As noted by Petitioner, Cummings discloses that jojoba esters demonstrate "remarkable stability with OSI values of all jojoba esters greater than 100 hours and as high as 675 hours." *Id.* (quoting Ex. 1004, 2). According to Petitioner, those OSI values are

"significantly greater than the OSI of refined jojoba oil that forms part of the feedstock" and which Cummings teaches has an OSI of "around 35 hours." *Id.*; Ex. 1004, 2 ("The OSI of refined jojoba oil is around 35 hours."). Further, Dr. Rockstraw opines, Cummings teaches that the structure of the transesterified jojoba esters is different from the starting materials and these compositional differences are what expands the utility of jojoba esters for cosmetics, including the products' favorable oxidative stability. Ex. 1003 ¶ 122 (citing Ex. 1004, 2). Petitioner argues "a POSA would have understood" that they "could achieve—and had a reasonable expectation of achieving—an OSI of the transesterified product (jojoba esters) that is greater than the OSI of the feedstock." Pet. 38; Ex. 1003 ¶ 122.

Additionally, Petitioner argues, "it was well-known that the transesterification of fats, oils and wax esters—including in lipase-catalyzed processes and processes involving jojoba wax esters and hydrogenated jojoba wax esters—can produce a product having improved, and thus greater, oxidative stability." Pet. 38–39 (citing Ex. 1003 ¶¶ 24–26, 123). In support, Petitioner and Dr. Rockstraw cite several publications, including Kodali,[16] Xu 2,[17] and Lopez-Hernandez.[18] *Id.* (citing Exs. 1015, 1016, 1017, and 1018). For example, Petitioner points out, Kodali describes "[t]ransesterifying various short saturated fatty acid esters with a vegetable oil improves oxidative stability and low temperature properties due to

[16] Kodali et al., US 2005/0176597 A1, published Aug. 11, 2005 (Ex. 1015 ("Kodali")).
[17] X. Xu et al., Chemical and enzymatic interesterification of lipids for use in food, (Frank D. Gunstone, ed., 2006) (Ex. 1017 ("Xu 2")).
[18] Lopez-Hernandez et al., *Lipase-catalyzed transesterification of Medium-chain Triacylglycerols and a Fully Hydrogenated Soybean Oil*, 70:6 Journal of Food Science, C365–C372 (2005) (Ex. 1018 ("Lopez-Hernandez")).

increased saturation and the heterogeneity of the fatty acids esterified to the polyols." *Id.* (citing Ex. 1015 ¶ 5). Also, Petitioner argues, an increased OSI as claimed is not unexpected in view of the cited art and the POSA's background knowledge. *Id.* at 39–41 (citing precedents about mere recognition by a patentee/applicant of properties that would have been expected or that flow naturally from suggestions of the art).

Patent Owner argues that Petitioner fails to establish that Cummings discloses limitation [1c]. Prelim. Resp. 9–13. According to Patent Owner, although Petitioner identifies the OSI of the "refined jojoba oil," Cummings does not "describe[] refined jojoba oil as a feedstock that contains both 'jojoba wax esters and hydrogenated wax esters'" like the feedstock of the claims. *Id.* at 10–11. Further, Patent Owner argues, a POSA "would have understood that refined jojoba oil does not contain hydrogenated jojoba wax esters." *Id.* (citing Ex. 2001 ¶¶ 46–48). Thus, according to Patent Owner, Petitioner's reliance on Cummings "fails to account for potential OSI contributions resulting from the presence of hydrogenated jojoba wax esters in the claimed feedstock." *Id.*

On the current record, we tend to agree with Patent Owner on this point. Elsewhere, Petitioner argues that Cummings's "refined jojoba oil" forms only "part of" the feedstock. Pet. 38. We take that to mean the *unsaturated* part of the feedstock. And, if that is so, Petitioner does not identify clearly where Cummings discloses an OSI value of the fully saturated jojoba oil that forms the *other* part of the feedstock, much less the OSI of a feedstock mixture containing both the saturated and unsaturated parts. In other words, the OSI value of "around 35 hours" that Petitioner relies upon does not appear to reflect the OSI value of the actual feedstock mixture as a whole. *See* Ex. 1004, 2.

Patent Owner also argues that Cummings's jojoba wax esters are not the claimed "transesterified product." Prelim. Resp. 12–13.

Based on the present record, we do not agree with Patent Owner on this second point. Cummings discloses the interesterification process as noted above, involving combining different ratios of unsaturated and fully saturated jojoba oils to make jojoba ester products. Ex. 1004, 2. Cummings then states that the jojoba ester family "presently consists of the following five products: jojoba esters (15), (20), (30), (60) and (70)." *Id.* Cummings then provides Fig. 2 "listing all ester compositions *resulting from the interesterification process*," which includes the compositions for the same five jojoba ester products listed previously (i.e., Jojoba esters (15), Jojoba esters (20), etc.). *Id.* (emphasis added). Then Cummings teaches that "[j]ojoba esters demonstrate remarkable stability with OSI values" between 100–675 hours. *Id.* On the present record, we find it more likely that the POSA would understand Cummings's reported OSI values for jojoba esters are for jojoba esters produced by transesterification (or interesterification) as earlier described in Cummings, and this qualifies as a "transesterified product" according to claim 1.[19] *See, e.g.*, Ex. 1003 ¶¶ 115–117 (testimony of Dr. Rockstraw (unrebutted) that Cummings and Xu clearly teach reacting saturated and unsaturated jojoba oil, in the presence of a catalyst, to produce the transesterified jojoba ester product).

[19] To the extent Patent Owner's argument is suggesting a narrower claim interpretation of "transesterified product" that might, for example, include only the immediate reaction product/mixture and exclude a finished or more refined jojoba ester product, Patent Owner should consider explaining at trial why such a construction is warranted.

Lastly, Patent Owner argues that Petitioner's position that it was "well known" that transesterification can produce products with higher OSI values does not remedy deficiencies in Cummings. Prelim. Resp. 13–19.

Patent Owner's argument is unavailing. The additional evidence cited by Petitioner does, at least at this stage, support a conclusion that it was known that, through transesterification, the OSI of the resulting product could be improved. Thus, even if Petitioner has not established that the OSI of the Cummings feedstock is only around 35 hours and therefore that the transesterified product necessarily has a greater OSI, it has still shown sufficiently for institution that it would have been obvious as a matter of routine optimization for a POSA to tailor the process to achieve such. Kodali, for example, describes transesterifying saturated fatty acid esters with vegetable oils to obtain products with greater oxidative stability. Ex. 1015 ¶ 5. Indeed, Kodali discloses that "[t]ransesterifying various short saturated fatty acid esters with vegetable oil *improves oxidative stability . . . due to the increased saturation and the heterogeneity* of the fatty acid esters to the polyols." *Id.* (emphasis added); *see also* Ex. 1017, 245 ("[C]onfirming that enzymatic interesterification has advantages for the oxidative stability of the products."). Modifying the saturation and heterogeneity within the resulting mixture of wax esters appears to be a key characteristic of the transesterification reaction itself (*see* Ex. 1004, Fig. 1), which modification the art suggests can be "engineered" for specific desired properties (*id.* at 2).

As the art similarly recognized that the degree of saturation relates directly to oxidative stability, we find that the POSA would and could tailor the ratio of saturated and unsaturated starting materials to obtain the mixture of wax ester products with the degree of saturation and heterogeneity, and

with increased OSI, as desired. *See, e.g.*, Ex. 1015 ¶¶ 4–5 ("[H]igh oxidative stability . . . generally is related to the degree of unsaturation present in the fatty acyl chains."); Ex. 1018, C371 (describing "lipase-catalyzed interesterification" and noting the "absence of unsaturated fatty acid residues implies that the products . . . have enhanced stability with regard to oxidation processes"). Ex. 1003 ¶¶ 122–123. In other words, the other evidence Petitioner cites for limitation 1[c] supports that OSI would have been understood to be an optimizable property that depends in significant part on the degree of saturation and heterogeneity of the wax esters used in and produced by the transesterification reaction. *See, e.g.*, *In re Applied Materials, Inc.*, 692 F.3d 1289, 1297 (Fed. Cir. 2012) (explaining that "the prior art need not provide the exact method of optimization for the variable to be result-effective. A recognition in the prior art that a property is affected by the variable is sufficient to find the variable result-effective.").

Patent Owner dismisses Petitioner's additional evidence as irrelevant. Prelim. Resp. 14–17. Patent Owner argues, for example, that Xu 2 and Kodali focused on triglyceride-containing compounds without mention of jojoba oils/esters. *Id.* (asserting that jojoba esters also involve longer carbon chains compared to the fatty acids described in Kodali and vegetable oils provide comparatively lower oxidative stability to begin with).

It is not clear at present why the POSA would discount this evidence for the reasons urged by Patent Owner. As it pertains to transesterification, which is the subject of all these references, if there is some material difference in the fundamental chemistry involved, it is left unsaid by Patent Owner. In any event, these arguments raise fact issues best resolved through trial.

In sum, although we are skeptical that Cummings alone discloses limitation [1c], the totality of the argument and evidence cited by Petitioner is sufficient to meet the institution burden and shows a reasonable likelihood that Petitioner would prevail in establishing the obviousness of this claimed subject matter. For the reasons discussed above, we determine that Petitioner is reasonably likely to prevail in establishing that claim 1 is unpatentable.

b) Other claims

Petitioner contends that dependent claims 2, 3, and 5 would also have been obvious over the cited art. Pet. 41–42; Ex. 1003 ¶¶ 125–130. We have considered Petitioner's argument and evidence for the dependent claims, which Patent Owner does not address beyond its argument on claim 1. Petitioner has shown that it is reasonably likely to prevail in showing the unpatentability of these additional claims.

c) Conclusion

For the reasons above, we determine that Petitioner is reasonably likely to prevail in establishing the unpatentability of at least one of claims 1–3 and 5 for obviousness over Cummings, Xu, and Sessa.

E. Ground 2 – Obviousness over Trans Isomers 2, Xu, and Sessa

Petitioner argues that claims 1–3 and 5 would have been obvious over Trans Isomers 2 in view of Xu and/or in further view of Sessa. Pet. 42–54.

Petitioner contends that Trans Isomers 2, Xu, and Sessa are prior art to the '245 patent and Patent Owner provides no argument otherwise. *Id.* at 15, 23, and 26. We agree that the asserted references qualify as prior art under 35 U.S.C. § 102(a).

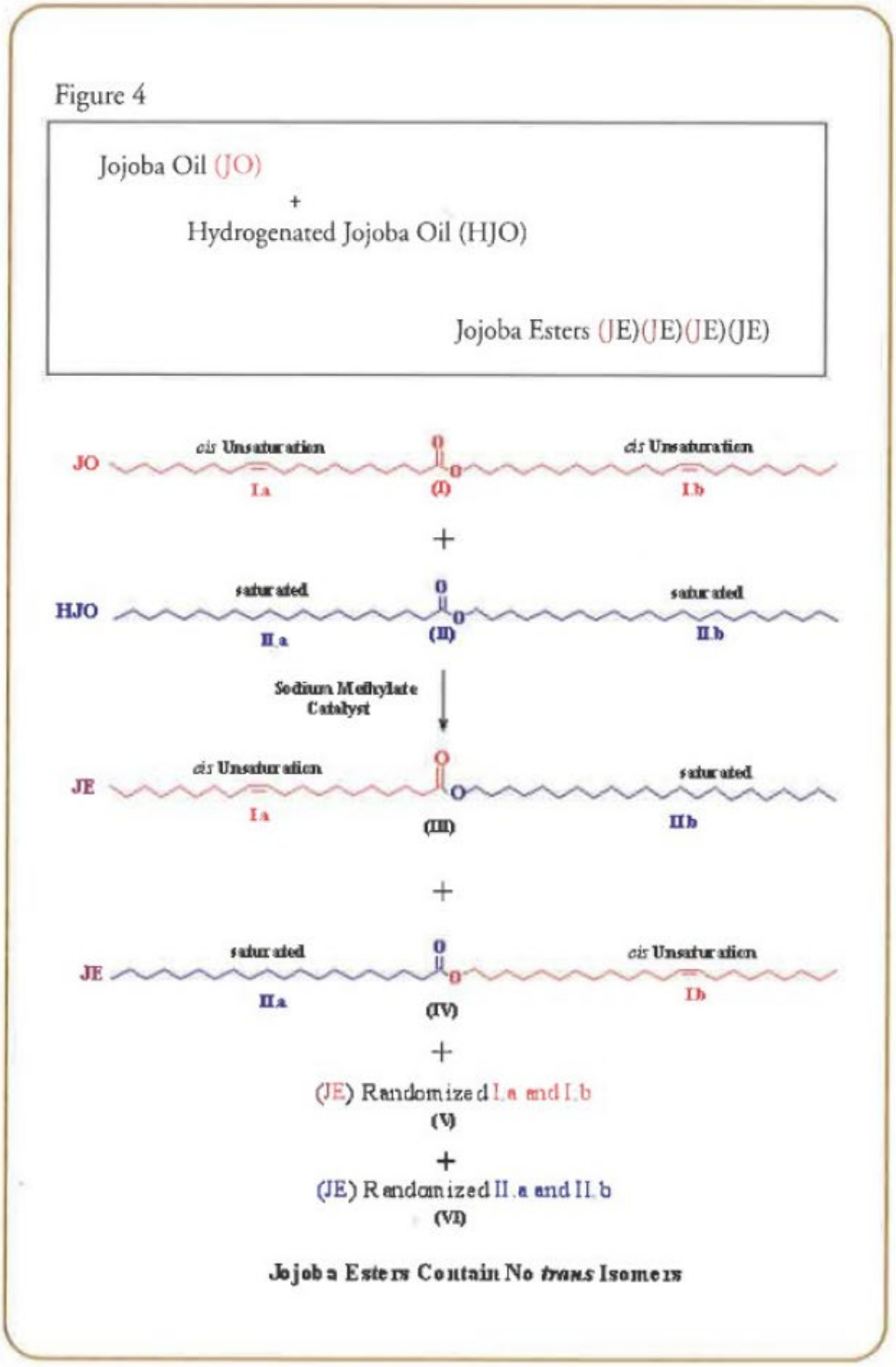
Xu and Sessa are summarized above. We summarize Trans Isomers 2 below and then turn to our analysis.

1. Trans Isomers 2 (Ex. 1006)

Trans Isomers 2 is an article titled "*Trans Isomers in Cosmetics, Part 2*" that published in 2001, and its content republished in 2004. Ex. 1006, 1, 6; Ex. 1014 (reprint). It is part of a two-part series with Trans Isomers 1 (summarized in Section III(F)(1) below).

Trans Isomers 2 teaches that "interesterification" is a process that, unlike certain other methods for manipulating natural lipids, produces no trans isomers. Ex. 1006, 1. Trans Isomers 2 discloses that "[t]he interesterification reaction used to produce trans free emollients is one in which a fully hydrogenated lipid material (no trans isomers) is reacted with neat oil containing only cis isomers." *Id.* "The resulting product [of interesterification] is an amorphous mixture of partially saturated, saturated and unsaturated esters that contain no trans isomers." *Id.*

According to Trans Isomers 2, "[j]ojoba [e]sters are an ideal model to use to demonstrate the trans free interesterification reaction and the properties of the resulting components." *Id.* Figure 4 of Trans Isomers 2 is reproduced below.



Ex. 1014, 5–7; Ex. 1006, 2–3. Figure 4, above, shows "the interesterification reaction between (I) jojoba oil (only cis isomers) and (II) fully hydrogenated jojoba oil (no cis or trans isomers)," along with

newly-formed jojoba ester reaction products (III) and (IV). Ex. 1006, 2–3. According to Trans Isomers 2, Figure 4 shows that products III and IV, include, respectively a saturated alcohol that has linked with an unsaturated acid (IIb with Ia), and an unsaturated alcohol linked to a saturated acid (1b with IIa). *Id.* The reaction is also described as creating additional products: randomized combinations of Ia and Ib (forming product (V)) and randomized combinations of IIa and IIb (forming product (VI)). *Id.*

Trans Isomers 2 includes "Table 2" and teaches that "Table 2 illustrates the range of properties achievable [through] this interesterification process used to produce 'Trans Free' Jojoba Esters." *Id.* at 2. Table 2 is reproduced below.

TABLE 2. CHEMICAL AND PHYSICAL PROPERTIES OF JOJOBA ESTERS

Jojoba Ester	Melting Point °C	Iodine Value g I₂/100g	Oxidative Stability Value, Hours	Lubricity Degrees	Penetration, Mm	Monoene, Content, 0%
15	10-15	78-85	70	19.0	—	0
20	42-48	64-70	130	20.4	—	25-35
30	47-51	57-61	165	18.9	26.4	36-46
60	56-61	40-44	225	17.9	9.3	42-52
70	66-70	0-2	680	15.9	0.3	0

Ex. 1014, 7; Ex. 1006, 3. Table 2 is titled "Chemical and Physical Properties of Jojoba Esters" and includes measures of various properties, including melting points, iodine values, and OSI values for Jojoba Esters (15), (20), (30), (60), and (70). Ex. 1006, 3.

2. Analysis

Petitioner's argument and analysis under Ground 2 is similar to Ground 1. Pet. 42–43. Petitioner argues that Trans Isomers 2 teaches or suggests claim 1's preamble, and limitation [1a] by back-calculation of iodine values and, secondarily, based on Sessa's range of 5–50% of hydrogenated jojoba wax esters in a feedstock. *Id.* at 42–48. Petitioner further argues that Trans Isomers 2 teaches limitation [1b], except for

addition of a "lipase" for which Petitioner turns to Xu based on substantially the same reasoning as Ground 1. *Id.* at 48–51. Petitioner argues Trans Isomers 2 discloses limitation [1c] in "Table 4," and also argues it was "well known" that transesterification can produce product with a higher OSI. *Id.* at 51–52. Patent Owner's counterarguments are also similar to its argument for Ground 1—limited to whether limitations [1a] and [1c] are met. Prelim. Resp. 19–23, 35–37. We focus below on the disputed issues, especially to the extent they differ from what we have already addressed above.

For limitation [1a], Petitioner's analysis using derived feedstock ratios using reported iodine values in certain products raises the same questions discussed above. *See* Section III(D)(4). Like we explained above, however, Petitioner also relies on Sessa and "routine optimization" of the proportional ratio of the feedstock. Pet. 46–48. Petitioner's reasoning is sufficient to meet its institution burden as to limitation [1a] for substantially the same reasons discussed above.

For limitation [1c], reciting that the transesterified product has an OSI greater than the OSI of the feedstock, Petitioner cites Table 4 of Trans Isomer 2, which is reproduced below.

TABLE 4. PHYSICAL PROPERTIES OF INTERESTERIFIED JOJOBA ESTERS IN COMPARISON WITH LIKE MELTING PARTIAL HYDROGENATES

Sample	Melting Point °C	Iodine Value g I₂/100g of Sample	% *Trans*	Oxidative Stability Index, Hours	Index of Refraction μ_D@80°C	Penetrometer, Mm	Slip, Cadicamo, Degress (1%)	Slip, IFT, Degress (100%)
Jojoba Esters 30	49	58	0	165	1.4418	26.4	18.9	23
Jojoba oil Partial Hydrogenate	49	69	11	27	1.4435	—	19.3	>25
Jojoba Esters 60	59	42	0	225	1.4403	9.3	17.9	14.1
Jojaba Oil Partial Hydrogenate	59	49	37	108	1.4408	5.2	18.1	15.4

Id. at 51; Ex. 1006, 3–4. Table 4, above, titled "Physical Properties of Interesterified Jojoba Esters in Comparison with like Melting Partial Hydrogenates" reports various properties (e.g., Melting Point, % Trans, and OSI) for four samples. Ex. 1006, 3–4 (slightly modified). According to Petitioner, this table discloses that Jojoba Esters 30 and 60 had an OSI of

165 and 225 hours, respectively, and "partially hydrogenated jojoba oils exhibiting identical melting points" had OSIs of "27 and 108 hours." Pet. 51. Because, for example, 165 is greater than 27, Petitioner contends limitation [1c] is met. *Id.* (citing Ex. 1003 ¶ 159).

Petitioner's reliance on Table 4's comparison of OSI values appears to be inapposite relative to the claimed OSI comparison. We see no teaching in Trans Isomers 2 that the "Jojoba oil Partial Hydrogenate[s]" of Table 4 form any part of a feedstock. Prelim. Resp. 20–21. To the contrary, these hydrogenates appear to be comparative *products* made by a different method—not interesterification. *See* Ex. 1006, 1–2 (describing a "transisomerization" reaction); *see also* Ex. 1005, 1 (describing formation of non-natural trans isomers through chemical transformations like partial hydrogenation and/or transisomerization). That these "Jojoba oil Partial Hydrogenate[s]" include a material *trans isomer* component (11% and 37%) while the reported Jojoba Esters contain ***no*** trans isomers only underscores that Table 4's hydrogenates are neither the feedstock nor the product of interesterification. Ex. 1006, 1 ("The interesterification reaction used to produce trans free emollients is one in which a fully hydrogenated lipid material (no trans isomers) is reacted with neat oil containing only cis isomers."). Petitioner does not explain adequately or persuasively why the comparison in Table 4 discloses the comparison recited in claim 1.

Despite our concerns with Petitioner's reasoning here, we note that Petitioner has also identified evidence concerning whether it was "well known" to the POSA that a product with a greater OSI could be made through transesterification (similar to Petitioner's argument for limitation 1[c] in Ground 1). Nevertheless, because we are instituting on the same claims in other grounds, we need not decide whether that showing alone is

sufficient to meet Petitioner's burden for Ground 2 given our concerns with Petitioner's other reasoning. Such analysis is best left for trial after full development of the record.

F. Ground 3 – Obviousness over Trans Isomers 2, Trans Isomers 1, and Sessa

Petitioner contends that claims 1–3 and 5 would have been obvious over Trans Isomers 2 in view of Trans Isomers 1 and/or in further view of Sessa. Pet. 54–59.

Petitioner contends that Trans Isomers 2, Trans Isomers 1, and Sessa are prior art to the '245 patent and Patent Owner provides no argument otherwise. *Id.* at 13, 15, and 26. We agree that the asserted references qualify as prior art under 35 U.S.C. § 102(a).

Trans Isomers 2 and Sessa are summarized above. We summarize Trans Isomers 1 below and then turn to the analysis.

1. Trans Isomers 1 (Ex. 1005)

Trans Isomers 1 is an article titled "Trans Isomers in Cosmetics" that published in 2001. Ex. 1005, 1, 5.

Trans Isomers 1 describes a movement in the cosmetics industry toward products that include no trans-isomer content. *Id.* at 1 (noting that cosmetic chemists may soon be asked to certify that their products are trans-free). Trans Isomers 1 teaches, as an alternative to the use of products with trans isomers, using products formed by interesterification. *Id.* at 3 ("Oil phase emollients with these desirable characteristics [(i.e., oxidatively stable, broad range of melting points, and trans-free)], can be obtained without the formation of trans isomers through a process known as 'interesterification.'"). Trans Isomers 1 discloses a "use of this

interesterification process to modify the melting characteristics of triglycerides using various catalysts including enzymes." *Id.*

Trans Isomers 1 also describes cis- and trans- geometry in lipid molecules. *Id.* at 1. Trans Isomers 1 teaches that "cis and trans labels refer to the geometric positioning of hydrogen atoms about points of unsaturation (double bonds) found in lipid chains." *Id.* Further, Trans Isomers 1 explains, the "cis isomer is simplistically represented by both hydrogen atoms of the carbon atoms forming the double bond being located on the same side of the carbon chain," whereas the "trans form is depicted with hydrogen atoms appearing on opposite sides of the carbon chain." *Id.* Trans Isomers 1 teaches that the overwhelming majority of the lipid components created in nature are in a cis form. *Id.* Conversely, "[t]rans isomers of lipid materials occur infrequently in nature" and "[n]on-natural trans isomers are usually formed when lipid materials are subjected to various chemical transformations," such as partial hydrogenation and transisomerization. *Id.*

According to Trans Isomers 1, "[f]ully hydrogenated lipid materials contain neither cis nor trans fatty acid isomers." *Id.* at 2. "The double bonds of a fully hydrogenated lipid have been eliminated by completely 'saturating' the molecule with hydrogen." *Id.* ("Fully hydrogenated forms are also the most oxidatively stable of all possible chemical structures of lipids."). Trans Isomers 1 reports that "[f]ully hydrogenated jojoba oil (melting point 68-70[degrees]C) contains neither cis nor trans isomers . . . and is frequently used as a component of lipsticks" and other cosmetics).

2. Analysis

Petitioner's argument and analysis for Ground 3 is similar to Ground 2. Pet. 54–58. The main difference is that, for satisfaction of limitation [1b], Petitioner points to Trans Isomer 1's disclosure about using

"enzymes" as a catalyst. *Id.* at 57; Ex. 1005, 3–4 ("Rozenall discussed use of th[e] interesterification process . . . using various catalysts including enzymes." (footnote omitted)). Petitioner contends that a "lipase" is defined broadly in the '245 patent (Pet. 57 n.13) to essentially encompass any enzyme that works in a transesterification reaction, and Petitioner contends it would have been obvious to substitute an enzymatic catalyst for a chemical catalyst. *Id.* at 57.

Patent Owner does not contest Petitioner's argument for Ground 3 beyond what Patent Owner argued for Grounds 1 and 2. Prelim. Resp. 24, 37–38. We addressed those arguments above. Petitioner's challenge to the claims under Ground 3 will be included in trial and evaluated on a full evidentiary record. *SAS*, 138 S. Ct. at 1355.

G. Ground 4 – Obviousness over Brown, Xu, Cummings, and Sessa

Petitioner contends that claims 1–3 and 5 would have been obvious over Brown in view of Xu and Cummings, and/or in further view of Sessa. Pet. 60–70.

Petitioner contends that Brown, Xu, Cummings, and Sessa are prior art to the '245 patent and Patent Owner provides no argument otherwise. *Id.* at 10, 19, 23, and 26. We agree that the asserted references qualify as prior art under 35 U.S.C. § 102(a).

Xu, Cummings, and Sessa are summarized above. We summarize Brown below and then turn the analysis.

1. Brown (Ex. 1007)

Brown is a U.S. reissue patent that reissued June 10, 2003. Ex. 1007, code (45). Brown relates, in general, to an "effective dry-feel emollient composition additive for use in personal care" and "cosmetic" products, and

methods of making such composition. *Id.* at 3:36–39. Brown teaches that the composition "is essentially solid at room temperature" and "can be produced from combinations of fatty alcohols, isopropyl esters and wax esters obtained from the oil contained in the seed of the jojoba plant . . . , jojoba oil." *Id.* at 3:40–45.

Further, Brown teaches:

> Jojoba esters are prepared by processes described herein, which processes result in a randomized molecular combination of saturated with unsaturated jojoba fatty acids and fatty alcohols. These esters are a complex mixture of different jojoba fatty acids and fatty alcohols combined randomly and composed of differing chain lengths. The fatty acids and fatty alcohols may be either fully saturated, monounsaturated or with both the fatty alcohol and the fatty acid containing one point of unsaturation, as described above. The melting point, consistency, and physical appearance of these jojoba esters can be manipulated to produce a family of wax esters ranging from pourable liquids to hard, crystalline waxes.

Id. at 7:7–19. Brown discloses that the "[j]ojoba esters in the present invention are utilized as oxidatively stable carriers." *Id.* at 8:24–25.

Brown discloses that a process for producing the emollient may comprise the steps of providing a composition comprising jojoba oil, adding an alcohol, affecting alcoholysis, and effecting interesterification of remaining wax esters. *Id.* at 4:60–67. Brown teaches that the starting materials for the reaction may include (I) alcohol, especially isopropyl alcohol, (II) jojoba wax esters (R^1–COO–CH_2–R^1), and (III) fully hydrogenated jojoba wax esters (R^2–COO–CH_2–R^2). *Id.* at 4:6–24 (disclosing that R^1 comprises a carbon chain of various lengths and includes a C=C bond, and R^2 comprises a carbon chain of various lengths and

includes no C=C bonds); *see also id.* at 5:1–38 (describing example reaction conditions and additives, e.g., sodium methoxide as a catalyst).

Brown further describes several reaction products. For example, Brown describes "Reaction C" where "I, and IIn and IIIn (catalyst) →IV, V, VI, VII, VIII, IX, IIr and IIIr." *Id.* at 4:48–51. According to Brown, "[t]his product is referred to . . . as 'the broad melting range emollient' and the properties of the emollient depend on the relative amounts of IIn and III[n]." *Id.*; *see also id.* at 4:52–54 (disclosing that subscripts "n" and "r" refer, respectively to the naturally occurring distribution of wax esters and the randomized distribution of wax esters resulting from the rearrangement that occurs during the reaction). Brown discloses that IV, VI, VII, and VIII are "[p]artially saturated wax esters" and "[t]ypical product components" from preferred synthetic reactions with jojoba oil. *Id.* at 4:25–38. According to Brown, "Floraesters 70 is III, Floraesters 15 is IIr, and Floraesters 20, 30, and 60 are combinations of IIr, IV, V, and IIIr." *Id.* at 5:39–43; *see also id.* at 8:45–55 (Table listing melting points and iodine values for jojoba esters).

2. Analysis

Petitioner's argument and analysis under Ground 4 is similar to Ground 1. Pet. 60–70. Petitioner argues that Brown teaches or suggests claim 1's preamble, and limitation [1a] by back-calculation of iodine values listed in Brown and, secondarily, based on Sessa's range of 5–50% of hydrogenated jojoba wax esters in a feedstock. *Id.* at 60–65. Petitioner further argues that Brown teaches limitation [1b], except for addition of a "lipase" for which Petitioner turns to Xu based on substantially the same

reasoning as Ground 1. *Id.* at 65–67.[20] Petitioner argues Cummings and Brown disclose limitation [1c] and also argues it was "well known" that transesterification can produce a higher OSI product. *Id.* at 67–69. Patent Owner's counterarguments repeat its argument for Ground 1—limited to whether limitations [1a] and [1c] are met. Prelim. Resp. 24–28 (cross-referencing Ground 1 arguments), 38–40 (same).

We have considered Petitioner's argument and evidence at this stage. Pet. 60–70; Ex. 1003 ¶¶ 200–244. Patent Owner's arguments are addressed above. *See* Section III(D)(4). The concerns expressed above for Ground 1 arise in Ground 4 as well (e.g., back-calculation from iodine values; adequacy of Cummings's comparison of the OSI for refined jojoba oil versus jojoba esters). Nevertheless, we find Petitioner has met its institution burden and established a reasonable likelihood that at least one of the challenged claims would have been obvious. Accordingly, trial will also proceed as to Ground 4.

IV. DISCRETIONARY ISSUES

A. Section 314(a) and Fintiv

Institution of *inter partes* review is discretionary. *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1367 (Fed. Cir. 2016) ("[T]he [U.S. Patent and Trademark Office] is permitted, but never compelled, to institute an IPR

[20] In addressing limitation [1b], Petitioner writes that a "POSA would have been motivated to replace . . . the chemical catalyst of ***Trans* Isomers 2** with a lipase as the catalyst in the reaction of Brown for the reasons stated in Xu." Pet. 67 (emphasis added). Because Ground 4 is not based on a modification of Trans Isomers 2, we will treat this as an inadvertent mistake. In context, it is clear that Petitioner meant to refer to modifying Brown's chemical catalyst. *Id.* at 66–67 ("POSA would have found it obvious to modify the chemically catalyzed process of Brown to use the lipase disclosed in Xu.").

proceeding."). In deciding whether to exercise such discretion when there is a co-pending lawsuit involving the challenged patent, the Board considers six non-exclusive factors. *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 at 6 (PTAB Mar. 20, 2020) (precedential) ("*Fintiv*"). On June 21, 2022, the Director of the USPTO clarified the Board's application of the *Fintiv* factors. Interim Procedure For Discretionary Denials In AIA Post-Grant Proceedings With Parallel District Court Litigation, issued June 21, 2022 ("Interim Procedure").[21] The Interim Procedure clarifies "the PTAB's current application of *Fintiv* to discretionary institution where there is parallel litigation" and explains that, "[c]onsistent with *Sotera Wireless*, *Inc.*, the PTAB will not discretionarily deny institution in view of parallel district court litigation where a petitioner presents a stipulation not to pursue in a parallel proceeding the same grounds or any grounds that could have reasonably been raised before the PTAB." Interim Procedure 2–3 (internal footnote omitted) (citing *Sotera Wireless, Inc. v. Masimo Corp.*, IPR2020-01019, Paper 12 (PTAB Dec. 1, 2020) (precedential as to § II.A) ("*Sotera*")). The Interim Procedure indicates that a *Sotera*-type stipulation "mitigates concerns of potentially conflicting decisions and duplicative efforts between the district court and the PTAB . . . [and] allows the PTAB to review grounds that the parallel district court litigation will not resolve." *Id.* at 7–8.

Petitioner argues that, applying *Fintiv* and the Director's Interim Procedure, discretionary denial would be inappropriate. Pet. 71–73. In particular, Petitioner states that, upon institution, Petitioner "stipulate[s] to

[21] *Available at* https://www.uspto.gov/sites/default/files/documents/interim_proc_discretionary_denials_aia_parallel_district_court_litigation_memo_20220621_.pdf

not pursue prior art invalidity in court ***on any grounds based entirely on prior art patents or publications***, ***including the grounds in this Petition***." *Id.* at 71. According to Petitioner, "[t]his alone demonstrates that denial is unwarranted." *Id.* (citing Interim Procedure 3), 72–73 (citing *Sotera*).

We agree. Although Petitioner uses different language for its stipulation than the language used in *Sotera*, for all practical purposes, we see no difference in the scope of Petitioner's stipulation and the one in *Sotera*.

Patent Owner quotes the language of the stipulation made in *Sotera*, but does not identify how that stipulation and Petitioner's stipulation actually or even theoretically differ in operation. Prelim. Resp. 42–43. Patent Owner instead acknowledges that Petitioner made a "*Sotero* [sic] type stipulation." *Id.* Yet Patent Owner contends discretionary denial is still appropriate because Petitioner raised invalidity theories in the parallel district court case that rely on the same or "substantially similar" references and combinations of references as asserted here. *Id.* We fail to see how such prior art references and combinations are not squarely within the scope of Petitioner's stipulation and we expect that, given our decision here, Petitioner will abide by that stipulation and no longer pursue those bases in the court action.

Patent Owner further argues that "Petitioner's offer to conditionally litigate one set of invalidity theories in the PTAB and a separate set of invalidity theories in the district court" only increases the parties' costs. *Id.* at 43. But Patent Owner identifies no theory of invalidity that was or could have reasonably been raised in this IPR, which theory must by statute be based on patents or printed publications, that Petitioner might conceivably continue to pursue in the parallel litigation. 35 U.S.C. § 311(b).

On this record, we find that Petitioner's stipulation "mitigates concerns of potentially conflicting decisions and duplicative efforts between the district court and the PTAB." Interim Procedure 7 (citing *Sotera* at 18–19). We are further satisfied that whatever bases of invalidity might remain before the court are not grounds that Petitioner could have raised before the Board in this proceeding. Consistent with the Director's guidance on *Fintiv* and *Sotera* stipulations as set forth in the Interim Procedure, we decline to deny the petition on the basis of § 314(a) discretion.[22]

B. Section 325(d)

The Board has discretion under 35 U.S.C. § 325(d) to reject a petition when the same or substantially the same prior art or arguments were presented previously in another proceeding before the Office. The relevant portion of that statute reads:

> In determining whether to institute or order a proceeding . . . , the Director may take into account whether, and reject the petition or request because, the same or substantially the same prior art or arguments previously were presented to the Office.

35 U.S.C. § 325(d). In evaluating whether to deny institution under 325(d), the Board has considered several non-exclusive factors: (a) the similarities and material differences between the asserted art and the prior art involved during examination; (b) the cumulative nature of the asserted art and the prior art evaluated during examination; (c) the extent to which the asserted art was evaluated during examination; (d) the extent of the overlap between

[22] Although Petitioner departed from the express language of the stipulation in *Sotera* here, this decision should not be understood as encouraging the same approach in other matters. Better practice, if a party seeks to avoid discretionary denial based on a stipulation alone, is to track the language of the *Sotera* stipulation exactly.

the arguments made during examination and the manner in which a petitioner relies on the prior art or a patent owner distinguishes the prior art; (e) whether a petitioner has pointed out sufficiently how the Office erred in evaluating the asserted prior art; and (f) the extent to which additional evidence and facts presented in the petition warrant reconsideration of the prior art or arguments. *See Becton, Dickinson & Co. v. B. Braun Melsungen AG*, IPR2017-01586, Paper 8 at 17–18 (PTAB Dec. 15, 2017) (precedential as to § III.C.5, first para.).

Factors (a), (b), and (d) relate to whether the art or arguments in the Petition are the same or substantially the same as those previously presented to the Office. *Advanced Bionics, LLC v. MED-EL Elektromedizinische Geräte GmbH*, IPR2019-01469, Paper 6 at 10 (PTAB Feb. 13, 2020) (precedential) ("*Advanced Bionics*"). Factors (c), (e), and (f) "relate to whether the petitioner has demonstrated a material error by the Office" in the Office's prior consideration of that art or arguments. *Id.*

Under *Advanced Bionics*'s two-part framework, we first determine whether the same or substantially the same art or arguments previously were presented to the Office. *Id.* at 8, 10. If "either condition of [the] first part of the framework is satisfied," we then determine whether Petitioner has demonstrated material error by the Office. *Id.* at 8, 10. As we discuss below, we conclude that the first part of *Advanced Bionics* is not satisfied and, thus, we do not proceed to the "error" part/prong.

Petitioner argues that the Board should not exercise its discretion to deny the Petition under 325(d) because Grounds 1, 2, and 4 rely on one or more references (Cummings, Xu, Brown) not disclosed during prosecution (and, thus, presenting combinations and arguments not then before the Office). Pet. 73–74. Petitioner argues that none of Cummings, Xu, or

Brown was presented previously to the Office during prosecution of the '245 patent. *Id.* at 10–11, 19, 23. As explained below, we agree.

Patent Owner argues that "much of the same art" asserted by Petitioner was presented previously. Prelim. Resp. 44–45 (arguing Trans Isomers 1 and 2, and Sessa were cited by Applicant during prosecution in an Information Disclosure Statement (IDS)).[23] Indeed, it is undisputed that Trans Isomers 1, Trans Isomers 2, and Sessa were before the Office. Those references are identified in the "References Cited" section of the '245 patent and in the Specification. Ex. 1001, code (56) (Other Publications, page 2), 12:35–47. Although Trans Isomers 1, Trans Isomers 2, and/or Sessa were not the basis of any rejection of the claims, their listing in an Examiner-signed IDS and disclosure in the body of the '245 patent itself supports a conclusion that those references were previously presented and considered during prosecution. *See Advanced Bionics* at 7–8 (noting that art made of record includes prior art identified in an IDS).

But that leaves Cummings, Xu, and Brown as references that were not previously considered. Patent Owner argues that Cummings is cumulative to Trans Isomers 2, that other references attributed to Xuebing Xu were before the Office even if the Xu reference asserted by Petitioner was not, and that Brown "is in the file history of the '245 patent." Prelim. Resp. 45–46. None of these arguments supports discretionary denial.

[23] Patent Owner but does not contend that Petitioner presents substantially the same arguments as raised during prosecution and, on this the preliminary record, it is not apparent that the arguments substantially overlap. Accordingly, we focus here on the extent to which substantially the same prior art was presented previously under part one of *Advanced Bionics*.

Starting with Cummings, Patent Owner asserts that Cummings and Trans Isomers 2 report "substantially similar" content describing OSI values and other parameters (e.g., iodine values) of jojoba esters. *Id.* at 46 (noting that the references also share an author (Robert Kleiman)). There is some overlap between Cummings and Trans Isomers 2 as pointed out by Patent Owner. *Compare* Ex. 1004, 1 (Fig. 3), *with* Ex. 1006, Table 2 (listing melting points and iodine values for certain jojoba ester products (e.g., Jojoba Esters (20), Jojoba Esters (70))). There are, however, material differences too. For example, Cummings discloses the OSI values of jojoba esters made through transesterification as well as the "OSI of refined jojoba oil," both of which Petitioner cites as material to the feedstock OSI and the comparison recited in limitation [1c]. Pet. 38. Patent Owner does not persuasively identify any corresponding disclosure of such a comparison in Trans Isomers 2; the cited comparison of OSI values of finished wax ester products to each other (in Trans Isomers 2 (Ex. 1006, 3 (Table 2)) is a different comparison and lacks any asserted teaching of the OSI of an *input* (feedstock component) to the transesterification reaction. Prelim. Resp. 46.[24] For at least that reason, we do not agree that the pertinent disclosures of Cummings and Trans Isomers 2 are cumulative.

Turning to Xu, Patent Owner's argument that other papers authored by Xuebing Xu were made of record during prosecution is unavailing. *Id.*

[24] We recognize Petitioner also cites Trans Isomers 2's Table 4 as allegedly evidencing a comparison of OSI of a feedstock to OSI of reaction product. Pet. 51. As we explain above, we have doubts that this is an apt comparison because the cited "Partial Hydrogenate[s]" in Table 4 do not appear not to be a feedstock at all but rather a *reaction product* from a *different reaction* (e.g., transisomerization that forms trans isomers, not transesterification, which avoids any creation of trans isomers). Ex. 1006, 1–4.

Patent Owner provides neither evidence nor analysis that compares any of the respective disclosures of these other papers to the disclosures in the Xu reference relied on by Petitioner here that would support a conclusion that the disclosures are cumulative. Instead, Patent Owner merely cites IDS entries where these other Xu papers purport to have been identified. *Id.*

Lastly, we are unpersuaded that Brown was previously presented to the Office during prosecution of the '245 patent. Brown is a reissue patent of U.S. Patent No. 6,280,746 ("the '746 patent"). Ex. 1007, code (64). Brown and the '746 patent ***are not*** identified among the "References Cited" in the '245 patent. The '746 patent was itself a continuation-in-part (CIP) application to the "Arquette" patent.[25] Pet. 74 (noting that Arquette was cited during prosecution); *see* Ex. 1001, code (56). Patent Owner, nevertheless, contends that Brown was "in the file history" of the '245 patent because a separate PCT application (WO2005/061686) was disclosed in an IDS during prosecution, and this PCT application appends an International Search Report page that identifies the '746 patent among three other "x" references for said PCT application. Prelim. Resp. 45 (asserting that the PCT application was later identified in a rejection of the '245 patent's then-pending claims); Ex. 1002, 137 (PCT application), 163 (ISR page).

Regarding Brown, Patent Owner's reference-within-a-reference theory of a prosecution disclosure that triggers Section 325(d) concerns goes too far. Patent Owner cites no authority that requires we find a nested citation of one reference (here the pre-reissue version of Brown) within another reference that is made of record (the '686 PCT application) to be

[25] Arquette et al., U.S. Patent No. 5,968,530, issued Oct. 19, 1999 (Ex. 1010).

sufficient to support a finding that part 1 of *Advanced Bionics* is met as to such nested reference. And we decline to do so on the record here.

Petitioner, for its part, acknowledges that Brown is a reissue of a patent that itself issued from a CIP application to Arquette, and that Arquette was cited during prosecution. Pet. 74. Petitioner argues, however, that Brown "includes new subject matter not disclosed in Arquette." *Id.* For example, Petitioner argues that Brown discloses "jojoba esters 'are utilized as oxidatively stable carriers of fragrance oils' compared to jojoba oils that would have reacted with the fragrance oil." *Id.* at 74–75 (citing, e.g., Ex. 1007, 8:24–29 and comparing with Arquette's disclosure (Ex. 1010)). Petitioner further cites "new" disclosure in Brown about transesterification providing "a randomized molecular combination of saturated with unsaturated jojoba fatty acids and fatty alcohols," and that properties such as "melting point, consistency, and physical appearance of these jojoba esters can be manipulated" through this process. *Id.* at 75 (citing Ex. 1007, 7:7–19). According to Petitioner, the "new" disclosures combined with other disclosures in Brown help supply a connection between the ratio of hydrogenated wax esters and the OSI of the wax ester product of transesterification that was argued as missing from Arquette during prosecution. *Id.* at 75–76 (citing Ex. 1002, 1092–1093, 1176–1177). Patent Owner, in its 325(d) response, does not address the "new" subject matter identified by Petitioner or explain how it is substantially the same as other disclosures that were of record during prosecution. Prelim. Resp. 45–46. Altogether, we find that Brown was not previously presented to the Office during the '245 patent's prosecution.

Because the first part of the framework of *Advanced Bionics* is not satisfied for Grounds 1, 2, and 4, which grounds rely on one or more of

Cummings, Xu, and Brown, we determine that Section 325(d) is not sufficiently implicated in a manner that justifies discretionary denial. *See, e.g.*, *Western Digital Corp., v. Kuster*, IPR2020-01410, Paper 13 at 17–19 (PTAB Feb. 17, 2021) (declining to deny a petition under § 325(d) where only two of seven grounds relied solely on references previously presented to the Office).

V. CONCLUSION

For the reasons above, we determine there is a reasonable likelihood that the Petitioner would prevail with respect to at least one of the claims challenged in the Petition. We do not deny the Petition on the basis of discretion. We, thus, institute *inter partes* review.

Any argument not raised in a Patent Owner Response to the Petition, or as permitted in another manner during trial, shall be deemed waived even if asserted in the Preliminary Response. In addition, nothing in this Decision authorizes Petitioner to supplement information advanced in the Petition in a manner not permitted by the Board's Rules.

VI. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that, pursuant to 35 U.S.C. § 314(a), *inter partes* review of all challenged claims of the '245 patent is instituted on all grounds of unpatentability set forth in the Petition.

FURTHER ORDERED that, pursuant to 35 U.S.C. § 314(a) and 37 C.F.R. § 42.4, notice is given of institution of trial commencing on the entry date of this Decision.

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