

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ENTEGRIS, INC.,
Petitioner,

v.

INPRIA CORP.,
Patent Owner.

IPR2025-00267
Patent 11,673,903 B2

Before CHRISTOPHER M. KAISER, DEBRA L. DENNETT, and
DAVID COTTA, *Administrative Patent Judges*.

KAISER, *Administrative Patent Judge*.

DECISION
Granting Institution of *Inter Partes* Review
35 U.S.C. § 314, 37 C.F.R. § 42.4

I. INTRODUCTION

A. Background and Summary

Entegris, Inc. (“Petitioner”) filed a Petition (Paper 1, “Pet.”) requesting *inter partes* review of claims 1–4 and 6–10 (“the challenged claims”) of U.S. Patent No. 11,673,903 B2 (Ex. 1001, “the ’903 patent”). Voith Patent GmbH (“Patent Owner”) filed a Preliminary Response (Paper 8, “Prelim. Resp.”). Patent Owner also requested discretionary denial of the Petition, and the Acting Director of the United States Patent and Trademark Office granted the request. Paper 12. Petitioner requested rehearing of the decision granting discretionary denial, and the Deputy Director granted rehearing and referred the Petition to us. Paper 21. With our authorization, Patent Owner filed a supplemental brief on real party-in-interest issues (Paper 28), and Petitioner responded (Paper 29).

We have authority, acting on the designation of the Director, to determine whether to institute an *inter partes* review under 35 U.S.C. § 314 and 37 C.F.R. § 42.4(a). *Inter partes* review may not be instituted unless “the information presented in the petition filed under [35 U.S.C.] section 311 and any response filed under [35 U.S.C.] section 313 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). “When instituting *inter partes* review, the Board will authorize the review to proceed on all of the challenged claims and on all grounds of unpatentability asserted for each claim.” 37 C.F.R. § 42.108(a) (2023). In other words, a decision to institute under § 314 may not institute on fewer than all claims challenged in the petition. *SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348, 1359–60 (2018). In addition, if the Board institutes trial, it will “institute . . . on all

grounds in the petition.” PTAB Consolidated Trial Practice Guide, 5–6 (Nov. 2019)¹ (“CTPG”); *see also PGS Geophysical AS v. Iancu*, 891 F.3d 1354, 1360 (Fed. Cir. 2018) (interpreting the statute to require “a simple yes-or-no institution choice respecting a petition, embracing all challenges included in the petition”).

For the reasons set forth below, upon considering the briefing and the evidence of record, we determine that the information presented in the Petition establishes a reasonable likelihood that Petitioner will prevail with respect to at least one of the challenged claims. Accordingly, we institute *inter partes* review of all challenged claims on all grounds asserted in the Petition.

B. Real Parties-in-Interest

Petitioner and Patent owner each identify themselves as real parties-in-interest. Pet. 1; Paper 4, 1.

C. Related Matters

Both parties identify *Inpria Corp. v. Lam Research Corp.*, No. 1:22-cv-01359 (D. Del.) (“the Delaware lawsuit”), as a related matter. *Id.* Patent Owner also notes that other patents asserted in the Delaware lawsuit are being challenged in IPR2024-00033, IPR2025-00256, and IPR2025-00309. Paper 4, 1.

D. The '903 Patent

The '903 patent, titled “Monoalkyl Tin Compounds with Low Polyalkyl Contamination, Their Compositions and Methods,” “relates to high-purity compositions of monoalkyl tin triamides, monoalkyl tin trialkoxides, or monoalkyl triamido tin and the methods to make them.”

¹ Available at <https://www.uspto.gov/TrialPracticeGuideConsolidated>.

Ex. 1001, code (54), 1:7–9. The application giving rise to the '903 patent was filed on April 11, 2018. *Id.* at codes (21), (22).

According to the '903 patent, “[o]rganometallic compounds are of interest for providing metal ions in a solution processable form. Alkyl tin compounds provide a radiation sensitive Sn—C bond that can be used to pattern structures lithographically.” *Id.* at 1:13–16. The methods of the '903 patent can produce “monoalkyl tin compositions, in particular monoalkyl tin triamides, monoalkyl tin trialkoxides, and monoalkyltriimido tin, with low polyalkyl tin byproducts.” *Id.* at 2:66–3:2. “In particular, three approaches have been developed for the synthesis of monoalkyl tin triamides with relatively low polyalkyl tin byproducts that can be used as synthesized or further purified.” *Id.* at 3:2–5. “The synthesized monoalkyl tin amides and monoalkyl tin alkoxides can be further purified by fractional distillation to effectively reduce polyalkyl contaminants below levels that may already be relatively low from the direct synthesis.” *Id.* at 3:13–17.

E. Illustrative Claim

Petitioner challenges claims 1–4 and 6–10 of the '903 patent. Claim 1 is independent and illustrative; it is reproduced below.

1. A high purity liquid composition comprising:
 - a monoalkyl tin triamide compound represented by the chemical formula $\text{RSn}(\text{NR}'_2)_3$ and
 - no more than 0.5 mole % dialkyltin compounds as an impurity relative to the total tin amount,
 - wherein R is a hydrocarbyl group with 1-31 carbon atoms, and
 - wherein R' is a hydrocarbyl group with 1-10 carbon atoms.

Ex. 1001, 17:41–18:4.

F. Asserted Grounds of Unpatentability

Petitioner asserts the following grounds of unpatentability (Pet. 7, 27–74):

Claim(s) Challenged	35 U.S.C. §²	Reference(s)/Basis
1–4, 6–10	102	Hänssgen ³
1–4, 6–10	103	Hänssgen, knowledge of POSITA
1–4, 6	103	Meyers, ⁴ Deelman ⁵
1–4, 6–10	103	Meyers, Deelman, Hänssgen
1–4, 6	103	Deelman, Jones ⁶
1–4, 6–10	103	Deelman, Jones, Hänssgen

In support of its unpatentability arguments, Petitioner relies on the declarations of Dr. Gerard Parkin (Ex. 1002) and Drew Hood, Ph.D. (Ex. 1003).

II. ANALYSIS

A. Real Party-in-Interest Designation

Petitioner names only itself as the real party-in-interest. Pet. 1. Patent Owner argues that Petitioner also should have named Lam Research Corp.

² Amendments to 35 U.S.C. §§ 102 and 103 enacted by the Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) (“AIA”), took effect in March 2013. The ’903 patent issued from an application filed in April 2018. *See* Ex. 1001, code (22). Therefore, we apply the post-AIA versions of §§ 102 and 103. Neither party, however, argues that the outcome of this case would differ based on applying the pre-AIA or post-AIA versions of these laws.

³ D. Hänssgen et al., “Synthesis of The First Mono-t-Butyltin Element Compounds,” 293 *Journal of Organometallic Chemistry* 191–95 (1985) (Ex. 1005).

⁴ US 2016/0116839 A1, published Apr. 28, 2016 (Ex. 1006).

⁵ US 2011/0166268 A1, published July 7, 2011 (Ex. 1007).

⁶ K. Jones and M.F. Lappert, “Amino-derivatives of Metals and Metalloids. Part I. Preparation of Aminostannanes, Stannylamines, and Stannazanes,” *Journal of Chemical Society* 1944–51 (1965) (Ex. 1009).

“Lam”) and failed to do so. Paper 15, 3; Paper 19, 1. We permitted Patent Owner to take limited additional discovery regarding this issue, and we authorized both parties to file additional briefing and evidence regarding whether Petitioner had satisfied the requirements of 35 U.S.C. § 312(a)(2). Paper 24. Patent Owner filed a brief, and Petitioner filed a responsive brief. Paper 28 (“PO RPI Br.”); Paper 29 (“Pet. RPI Br.”). The parties also filed new evidence relevant to the RPI issue, including in particular a declaration by Dr. Joseph Rivers and the transcript of a deposition of Dr. Rivers. Ex. 2046 (Rivers declaration); Ex. 2055 (Rivers deposition transcript); Exs. 2047–2054.

Upon consideration of the additional briefing and evidence filed by both parties, we determine that Petitioner has satisfied the requirements of § 312(a)(2).

1. *Legal Standards Regarding Real Party-in-Interest Identification*

We may consider a petition for *inter partes* review “only if . . . the petition identifies all real parties in interest.” 35 U.S.C. § 312(a)(2). This requirement “must be satisfied before the Director can institute trial.” Precedential Designation of *Corning Optical Communications RF, LLC v. PPC Broadband, Inc.*, Memorandum from John A. Squires to All PTAB Judges (Oct. 28, 2025) (available at https://www.uspto.gov/sites/default/files/documents/Precedential_designation_of_Corning_Optical_Communications_RF_LLC_v._PPC_Broadband_Inc_Memo_-_Dated_10_28_25.pdf) (“*Corning Optical Memo*”), at 1. “There are several factors relevant to “whether a party who is not a named participant in a given proceeding is a ‘real party-in-interest’ to that proceeding.” *Corning Optical Comm’ns RF, LLC v. PPC Broadband, Inc.*, IPR2014-00440, Paper 68, at 14 (PTAB Aug.

18, 2015) (precedential except as to § II.E.1). This ““is a highly fact-dependent question.”” *Id.* (quoting 77 Fed. Reg. at 48,759 (citing *Taylor v. Sturgell*, 533 U.S. 880 (2008))).

As the Board set out in the precedential decision in *Corning Optical*, there is no “bright line test.” [77 Fed. Reg. at 48,759.] The Supreme Court in *Taylor* sets forth a list of factors that might be relevant in a particular case. 533 U.S. at 893–95. Although “rarely will one fact, standing alone, be determinative of the inquiry” (Trial Practice Guide, 77 Fed. Reg. at 48,759), “[a] common consideration is whether the non-party exercised or could have exercised control over a party’s participation in a proceeding” (*id.* at 48,761 (citations omitted)); *see also Reflectix, Inc. v. Promethean Insulation Tech. LLC*, Case IPR2015-00039, slip op. at 12 (PTAB April 24, 2015) (Paper 18) (“The proper RPI analysis [] focuses on . . . the degree to which [the related non-named entity] exercised, or could have exercised, control over the Petitions.”). Other considerations may include whether a non-party “funds and directs and controls” an IPR petition or proceeding; the non-party’s relationship with the petitioner; the non-party’s relationship to the petition itself, including the nature and/or degree of involvement in the filing; and the nature of the entity filing the petition. Trial Practice Guide, 77 Fed. Reg. at 48,760; *see also id.* at 48,759 (citing *Taylor*, 533 U.S. at 893–95 & n.6 (2008)). A party does not become a RPI merely through association with another party in an endeavor unrelated to the IPR proceeding. *Id.* at 48,760; *see also Denso Corp. v. Beacon Navigation GmbH*, Case IPR2013-00026, slip op. at 10–11 (PTAB Mar. 14, 2014) (Paper 34) (stating that the mere fact that parties are co-defendants or concurrent defendants in related litigation does not make them RPI).

A non-party’s participation with a petitioner may be overt or covert, and the evidence may be direct or circumstantial, but the evidence as a whole must show that the non-party possessed effective control over the IPR proceeding. *Zoll Lifecor Corp. v. Philips Elec. N. Am. Corp.*, Case IPR2013-00609, slip op. at 10 (PTAB Mar. 20, 2014) (Paper 15). In this regard, we consider “the degree of control the nonparty could exert over the inter

partes review.” *Aruze Gaming Macau, Ltd. v. MGT Gaming, Inc.*, Case IPR2014-01288, slip op. at 11 (PTAB Feb. 20, 2015) (Paper 13).

We may consider whether a non-party “has the actual measure of control or opportunity to control that might reasonably be expected between two formal coparties.” Trial Practice Guide, 77 Fed. Reg. at 48,759 (quoting 18A CHARLES ALAN WRIGHT, ARTHUR R. MILLER & EDWARD H. COOPER, FEDERAL PRACTICE & PROCEDURE § 4451 (2d ed. 2011)) (internal quotations omitted). We also may consider whether Petitioner’s actions “have blurred sufficiently the lines of corporate separation with [an unnamed related entity], such that [the entity] could have controlled the filing and participation of the IPRs.” *Zoll Lifecor Corp. v. Philips Elec. N. Am. Corp.*, Case IPR2013-00606, slip op. at 10 (PTAB Mar. 20, 2014) (Paper 13); *see also Galderma S.A. v. Allergan Industrie, SAS*, Case IPR2014-01422, slip op. at 12 (PTAB Mar. 5, 2015) (Paper 14) (same person serving as President and CEO of both parent and subsidiary determined to have “a significant degree of effective control over the present matter”).

IPR2014-00440, Paper 68, at 14–15.

In addition, the precedential decision in *RPX Corp. v. Applications in Internet Time, LLC* states that a non-party is also a real party-in-interest if it “is a clear beneficiary that has a preexisting, established relationship with the petitioner.” IPR2015-01750, Paper 128, 2 (PTAB Oct. 2, 2020) (precedential); *see also Ventex Co. v. Columbia Sportswear N. Am., Inc.*, IPR2017-00651, Paper 148, 6–11 (PTAB Jan. 24, 2019) (precedential) (non-party was real party-in-interest where there was an indemnification agreement between petitioner and non-party, there was an agreement under which petitioner agreed to manufacture its product only for non-party, and petitioner admitted its desire to shield its customers and prospective buyers from infringement liability was the reason it filed its petition).

2. *The Parties' Arguments*

Patent Owner does not argue that Lam meets the *Corning Optical* standard for being a real party-in-interest. PO RPI Br. 1–5. Instead, Patent Owner argues that Lam meets the *RPX* standard for a real party-in-interest. *Id.* at 1. Thus, Patent Owner does not argue that Lam has effective control over the present proceeding, only that the nature of the relationship between Lam and Petitioner is such that Lam “is a ‘clear beneficiary that has a preexisting, established relationship with’ Entegris.” *Id.* (quoting *RPX*, IPR2015-01750, Paper 128, 2). Patent Owner’s position is based on five arguments: (1) “Entegris was attempting to coordinate with Lam in filing their collective IPRs,” [REDACTED]

[REDACTED] Petitioner opposes each of Patent Owner’s arguments and also argues that Lam does not control or fund the present proceeding. Pet. RPI Br. 1–5. We discuss each of the parties’ arguments in turn.

3. *Coordination Between Lam and Petitioner with Respect to the Inter Partes Review*

Patent Owner argues that the evidence of record shows that Petitioner coordinated the filing of the Petition with Lam. PO RPI Br. 1 (citing Ex. 2055, 159:22–161:15). Petitioner disagrees, arguing that “Entegris did not coordinate with Lam about this IPR at any time.” Pet. RPI Br. 2–3 (citing Ex. 2046 ¶¶ 3–4; Ex. 2055, 52:18–53:21, 68:10–14, 73:19–75:2, 76:1–22, 93:8–95:1, 96:8–19, 97:17–21).

On this factual dispute, the preponderance of the evidence supports Petitioner. We note first that the testimony of Dr. Rivers cited by Patent Owner is susceptible to multiple interpretations. That testimony states that Petitioner filed the present Petition in December 2024 in order “to get this in front of the board at the same timing that there may be other rulings in the Lam/Inpria case.” Ex. 2055, 159:22–160:16. Dr. Rivers goes on to explain that the timing of the filing of the present Petition was intended “to do it at a timing when there might be other filings going in,” with those other filings described as “[o]ther IPRs.” *Id.* at 160:17–161:15. [REDACTED]

Dr. Rivers’s other sworn testimony supports the latter interpretation. First, Dr. Rivers testifies that “Entegris prepared and filed this IPR with no participation by Lam,” that Petitioner “did not provide Lam with any materials relating to this IPR before or after Entegris filed it,” that Petitioner “did not discuss any strategy with Lam before or after filing,” that “Lam had no input in the decision to pursue this IPR or in the content, timing, scope, or preparation of the IPR or any other aspect of this proceeding.” Ex. 2046 ¶¶ 3–4. Patent Owner argues that we should ignore Dr. Rivers’s declaration because it is not based on personal knowledge. PO RPI Br. 5. But Dr. Rivers testified extensively as to the source of his knowledge regarding Lam’s lack of involvement in deciding when to file the Petition. Ex. 2055, 52:18–53:21 (“preparation of the IPR” was outside the ordinary “scope of [Petitioner’s] meetings . . . with Lam,” and Dr. Rivers “confirm[ed] with

[his] team that there wasn't anything outside the normal scope of conversations with Lam"), 68:2–14 (basis of Dr. Rivers's statement that "Entegris prepared and filed this IPR with no participation by Lam" was his "involvement with . . . regular course of business communications with Lam"), 73:16–75:2 ("Entegris, including inside and out[side] counsel, filed this IPR with no participation by Lam," and Dr. Rivers confirmed through inside counsel that Lam was not involved through communications with outside counsel), 75:9–22 (basis of Dr. Rivers's statement that "Entegris prepared and filed this IPR with no participation by Lam" was his own "background experience in communications with Lam," as well as "confirm[ation] with [his] team members" that there was no "discussion in preparation for the IPR with Lam" and "confirm[ation] with [Petitioner's] internal legal team that that statement was correct"),⁷ 93:8–95:1 (Dr. Rivers was "involved in the decision to file the IPR"), 96:8–19 (when deciding whether to file an IPR, Dr. Rivers was "the decision-maker, but the variety of options [was] presented to [him] from the legal team"), 97:17–21 (the recommendations presented by the legal team in this case did not "involve considerations relating to Lam"). Given Dr. Rivers's personal knowledge of the facts surrounding Petitioner's decision to file the Petition when it did, the additional confirmation that Dr. Rivers sought to determine whether his own recollection was correct, and the consistent testimony that Lam was not

⁷ At this point in the deposition, Petitioner objected to Patent Owner's question regarding what Dr. Rivers had done to confirm the accuracy of his declaration testimony as repetitive. Ex. 2055, 75:9–17. We agree. As noted above, this was at least the fourth time this same question had been posed to Dr. Rivers about the statements in paragraph 3 of his declaration. Ex. 2055, 52:18–53:21, 68:2–14, 73:16–75:2, 75:9–22. Despite the repetitive nature of the questioning, Dr. Rivers's testimony remained consistent.

involved in the decision to file the Petition when Petitioner did so, the preponderance of the evidence supports a finding that Petitioner and Lam did not coordinate with respect to the filing of the Petition.

Dr. Rivers also testifies that “Lam has not controlled and does not control Entegris in any aspect of this IPR” and that “Lam has not funded any aspect of this IPR.” Ex. 2046 ¶¶ 4–5; *see* Ex. 2055, 92:18–93:7. Patent Owner does not dispute this testimony or argue in any fashion that Lam controls or funds the present proceeding. PO RPI Br. 1–5. Thus, the preponderance of the evidence supports a finding that Lam did not fund, control, or have the ability to control the present proceeding.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

7. *Common-Interest Agreement Between Lam and
Petitioner*

[REDACTED]

[REDACTED] In addition, we agree with
Petitioner that Patent Owner's and Lam's settlement of the Delaware lawsuit

without the inclusion of Petitioner further demonstrates that Petitioner and Lam have individual and independent interests with respect to the '903 patent. Pet. RPI Br. 5; Ex. 1029; Ex. 1030. In addition, Petitioner also argues that, under the agreement to settle the Delaware lawsuit, Lam is now “in direct competition with” Petitioner. Pet. RPI Br. 5. Petitioner does not direct us to evidence to support this allegation,⁹ so we do not include it among the reasons supporting our finding that Petitioner and Lam have individual and independent interests with respect to the '903 patent, but we note that such competition would only strengthen the case in favor of Petitioner’s position on this factual dispute.

8. *Analysis*

As discussed above, the preponderance of the evidence here supports several findings. First, Lam and Petitioner did not coordinate with respect to the filing of the present Petition. Second, Lam did not fund, control, or have the ability to control the present proceeding. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]. Finally,

[REDACTED]

Lam and Petitioner had a common interest in invalidating the '903 patent, and Petitioner also had its own, independent interest in doing so.

Under these facts, it is clear that Petitioner has shown that Lam is not a real party-in-interest under the standard set forth in *Corning Optical*, under which “[a] non-party’s participation with a petitioner may be overt or covert, and the evidence may be direct or circumstantial, but the evidence as a whole must show that the non-party possessed effective control over the IPR proceeding.” IPR2014-00440, Paper 68, at 14–15. This is so because, as discussed above, the evidence of record shows that Lam did not fund, control, or have the ability to control the present proceeding.

It is a closer call whether Petitioner has also shown that Lam is not a real party-in-interest under the standard set forth in *RPX*, under which a non-party is a real party-in-interest if it “is a clear beneficiary that has a preexisting, established relationship with the petitioner.” IPR2015-01750, Paper 128, 2. With respect to this standard, Patent Owner argues that the facts here are similar to those in *Ventex*, IPR2017-00651, Paper 148. PO RPI Br. 2. In that case, the Board concluded that a third party, Seirus, was a real party-in-interest who the petitioner, Ventex, had failed to identify. *Ventex*, IPR2017-00651, Paper 148, 6–11. Patent Owner relies on *Ventex*, characterizing its holding as concluding that Seirus was a real party-in-interest because it and the petitioner “had a specially structured, preexisting, and well established business relationship with one another, [REDACTED] [REDACTED] PO RPI Br. 2. We think, however, that the present case can and should be distinguished from *Ventex*.

The conclusion in *Ventex* that Seirus was a real party-in-interest depended on the combination of three facts: (1) there was an indemnification

agreement between Ventex and Seirus, (2) there was an agreement under which Ventex agreed to manufacture its product only for Seirus, and (3) Ventex admitted its desire to shield its customers and prospective buyers from infringement liability was the reason it filed its petition. *Ventex*, IPR2017-00651, Paper 148, 7–11. [REDACTED]

[REDACTED] And, unlike in *Ventex*, Petitioner here has not admitted that its goal in filing the present Petition was to shield its customers or potential buyers; instead, Petitioner points to its own interest in challenging the '903 patent. It is true that, at the time the present Petition was filed, Petitioner and Lam shared an interest in challenging the '903 patent, [REDACTED]

[REDACTED] But the significant differences between this case and *Ventex*, including Lam being a tangential beneficiary (unlike Seirus) [REDACTED]

[REDACTED] are sufficient to take Lam beyond the bounds of *RPX*'s "beneficiary that has a preexisting, established relationship with the petitioner."

9. Conclusion

After considering the parties' briefs and the evidence of record, for the reasons discussed above, we determine that Petitioner has shown sufficiently that its identification of real parties-in-interest, which did not include Lam, satisfied the requirements of 35 U.S.C. § 312(a)(2).

B. Legal Standards

A claim may be unpatentable as anticipated if “each and every limitation is found either expressly or inherently in a single prior art reference.” *Sanofi-Synthelabo v. Apotex, Inc.*, 470 F.3d 1368, 1375 (Fed. Cir. 2006). Anticipation under § 102 may be established by showing, as a matter of fact, that all elements arranged as specified in a claim are disclosed within the four corners of a reference, either expressly or inherently, in a manner enabling one skilled in the art to practice an embodiment of the claimed invention without undue experimentation. *See ClearValue, Inc. v. Pearl River Polymers, Inc.*, 668 F.3d 1340, 1344 (Fed. Cir. 2012).

A patent claim is unpatentable under 35 U.S.C. § 103(a) 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 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) when in evidence, objective evidence of nonobviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). “While the sequence of these questions might be reordered in any

particular case,” *KSR*, 550 U.S. at 407, the U.S. Court of Appeals for the Federal Circuit has repeatedly emphasized that “it is error to reach a conclusion of obviousness until all those factors are considered,” *WBIP, LLC v. Kohler Co.*, 829 F.3d 1317, 1328 (Fed. Cir. 2016). Because Patent Owner does not address objective evidence of non-obviousness, we focus solely on the first three *Graham* factors.

“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 petitions to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim”)). This burden of persuasion never shifts to Patent Owner. *See Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (discussing the burden of proof in *inter partes* review).

At this preliminary stage, we determine whether the information presented shows a reasonable likelihood that Petitioner would prevail in establishing that at least one of the challenged claims would have been unpatentable over the prior art identified in the Petition. We analyze the asserted grounds with the above-noted principles in mind.

C. Level of Ordinary Skill in the Art

The level of ordinary skill in the pertinent art at the time of the invention is a factor in how we construe patent claims. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (en banc). It is also one of the factors we consider when determining whether a patent claim is obvious over the prior art. *See Graham*, 383 U.S. at 17–18.

Factors pertinent to a determination of the level of ordinary skill in the art include “(1) the educational level of the inventor; (2) type of problems encountered in the art; (3) prior art solutions to those problems; (4) rapidity with which innovations are made; (5) sophistication of the technology; and (6) educational level of active workers in the field.” *Envtl. Designs, Ltd. v. Union Oil Co. of Cal.*, 713 F.2d 693, 696–697 (Fed. Cir. 1983) (citing *Orthopedic Equip. Co. v. All Orthopedic Appliances, Inc.*, 707 F.2d 1376, 1381–82 (Fed. Cir. 1983)). “Not all such factors may be present in every case, and one or more of these or other factors may predominate in a particular case.” *Id.*

Petitioner contends that one of ordinary skill in the art “would have had a Bachelor of Science in Chemistry, or an equivalent field as well as four years of experience in the synthesis of organometallic compounds.” Pet. 22 (citing Ex. 1002 ¶ 83). On the present record, Patent Owner does not contest Petitioner’s proposed level of ordinary skill. Prelim. Resp. 4.

For purposes of this Decision, we adopt Petitioner’s assessment of the level of ordinary skill in the art, as it appears consistent with the ’903 patent and the asserted prior art. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001).

D. Claim Construction

We apply the same claim-construction standard used in the federal courts—in other words, the claim-construction standard that would be used to construe the claim in a civil action under 35 U.S.C. § 282(b), which is articulated in *Phillips*. *See* 37 C.F.R. § 42.100(b). Under the *Phillips* standard, the “words of a claim ‘are generally given their ordinary and customary meaning,’” which “is the meaning that the term would have to a

person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application.” *Phillips*, 415 F.3d at 1312–13.

Both parties argue that no claim terms require express construction at this stage of the proceeding. Pet. 23; Prelim. Resp. 4–5. On the present record, we agree. See *Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1375 (Fed. Cir. 2019) (“The Board is required to construe ‘only those terms . . . that are in controversy, and only to the extent necessary to resolve the controversy.’” (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))).

E. Asserted Obviousness Based on the Combination of Hänssgen and the Knowledge of a POSITA

Petitioner argues that claims 1–4 and 6–10 of the ’903 patent would have been obvious over the combination of Hänssgen and the knowledge of a person of ordinary skill in the art. Pet. 35–40.

1. Overview of Hänssgen

Sudre, titled “Synthesis of the First Mono-t-Butyltin Element Compounds,” relates to “Sn-alkylation of tetrakis(diethylamino)stannane with lithium-t-butyl” to obtain “t-Butyl-tris(diethylamino)stannane.” Ex. 1005, 191. “Lithium diethylamide can be separated from the reaction mixture by precipitation with benzene and analytically pure [t-butyl-tris(diethylamino)stannane] can be obtained by fractionated distillation of the benzene phase.” *Id.* at 192. “The reaction proceeds practically quantitatively; there are no indications of secondary reactions,” such as the production of “t-Bu₂Sn(NEt₂)₂.” *Id.*

2. *Analysis of Claim 1*

- a) *Disputed Limitation: “no more than 0.5 mole % dialkyltin compounds as an impurity relative to the total tin amount”*

Claim 1 recites “no more than 0.5 mole % dialkyltin compounds as an impurity relative to the total tin amount.” Ex. 1001, 17:44–45. According to Petitioner, “it would have been obvious to a [person of ordinary skill in the art] to optimize reaction conditions and/or apply known purification methods . . . to optimize the purity of the monoalkyl tin triamide composition to remove the dialkyltin compounds.” Pet. 37. Patent Owner argues that Petitioner’s argument is “substantively based on inherency” and relies on Petitioner’s “assertions as to experiments it conducted allegedly following the prior art and its conclusory analysis with respect to a reasonable expectation of success.” Prelim. Resp. 7 (citing, *inter alia*, Pet. 37, 39–40).

We are not persuaded that Petitioner relies on any experiments it conducted with respect to its challenge of claim 1 as obvious over the combination of Hänssgen and the knowledge of a person of ordinary skill in the art. As Patent Owner notes, Petitioner does state within that challenge that “Hänssgen discloses ‘no more than 0.5 mole % dialkyltin compounds as an impurity relative to the total tin amount’ as set forth in §IX.A.3,” referring back to the analysis within the Hänssgen anticipation ground. Pet. 37. And section IX.A.3 of the Petition, which Petitioner refers to in this sentence, does rely on Petitioner’s experiments. *Id.* at 28–29 (citing Ex. 1002 ¶ 130; Ex. 1003 ¶¶ 17–18). But Petitioner then goes on to argue that, “[t]o the extent [Patent Owner] argues this limitation is not disclosed, it would have been obvious to a POSITA to optimize reaction conditions

and/or apply known purification methods to known monoalkyl triamide products to yield predictable results.” *Id.* at 37. This alternative argument does not cite or rely on the results of Petitioner’s experiments. *Id.* at 37–39.

Instead, this argument relies on alleged knowledge that a person of ordinary skill in the art would have had regarding purification of Hänssgen’s reaction mixture. *Id.* at 35–39 (citing Ex. 1002 ¶¶ 178–180, 184–188; Ex. 1005, 2). In particular, Petitioner argues that a person of ordinary skill in the art “would have understood that high purity organotin compounds [were] desirable, *e.g.*, to minimize side reactions and undesirable impurities,” as well as that a person of ordinary skill in the art “would have been motivated to further optimize the process conditions disclosed by Hänssgen, including by the use of fractional distillation, as Hänssgen teaches.” *Id.* at 36.

There is evidence of record to support this argument. First, Dr. Parkin’s testimony that a person of ordinary skill in the art would have been motivated to produce high-purity organotin compounds is supported by evidence of record. *See* Ex. 1007 ¶ 10 (“high purity monoalkyltin trihalides can be converted to other mono-alkyltin derivatives”). Second, Hänssgen itself discusses the differences between similar reactions of “*t*-BuLi” with both “(Et₂N)₄Sn” and “(Me₂N)₄Sn,” focusing on the fact that “it is not possible [with (Me₂N)₄Sn] to get a mono-substitution product” as happens with (Et₂N)₄Sn. Ex. 1005, 192–93. This focus suggests that a person of ordinary skill in the art would have been concerned with producing a high-purity product and that reactions that produced a mixture of products would have been a problem requiring a solution.

With respect to the use of fractional distillation as the solution to that problem, there is evidence of record to support this as well. Hänssgen itself teaches that “analytically pure [t-BuSn(NEt₂)₃] can be obtained by fractionated distillation of the benzene phase.” Ex. 1005, 192. In addition, Dr. Parkin testifies that “[f]ractional distillation is a technique[] established many years ago” that “has been employed widely in industry to separate and purify volatile substances including organotin compounds.” Ex. 1002 ¶¶ 32–33. This testimony is supported by evidence of record. Ex. 1007 ¶ 28; Ex. 1017, 8, 16.

Thus, there is evidence of record that a person of ordinary skill in the art would have been motivated to produce a high-purity product and that they would have known that fractional distillation would achieve this result. On the present record, Patent Owner does not direct us to evidence to the contrary. Prelim. Resp. 5–24. Accordingly, we are persuaded that Petitioner has shown, sufficiently for institution, that the combination of Hänssgen and the knowledge of a person of ordinary skill in the art taught “no more than 0.5 mole % dialkyltin compounds as an impurity relative to the total tin amount.” Ex. 1001, 17:44–45.

b) Undisputed Limitations

Claim 1 also recites

1. A high purity liquid composition comprising:

a monoalkyl tin triamide compound represented by the chemical formula $\text{RSn}(\text{NR}'_2)_3$ and

...

wherein R is a hydrocarbyl group with 1-31 carbon atoms,
and

wherein R' is a hydrocarbyl group with 1-10 carbon atoms.

Ex. 1001, 17:41–18:4. Petitioner argues that Hänssgen teaches these limitations. Pet. 37 (citing Pet. 27–29).

After reviewing Petitioner’s arguments and information regarding the limitations identified immediately above, including the Parkin and Hood Declarations, which are not addressed by Patent Owner at this stage (*see* Prelim. Resp. 5–24), we are persuaded that Petitioner sufficiently demonstrates, for purposes of deciding whether to institute trial, that these limitations would have been obvious over the combination of Hänssgen and the knowledge of a person of ordinary skill in the art.

c) Conclusion Regarding Claim 1

Based on the current record, we determine that there is a reasonable likelihood that Petitioner will prevail in demonstrating that claim 1 is unpatentable as obvious over the combination of Hänssgen and the knowledge of a person of ordinary skill in the art. Accordingly, we institute *inter partes* review with respect to all claims and all grounds asserted in the Petition.

3. *Claims 2–4 and 6–10*

Because Petitioner demonstrates a reasonable likelihood of success in proving that at least one claim of the ’903 patent is unpatentable, we institute on all grounds and all claims raised in the Petition. *See* 37 C.F.R. § 42.108(a). Therefore, at this stage of the proceeding, it is not necessary for us to provide an assessment of every challenge raised by Petitioner, especially, as in this case, when Patent Owner does not separately argue those claims. *See* Prelim. Resp. 5–24. Those challenges, in our view, are best left for trial after full development of the record.

F. Remaining Challenges

Petitioner argues that claims 1–4 and 6–10 were anticipated by Hänssgen; that claims 1–4 and 6 would have been obvious over the combination of Meyers and Deelman; that claims 1–4 and 6–10 would have been obvious over the combination of Meyers, Deelman, and Hänssgen; that claims 1–4 and 6 would have been obvious over the combination of Deelman and Jones; and that claims 1–4 and 6–10 would have been obvious over the combination of Deelman, Jones, and Hänssgen. Pet. 27–35, 40–74. Patent Owner opposes these challenges, arguing that each of them relies on flawed laboratory testing to demonstrate the inherency of certain claim limitations. Prelim. Resp. 5–24.

Because Petitioner demonstrates a reasonable likelihood of success in proving that at least one claim of the '903 patent is unpatentable, we institute on all grounds and all claims raised in the Petition. *See* 37 C.F.R. § 42.108(a). Therefore, at this stage of the proceeding, it is not necessary for us to provide an assessment of every challenge raised by Petitioner. The challenges other than the challenge based on the combination of Hänssgen and the knowledge of a person of ordinary skill in the art, including Patent Owner's arguments regarding Petitioner's laboratory testing, in our view, are best left for trial after full development of the record.

III. CONCLUSION

For the reasons set forth above, we determine that Petitioner has demonstrated a reasonable likelihood of prevailing with respect to at least one challenged claim of the '903 patent. Accordingly, we institute *inter partes* review of all challenged claims on all grounds asserted in the Petition.

Our factual findings, conclusions of law, and determinations at this stage of the proceeding are preliminary, and based on the evidentiary record developed thus far. This is not a final decision as to the patentability of claims for which *inter partes* review is instituted. Our final decision will be based on the record as fully developed during trial.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that, pursuant to 35 U.S.C. § 314(a), an *inter partes* review is instituted for claims 1–4 and 6–10 of the '903 patent on the grounds asserted in the Petition; and

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

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Patent 11,673,903 B2

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