

**IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE**

INPRIA CORPORATION,

Plaintiff,

v.

LAM RESEARCH CORP.,

Defendant.

C.A. No. 1-22-cv-01359-CJB

JURY TRIAL DEMANDED

JOINT CLAIM CONSTRUCTION BRIEF

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I. INTRODUCTION

A. Plaintiff's Opening Introduction

Founded in 2007, Plaintiff Inpria Corporation—a spin-out of Oregon State University—has been at the forefront of developing cutting-edge photoresist technology for extreme ultraviolet (“EUV”) lithography. Inpria’s groundbreaking patented innovations are poised to significantly impact the next generation of semiconductors.¹

Inpria proposes that the disputed claim terms in these patents be given their ordinary and customary meanings. Conversely, Defendant Lam Research Corporation’s proposals ignore those meanings and, in many cases, unjustifiably import additional limitations, contravening established Federal Circuit law.² Lam’s proposals should therefore be rejected.

B. Plaintiff's Reply Introduction

Lam asks the Court to (i) import limitations into the claims, (ii) find a broad disclaimer of all prior art, (iii) ignore fundamental characteristics of claimed inventions because they are recited in preambles, and (iv) hold claims invalid as indefinite despite a lack of clear and convincing evidence. The Court should decline Lam’s invitation to commit reversible error.

II. AGREED-UPON CONSTRUCTIONS

The parties do not agree on the construction of any term.

III. DISPUTED CONSTRUCTIONS

A. “Metal” Terms (Term Nos. 2, 6, 12, and 30)

Plaintiff Inpria’s Proposal	Defendant Lam’s Proposal
Not indefinite. No construction is necessary. The ordinary customary meaning of these	Indefinite.

¹ A summary of the relevant technology is provided by Inpria’s expert, E. Bryan Coughlin, Ph.D. *See* Citroen Decl., Ex. 1 (“Coughlin Decl.”) ¶¶ 26-42.

² Lam also presents indefiniteness positions for certain claim terms, which it must prove by clear and convincing evidence. To the extent Lam maintains any of its indefiniteness positions, Inpria will respond in its reply brief.

claim terms should apply, which is: “a metal (which includes a metalloid) element.”	Alternatively, for the '564, '312, and '684 patents, an atom or molecule element, which includes Al, As, B, Bi, Ca, Ce, Co, Cr, Cu, Dy, Eb, Er, Eu, Fe, Ga, Ge, Gd, Hf, Ho, In, Ir, La, Lu, Mg, Mn, Mo, Nb, Nd, Ni, P, Pm, Pt, Pr, Re, Si, Sb, Sc, Sm, Sn, Ta, Tb, Ti, Tm, V, W, Y, Yb, Zn, and Zr.
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1. Plaintiff's Opening Position³

The “metal” terms⁴ should be given their ordinary and customary meaning, which is “a metal (which includes metalloid) element.” *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1312-13 (Fed. Cir. 2005) (en banc). While Lam does not appear to dispute that “metal,” in the context of these patents,⁵ encompasses both metal and metalloid elements,⁶ Lam nonetheless proposes an alternative construction that unjustifiably limits “metal” to a narrow set of elements.⁷ Lam's

³ The “metal” terms appear in three different patent families, which have different specifications, and Lam's positions set forth in the Joint Claim Construction Chart (“JCCC”) differed regarding these terms. *See* D.I. 141-1 (“JCCC”) at 1-4, 6-9, 14-16, 37-39. However, in response to the Court's order limiting briefing to “no more than 10 terms,” (D.I. 142), Lam now lumps the “metal” terms together into one term. *See* Citroen Decl., Ex. 13 (email from A. Hsu-Hoffman (July 30, 2024)). Lam also asserts that it is “willing to limit this term for construction to just ‘metal.’” *See* Citroen Decl., Ex. 13. Given Lam's differing positions in the JCCC regarding these terms, Lam's current position is unclear. In this brief, Inpria addresses Lam's alternative construction, which it proposed for the '564, '312, and '684 patents, but not the '505 patent.

⁴ The “metal” terms appear in claim 1 of the '505 patent; claims 1-3 and 8 of the '564 patent; claims 1, 4, 13-15, and 17 of the '312 patent; and claims 1, 7, 8, 10-12, 15-18, 20, 27, and 28 of the '684 patent.

⁵ The specifications repeatedly and consistently use “metal” to refer to metal elements (*e.g.*, Sn, Hf, Zr, and Ti) and metalloid elements (*e.g.*, Sb, Te, B, Si, P, Ge, and As). *See, e.g.*, '505 patent at 10:24-25; D.I. 141-2, Ex. A-2 (“'564 patent”) at 11:21-39; D.I. 141-2, Ex. A-7 (“'312 patent”) at 11:38-56; and D.I. 141-2, Ex. A-1 (“'684 patent”) at 9:36-45.

⁶ *See* JCCC at 1-2 (Lam explaining that the “exemplary metals identified in the patent also include Sb and Te, which are typically categorized as metalloids”), 6-7 (“The exemplary metals identified in the patent also include Si, Ge, As, and Sb, which are typically categorized as metalloids.”), 37 (“Other exemplary metals included in the patent, such as Si, Ge, As, and Sb, are typically categorized as metalloids.”).

⁷ Lam's own patent filings use the term “metal” to refer to metal and metalloid elements. *See, e.g.*, Citroen Decl., Ex. 4 (WO 2020/264158) at 3:28-31 (identifying metals elements such as Sn and metalloid elements Te, Sb, and Ge as metal), 12:8-11 (same), 56:1-3 (same).

construction should therefore be rejected.

It is “axiomatic” that courts should “not narrow a claim term beyond its plain and ordinary meaning unless there is support for the limitation in the words of the claim, the specification, or the prosecution history.” *3M Innovative Props. Co. v. Tredegar Corp.*, 725 F.3d 1315, 1333-34 (Fed. Cir. 2013). That is, only when the patentee acts as a lexicographer or disavows claim scope should a different meaning apply. *See Phillips*, 415 F.3d at 1316. Here, there is no lexicography or disavowal. Yet, Lam’s construction narrows the meaning of “metal” to a confined set of elements—even excluding elements explicitly identified as “metal” in the specifications. *See, e.g.*, ’564 patent at 17:67-18:1 (“alkali metals (lithium, sodium, potassium or the like)”); ’312 patent at 18:17-18 (same); ’684 patent at 18:15-16 (same), 8:53-55 (certain “group 13, 14 and 15 metals,” such as lead); ’505 patent at 10:24-25 (“Desirable metals . . . may include . . . Te”), 15:31-33 (“alkali metals and alkaline earth metals, Au, Ag, . . . Pd”), 23:49-50 (“alkali metals (lithium, sodium, potassium or the like)”). At a minimum, any construction of the “metal” terms must encompass these elements. *See Oatey Co. v. IPS Corp.*, 514 F.3d 1271, 1276-77 (Fed. Cir. 2008) (“We normally do not interpret claim terms in a way that excludes embodiments disclosed in the specification.”) (citation omitted).

Lam’s implicit rationale for limiting the “metal” terms to specific elements is also flawed. Lam suggests its construction is appropriate because the ’564, ’312, and ’684 patent specifications “include[] phosphorus as an exemplary metal,” which, according to Lam, “is not considered a metal.” JCCC at 6-7, 14-15, 37. As a person of ordinary skill in the art (“POSITA”) would have known, however, phosphorus has been recognized as a metalloid for decades. *See Coughlin Decl.* ¶¶ 48-52. Its inclusion in the specifications as an exemplary metal is therefore consistent with the ordinary and customary meaning of “metal.” Lam also contends that the ’505 patent identifies the

“Group 2-Group 16 *elements*” (including “elements” that Lam contends “are not considered to be metals”) as metals. JCCC at 1-2 (emphasis added). But the ’505 patent specification does not refer to Group 2-Group 16 *elements* as “metals”—it refers to “Group 2-Group 16 *metal[s]*.” ’505 patent at 10:22-24 (emphasis added); *see also id.* 2:25-31, 2:63-3:3, 3:20-27, 7:23-29.

Accordingly, Lam’s proposed construction of the “metal” terms should be rejected in favor of the ordinary and customary meaning of those terms.

2. Defendant’s Answering Position

Inpria’s opening brief fails to address why this term is not indefinite under the operative legal standard. “A patent is indefinite ‘if its claims, read in light of the specification ... and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.’” *Teva Pharms. USA, Inc. v. Sandoz, Inc.*, 789 F.3d 1335, 1340-41 (Fed. Cir. 2015). To avoid indefiniteness, “a patent must be precise enough to afford clear notice of what is claimed, thereby appris[ing] the public of what is still open to them.” *Id.* at 1341; *Howmedica Ostenics Corp. v. Tranquil Prospects, Ltd.*, 401 F.3d 1367, 1371 (Fed. Cir. 2005) (“A claim is indefinite if its legal scope is not clear enough that a person of ordinary skill in the art could determine whether a particular [product or method] infringes or not.”). When the patent does not “teach a person of ordinary skill in the art how to identify” when a claim element is met, the claim is indefinite. *Array Biopharma, Inc. v. Alembic Pharms. Ltd.*, No. 22-cv-1277, 2024 WL 1637354, at *3 (D. Del. Apr. 16, 2024).

Such is the case with “metal.” The Asserted Patents do not define “metal.” Although a POSA would understand the meaning of “metal” to be those elements identified as such on the periodic table, the patentee obfuscates the meaning by using the term metal to refer to elements that a POSA would understand to be non-metals or metalloids. Lyons Ex. (“Ex”) A, Schanze Decl. ¶¶ 26-35. For example, the specifications create uncertainty by identifying phosphorus (“P”) as an

exemplary metal. '684 Patent, 9:39-43 (“Additional metals can . . . include, for example, . . . P.”) (emphasis added here and elsewhere unless otherwise noted); '564 Patent, 11:21-42 (“[O]ne or more ions (cations or anions) comprising . . . phosphorous . . . can be used to increase the absorption cross section at shorter wavelengths.”). A POSA would understand that phosphorus is not a metal and that the patent was not using the term metal in its conventional sense. Ex. A, Schanze Decl. ¶¶ 32-34.

Having eschewed the conventional understanding of the term “metal,” the patentees necessarily acted as their own lexicographer, but failed to provide a clear definition that would allow a POSA to determine whether any particular element qualifies as a “metal” as that term is used in the patent. Beyond confusing references to metalloid and nonmetal elements as “metals,” the specifications provide no guidance. The patents’ use of the term “metal” in the claims is indefinite because a POSA would not know and be able to identify what elements fall within the scope of the term “metal.” *See, e.g., Teva Pharms.*, 789 F.3d at 1340-41.

Inpria argues that the Court should adopt the plain and ordinary meaning of “metal,” which it contends is “a metal (which includes a metalloid) element.” Joint Claim Construction Brief at 2. But this is not the plain and ordinary meaning. The foundation of physical chemistry lies in the chemical elements, which are conventionally organized and represented in the periodic table. The periodic table categorizes each element into one of three groups: metals, metalloids, and non-metals. A POSA would understand the plain and ordinary meaning of a “metal” as referring to those elements classified as metals in the periodic table.⁸ A POSA would understand that this does not include metalloids or non-metals. Ex. A, Schanze Decl. ¶ 27.

⁸ Tellingly, the Asserted Patents expressly recognize the periodic table’s grouping of metals. *See, e.g., '684 Patent*, 18:10-15 (referring to groups of metals in the periodic table).

Indeed, a POSA would understand that metals and metalloids are separately categorized in the periodic table because they have different properties. Ex. A, Schanze Decl. ¶ 27. A metal is a “good conductor of heat and electricity,” whereas a metalloid has “properties that are intermediate between those of metals and nonmetals.” Ex. B at 48. Although the specifications do identify as “metals” certain elements a POSA would understand to be metalloids (*e.g.*, silicon, antimony), they do not identify as metals other metalloids (*e.g.*, boron, germanium, arsenic, tellurium). The specifications provide no guidance on how a POSA would determine whether any particular metalloid that is not identified in the specification has enough metallic properties to be considered by the patentee to be within its definition of “metal” as used in the claims. Ex. A, Schanze Decl. ¶ 28.

The intrinsic record also makes clear that the term metal does not encompass all metalloids as Inpria contends. Importantly, claim 16 of the '684 Patent recites that “the metal cations further comprise a cation of another metal element and/or metalloid element at no more than about 50 mole % of total metal+metalloid content.” '684 Patent, 26:4-7. If the term metal already includes metalloids, as Inpria argues, then claim 16 would not need to refer to “another metal element and/or metalloid element” as the metalloid elements would already be encompassed by the term “metal element” and the term “metalloid element” would be superfluous. *See Merck & Co., Inc. v. Teva Pharms. USA, Inc.*, 395 F.3d 1364, 1372 (Fed. Cir. 2005) (“A claim construction that gives meaning to all the terms of the claim is preferred over one that does not do so.”); *see also SSI Techs., LLC v. Dongguan Zhengyang Elec. Mech. Ltd.*, 59 F.4th 1328, 1334-35 (Fed. Cir. 2023) (rejecting proposed construction because “the word ‘measured’ would be superfluous, as the word ‘volume’ alone would be sufficient to give the claim the scope that [patentee] proposes.”). Claim 16 only makes sense as written if the added phrase “and/or metalloid element” adds more elements

not already encompassed by the term “metal elements.” Ex. A, Schanze Decl. ¶ 29. Accordingly, when read in view of the specification, a POSA would understand “metal” to be distinct from and certainly not to include all metalloids.

Finally, the entire premise of Inpria’s construction fails because a POSA would understand phosphorus to be a non-metal and not a metalloid. *Id.* ¶¶ 31-34. Although phosphorus has been classified as a metalloid in rare instances, there are only six elements that are “commonly recognized as metalloids: boron, silicon, germanium, arsenic, antimony, and tellurium.” *Id.* at ¶ 34. Thus, the patents’ identification of non-metal phosphorus as a “metal” does not support expanding the scope of the term metal to include all metalloids. Indeed, if the Court were to adopt Inpria’s proposed construction of “a metal (which includes a metalloid) element,” the term would not encompass the nonmetal phosphorus even though it is an exemplary “metal” referenced in the patents. This inconsistent usage makes it impossible for a POSA to identify what elements fall within the scope of “metal” in the claims. *See, e.g., Teva Pharms.*, 789 F.3d at 1340-41.

3. Plaintiff’s Reply Position

The parties appear to agree that the “metal” terms in dispute (*e.g.*, “metal cations”) encompass both metal elements and metalloid elements, consistent with Inpria’s proposed ordinary and customary meaning of those terms in the context of the patents.⁹ For example, Lam acknowledges that (i) the term “metal” encompasses “those elements classified as metals in the periodic table,” *supra* at 5, and (ii) the specifications “identify as ‘metals’ certain elements a POSA would understand to be metalloids,” *id.* at 6; *see also id.* at 4.¹⁰ Yet, as Inpria explained in its

⁹ Lam uses the term “metal” in the same way in its own patent applications in the same field. *See* Ex. 29 (Coughlin Reply Decl.) ¶ 11 (hereinafter “Reply Decl.”).

¹⁰ To the extent the patentees “acted as their own lexicographer,” Lam is wrong that the specifications “failed to provide a clear definition.” *Supra* at 5. The specifications consistently use “metal” to refer to metal and metalloid elements. *See supra* at 2-3; *Astrazeneca LP v. Apotex*,

opening brief, *supra* at 2-4, Lam’s alternative construction improperly excludes metal elements in the periodic table and metalloid elements identified in the specifications as metals (*e.g.*, Te). Lam fails to justify this exclusion, as it does not address its alternative construction or Inpria’s related arguments in its responsive brief. Lam has therefore conceded that any construction of the “metal” terms must encompass all metal and metalloid elements.¹¹ *See Bench Walk Lighting LLC v. LG Innotek Co.*, 530 F. Supp. 3d 468, 477 (D. Del. 2021).

Lam instead argues that the “metal” terms are indefinite because a POSA would not be able to determine whether those terms include metalloid elements not identified in the specifications. *See supra* at 5-6. This argument is flawed. First, Lam falsely claims that the specifications only identify two out of the six elements “a POSA would understand to be metalloids,”¹² *id.*, but the specifications together identify all six, *see* ’564 patent at 10:65-11:12 (Sb), 11:35-39 (Sb, Si, B); ’312 patent at 11:15-29 (Sb), 11:52-56 (Sb, Si, B); ’684 patent at 4:26-30 (Sb), 9:39-43 (Si, Ge, As); ’505 patent at 10:24-25 (Sb, Te); *see also* Reply Decl. ¶¶ 12-18. Second, even if not identified, Lam fails to explain why all metalloid elements would not be included from the outset. Just as “a POSA would understand the meaning of ‘metal’ to be those elements identified as such on the periodic table,” *supra* at 4, a POSA would likewise understand the meaning of metalloid to include all metalloid elements. *See* Reply Decl. ¶ 5. That some elements, like phosphorus, may be less frequently categorized as metalloids is irrelevant. The specifications, which plainly identify phosphorus as a metal, among other metal and metalloid

Inc., 633 F.3d 1042, 1051-52 (Fed. Cir. 2010) (a term can be defined “explicitly” or by “implication”) (citation omitted).

¹¹ To the extent Lam addresses its alternative construction for the first time in its sur-reply, Inpria reserves the right to seek appropriate relief from the Court, including a sur-sur-reply.

¹² Inpria does not concede Lam’s list of metalloids is complete. Indeed, Lam’s own evidence identifies additional elements as metalloids: polonium (Po) and astatine (At). *See* Ex. B at 48.

elements, *see, e.g.*, '684 patent at 9:39-43, indicate to a POSA that the patentees intended the “metal” terms to include such metalloid elements, *see* Reply Decl. ¶¶ 5-7, 12-18.

Lam’s assertion that claim 16 of the '684 patent supports its conclusion is incorrect and only serves to confuse the true dispute. *See supra* at 6-7. According to Lam, if the term “metal” encompass all metalloids, “the term ‘metalloid element’ [in claim 16] would be superfluous,” and claim 16 “only makes sense as written if the added phrase ‘and/or metalloid element’ adds more elements not already encompassed by the term ‘metal elements.’” *Id.* at 6. The dispute, however, is not about the meaning of the terms “metal element” and “metalloid element,” which are distinct elements in the periodic table. The dispute is about whether terms like “metal ions” and “metal cations” include both metal elements and metalloid elements. *See* JCCC at 1-4, 6-9, 14-16, 37-39. They do, and claim 16 supports this conclusion. Claim 16 simply recites that the “metal cations” can “further comprise a cation of another metal element and/or metalloid element,” consistent with the specifications and Inpria’s proposed ordinary and customary meaning of “metal cations,” and further limits those elements to “no more than about 50 mole % of total metal+metalloid content.”

Lam also argues that the “metal” terms are indefinite because the specifications use those terms to refer to “elements that a POSA would understand to be non-metals.” *Supra* at 4; *see also supra* at 7. But the only alleged “non-metal” identified by Lam is “phosphorus.” *Id.* at 4. As Inpria previously explained, phosphorus has been recognized as a metalloid for decades. *Supra* at 3; *see also* Reply Decl. ¶¶ 8-10. This—along with the specifications’ inclusion of phosphorus among other metal and metalloid elements—confirms phosphorus is a metalloid element in the context of the patents.

Nevertheless, should the Court have concerns regarding the definiteness of the “metal” terms, it can resolve those concerns, as even Lam concedes with its alternative construction, by

construing the terms for purposes of this case to encompass specific metal and metalloid elements. For the reasons discussed above, those elements should include all metal elements identified in the periodic table and all metalloid elements explicitly identified in the specifications: Li, Na, K, Rb, Cs, Fr, Be, Mg, Ca, Sr, Ba, Ra, Sc, Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Zn, Y, Zr, Nb, Mo, Tc, Ru, Rh, Pd, Ag, Cd, Hf, Ta, W, Re, Os, Ir, Pt, Au, Hg, Rf, Db, Sg, Bh, Hs, Mt, Ds, Rg, Cn, Al, Ga, In, Sn, Tl, Pb, Bi, Nh, Fl, Mc, Lv, La, Ac, Ts, Og, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Td, Dy, Ho, Er, Tm, Yb, Lu, Th, Pa, U, Np, Pu, Am, Cm, Bk, Cf, Es, Fm, Md, No, Lr, B, Si, Ge, As, Sb, Te, and P.

4. Defendant's Sur-Reply Position

Contrary to Inpria's contentions, Lam neither agreed that the term "metal" "encompass[es] both metal elements and metalloid elements" nor "conceded that any construction of the 'metal' terms must encompass all metal and metalloid elements." *Supra* at 8. Rather, it is Inpria who conceded that the plain and ordinary meaning of "metal" does not include metalloids. *Id.* at 9 ("'metal element' and 'metalloid element' ... are distinct elements in the periodic table").

Despite this admission, Inpria contends that a POSA would understand a "**metal** cation" to include not only metal elements, but also metalloid elements. Ex. Q, Rebuttal Declaration of K. Schanze, Ph.D. ("Schanze Reb.") ¶ 9. But Inpria provides no credible evidence that the term "metal" would change its meaning when combined with "cation." In contrast, Lam appropriately focused on the undisputed meaning of the attributive noun "metal" that modifies the noun "cation." *See, e.g., Malvern Panalytical Inc. v. TA Instruments-Waters LLC*, 85 F. 4th 1365, 1372 (Fed. Cir. 2023) (construing "pipette guiding mechanism" by looking to the words 'pipette,' 'guiding,' and 'mechanism' individually").

The term "metal" always refers to the same distinct "metal elements" in the periodic table regardless of whether used on its own or in the combined term "metal cation." Ex. Q, Schanze Reb. at ¶¶ 10-11. Indeed, the patents confirm that metal cations are just "cations with a metal

element”: “**Metal** suboxide **cations** are polyatomic **cations with a metal element**...” ’564 Patent, 5:47-49; ’312 Patent, 5:61-63 (same); ’684 Patent, 7:20-23 (“Polynuclear **metal** oxo/hydroxo **cations**, also described as **metal** suboxide **cations**, are polyatomic **cations with a metal element**...”); ’505 Patent, 7:27-28 (“M is a **metal cation** chosen from [periodic table] group 2-16 metals”). This directly contradicts Inpria’s claim that metal cations include not only “cations with a metal element,” as noted in the patents, but also cations with metalloid elements.

Inpria argues that “metal” was implicitly redefined by aggregating stray references to different metalloids in inconsistent lists of “metals” across different Asserted Patents. *Supra* at 8. But that underscores the problem: the Asserted Patents do not explain why a given metalloid is included in some lists of “metals” in some Asserted Patents and omitted in others. Indeed, no single Asserted Patent identifies all metalloids identified by Inpria as purported “metals.”

Inpria next argues that the specifications identifying phosphorus as a metal—which Inpria and its expert admit is not typically categorized as a metal **or** metalloid—somehow “indicate[s] to a POSA that the patentees intended the ‘metal’ terms to include such metalloid elements.” *Id.* But if phosphorus is somehow a “metal” in the Asserted Patents, then there is no guidance for a POSA to determine what other non-metals could constitute a “metal.” Ex. Q, Schanze Reb. ¶¶ 11-13.

Inpria has no meaningful response to claim 16, which adds “cations of another metal element and/or metalloid element” to the metal cations with tin, antimony, and/or indium elements recited in claim 15. If “metal cations” includes both metal elements and metalloid elements, as Inpria contends, then claim 16 would **not** need to recite that the metal cations of claim 15 further comprise a cation with a “metal element and/or metalloid element.” *Supra* at 9. Rather, it would simply recite that the specific metal cations of claim 15 further comprise “another metal cation,” omitting the reference to a “metalloid element” that is superfluous under Inpria’s construction.

Ultimately, if the term “metal” in the Asserted Patents sometimes includes certain metalloids (*e.g.*, silicon, antimony) and sometimes includes even certain non-metals (*e.g.*, phosphorus), a POSA would not be able to determine which metalloids and non-metals are or are not included in any given claim of the Asserted Patents, rendering them invalid as indefinite.

B. “coating” / “coating material” / “coated substrate” (Term Nos. 5, 11, and 14)

Plaintiff Inpria’s Proposal	Defendant Lam’s Proposal
No construction is necessary. The ordinary and customary meaning of this claim term should apply, which is:	
[for “coating”]: material covering at least a portion of a surface of a substrate;	[for “coating”]: A material formed through the deposition of a liquid precursor solution onto a selected substrate. ¹³ / A material formed through the deposition of a liquid precursor solution onto a substrate. ¹⁴
[for “coating material”]: material covering at least a portion of a surface of a substrate; and	[for “coating material”]: A material formed through the deposition of a liquid precursor solution onto a substrate.
[for “coated substrate”]: substrate having a surface at least partially covered by a material.	[for “coated substrate”]: A material formed through the deposition of a liquid precursor solution onto a selected substrate.

1. Plaintiff’s Opening Position

The crux of the dispute regarding these terms is not over their ordinary and customary meaning, which is clear,¹⁵ but whether the “coating,” “coating material,” and “coated substrate”

¹³ Lam proposed this construction for Term No. 11’s “coating.” *See* D.I. 141-1 at 14.

¹⁴ Lam proposed this construction for Term No. 14’s “coating.” *See* D.I. 141-1 at 17.

¹⁵ These terms are not terms of art, but of common parlance, as confirmed by ordinary dictionaries. *See* Citroen Decl., Ex. 5 (Webster’s II New College Dictionary (3d. ed. 2005)) at 219-20 (defining a “coating” as a “coat,” and “coat” as a “layer of covering material”); *see also* Coughlin Decl. ¶ 55. Therefore, the ordinary and customary meaning of these terms should apply, which for “coating” and “coating material” is a “material covering at least a portion of a surface of a substrate,” and for “coated substrate” is a “substrate having a surface at least partially covered by a material.”

must be “formed through the deposition of a liquid precursor solution,” as Lam proposes.¹⁶ See JCCC at 6, 14, 17. Lam’s proposed constructions importing this process limitation are improper because (i) they conflict with the claim language and (ii) there is no lexicography or disavowal requiring a specific formation process.

a. Lam’s Constructions Conflict with the Plain Claim Language

If the patentee had intended to limit the claimed coatings to be formed through the deposition of a liquid precursor solution, it could have drafted the claims to expressly include such a limitation. Instead, the patentee chose to include this limitation in one dependent method claim—*i.e.*, claim 9 of the ’684 patent. See ’684 patent at claim 9 (“The method of claim 1 further comprising forming the coating by depositing a liquid precursor solution ...”). The presence of that dependent method claim not only conveys the patentee’s intent to confine the “form[ed] . . . by depositing a liquid precursor solution” process limitation to that specific claim, it also “gives rise to a presumption” that Lam’s proposal to broadly import such a narrowing limitation in all claims at issue is incorrect. See *Phillips*, 415 F.3d at 1315.

That dependent claim’s recitation of “forming the coating by depositing a liquid precursor solution” would also be rendered superfluous if Lam’s proposal is adopted, which is “highly disfavored.” See *Intel Corp. v. Qualcomm Inc.*, 21 F.4th 801, 809-10 (Fed. Cir. 2021) (quoting *Wasica Fin. GmbH v. Con’l Auto. Sys., Inc.*, 853 F.3d 1272, 1288 n.10 (Fed. Cir. 2017)).

Lam’s proposed redefinition would also improperly import a *process* limitation (“formed through the deposition of a liquid precursor solution”) into *product* claims. Here, the majority of claims at issue are directed to *products*, such as a “structure,” “coated substrate,” or “substrate,”

¹⁶ The “coating” term appears in claims 1-3, 7, 9, 10, and 19-24 of the ’684 patent and claims 18 and 21 of the ’153 patent. The “coating material” term appears in claims 1, 5, 7, 9, and 12 of the ’564 patent. The “coated substrate” term appears in claims 1 and 10-19 of the ’684 patent.

that comprise or have “a coating” or “coating material.” See ’564 patent at claims 1, 5, 7, 9, 12; D.I. 141-2, Ex. A-3 (“’153 patent”) at claim 18, 21; ’684 patent at claims 10-24. None of these *product* claims impose any limitation regarding how the “coating” must be formed.¹⁷ That is for good reason—a “novel product that meets the criteria of patentability is not limited to the process by which it was made.” *Vanguard Prods. Corp. v. Parker Hannifin Corp.*, 234 F.3d 1370, 1372-73 (Fed. Cir. 2000); see also *Nichia Corp. v. Global Value Lighting, LLC*, No. 1:19-cv-01388, 2020 WL 6318688, at *8 (D. Del. Oct. 28, 2020) (“Even if the specification describes only one way to make a product, ‘[a] novel product that meets the criteria of patentability is not limited to the process by which it is made.’”). Lam’s proposal to broadly import this process limitation into all claims at issue should thus be rejected.

b. There Is No Lexicography or Disavowal Requiring “Formed Through the Deposition of a Liquid Precursor Solution”

Construing these terms to require “formed through the deposition of a liquid precursor solution” would be a departure from the ordinary and customary meaning, which is improper unless the patentee “acts as his own lexicographer” or “disavows the full scope of a claim term either in the specification or during prosecution.” *Thorner v. Sony Computer Entm’t Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012). Here, nothing in the patents’ specifications or prosecution history rises anywhere near lexicography or disavowal.¹⁸ See *Hill-Rom Servs., Inc. v. Stryker Corp.*, 755 F.3d 1367, 1371 (Fed. Cir. 2014) (“The standards for finding lexicography and disavowal are exacting.”).

To the contrary, the specifications consistently describe the various “coatings” as material

¹⁷ None of these claims even recite the term “precursor solution.” Only two claims (*i.e.*, claims 20 and 22 of the ’684 patent) recite “liquid” but not in regards to a “coating” process.

¹⁸ The principle of claim differentiation and the general proscription against importing process limitations into product claims, as described above, further weigh against Lam’s proposal.

covering at least a portion of a surface of a substrate. To take one example, Figure 2 of the '564 patent illustrates "coating material" 104 as covering "substrate" 102. *See* '564 patent at 16:46-56, Fig. 2; *see also id.* at 14:24-26, 17:21-27, Figs. 3-6; '684 patent at 13:27-29, 16:27-36, 17:13-26, 20:11-23, Figs. 2-7; Coughlin Decl. ¶¶ 56-57; '153 patent at 18:52-54, 21:64-22:6, 22:44-58, 25:57-26:3, Figs. 2-7. And the claims themselves confirm that it is a surface of a substrate that the "coating" covers. *See* '564 patent at claim 1 (reciting "a coating material on a surface of the substrate"); '684 patent at claim 1 (reciting "coated substrate"), 10-19 (same), 20 (reciting "a substrate with a surface and a first coating at selected regions along the surface"); '153 patent at claim 18 (reciting "a substrate having a surface and a coating associated with the surface"). The specifications also describe various examples of "coatings," such as ones, for example, that are "radiation patternable," "patterned," "irradiated," "un-irradiated," and/or "functional." *See, e.g.,* '564 patent at 2:34-43, 4:1-12, 9:19-22, 9:31-32, 20:6-13; '684 patent at 2:3-10, 16:38-42, 20:27-34; '153 patent at 22:8-20, 25:48-56, 26:7-14.

The specifications provide examples of how such "coatings" can be formed. For example, the specifications disclose that a "precursor composition can be deposited onto a substrate, *for example*, using conventional coating approaches." *See, e.g.,* '564 patent at 7:26-28 (emphasis added). Conventional coating approaches included many techniques that did not include deposition of a liquid precursor solution. *See* Coughlin Decl. ¶¶ 58-60. The specifications also disclose that "[f]or example, precursor solutions can be coated onto wafers or other substrates using spin coating, *although other coating approaches can be used*, such as spray coating, knife edge coating *or other appropriate techniques.*" '564 patent at 7:32-36 (emphasis added); *see also id.* at 2:6-8 (identifying "chemical vapor deposition, physical vapor deposition or other desired approaches"), 20:13-17 (identifying "suitable approaches, such as solution based approaches,

chemical vapor deposition (CVD), sputtering, physical vapor deposition (PVD), or other suitable approach”); ’684 patent at 1:60-62, 20:34-38; ’153 patent at 2:2-4, 26:14-18. The specifications also explain that “*any suitable coating process* can be used to deliver the precursor solution to a substrate.” ’564 patent at 14:8-9 (emphasis added); ’684 patent at 13:12-13; ’153 patent at 18:36-37. Again, consistent with these disclosures, a variety of processes were known in the art for forming coatings that did not include “deposition of a liquid precursor solution.” See Coughlin Decl. ¶¶ 58-60. The specifications further explain that “coating materials can be selected to have appropriate functionality,” ’564 patent at 9:31-32, and recognize that “coating properties also depend on the deposition technique,” ’684 patent at 6:36-37. See also ’564 patent at 9:19-22, 1:28-30, 20:6-8; ’684 patent at 20:24-28; ’153 patent at 26:7-8.

The specifications do not, however, limit “coatings” to require a specific process of formation. And nowhere do the specifications limit “coatings” to being “formed through the deposition of a liquid precursor solution.” Lam’s proposed constructions should therefore be rejected.

2. Defendant’s Answering Position

The patentee expressly used and defined the term “coating” in the Asserted Patents as referring to a material formed from a liquid precursor solution. “It is black letter law that a patentee can ‘choose to be his or her own lexicographer by clearly setting forth an explicit definition for a claim term that could differ in scope from that which would be afforded by its ordinary meaning.’” *Jack Guttman, Inc. v. Kopykake Enters., Inc.*, 302 F.3d 1352, 1360 (Fed. Cir. 2002). Lexicography does not require any specific words or to use the label “definition.” See *Astrazeneca AB, Aktiebolaget Hassle, KBI-E, Inc. v. Mut. Pharm. Co.*, 384 F.3d 1333, 1339 (Fed. Cir. 2004) (rejecting that “lexicography requires a statement in the form ‘I define _____ to mean _____.’”).

Here, the Asserted Patents’ specifications provide: “[a] coating material is formed through

the deposition and subsequent processing of the precursor solution onto a selected substrate.” ’684 Patent, 12:53-55; ’564 Patent, 13:29-30; ’153 Patent at 18:2-4. “Nothing about this statement suggests [this definition] is merely an example” *Kyocera Senco Indus. Tools Inc. v. Int’l Trade Comm’n*, 22 F.4th 1369, 1378 (Fed. Cir. 2022). Indeed, the Asserted Patents’ specifications repeatedly refer to the “invention” as a coating made by a “coating solution.” *See, e.g.*, ’153 Patent, 1:24-29; ’564 Patent, 1:30-34; ’684 Patent, 1:17-21. *See Regents of Univ. of Minn. v. AGA Med. Corp.*, 717 F.3d 929, 936 (Fed. Cir. 2013) (“When a patent thus describes the features of the ‘present invention’ as a whole, this description limits the scope of the invention.”).

The term “solution” is generally used to refer to a liquid in which a substance has been dissolved into a liquid solvent. Ex. A, Schanze Decl. ¶ 37. Thus, the patent specification’s requirement that the coating is made by depositing a “solution” makes clear that the invention is directed to a liquid precursor. The Asserted Patents confirm this by referring to the precursor solution as an “aqueous solution,” *i.e.*, a liquid solution with a water solvent. ’564 Patent, 9:61-63 (“The precursor solutions are based on metal oxide chemistry and aqueous solutions of metal cations with polyatomic anions.”).

That the precursor is liquid is further confirmed by its being described as comprising an organic solvent with the metal cations. ’684 Patent, 8:38-41 (“The precursor solutions for forming the resist coatings generally comprise metal cations . . . in an organic solvent”); ’153 Patent, 12:36-38 (“The precursor solutions for forming the resist coatings generally comprise tin cations . . . in a solvent, generally an organic solvent.”). They also explain that the “precursor solutions can be applied to a substrate surface, dried and further processed” ’684 Patent, 8:62-65; ’153 Patent, 12:55-57. In each exemplary embodiment, a coating is formed by a deposition process that uses a liquid precursor solution. *E.g.*, ’564 Patent, 21:14-67; ’684 Patent, 21:39-58, 23:36-61,

24:12-52; '153 Patent, 28:21-32, 31:1-53. The Asserted Patents make clear that a liquid-formed coating is a feature of the invention as a whole, not merely a preferred embodiment. Ex. A, Schanze Decl. ¶¶ 37-40; *see Bell Atl. Network Servs., Inc. v. Covad Commc'ns Grp., Inc.*, 262 F.3d 1258, 1271 (Fed. Cir. 2001) (“[W]hen a patentee uses a claim term throughout the entire patent specification, in a manner consistent with only a single meaning, he has defined that term ‘by implication.’”).

Lam’s construction does not render any dependent claims superfluous. *See supra* at 13-14. Claim 9 of the '684 Patent adds additional steps to claim 1: “The method of claim 1, further comprising forming the coating by depositing a liquid precursor solution and evaporating the solvent to solidify the coating.” '684 Patent, claim 9. Claim 1 requires neither “depositing” nor “evaporating.” *Id.* at claim 1 (requiring irradiating, heating, and developing steps). Thus, Lam’s construction would not render claim 9 of the '684 Patent superfluous. *See Kraft Foods, Inc. v. Int’l Trading Co.*, 203 F.3d 1362, 1368 (Fed. Cir. 2000) (“[T]hat the claims are presumed to differ in scope does not mean that every limitation must be distinguished from its counterpart in another claim, but only that at least one limitation must differ.”). Because this dependent claim adds the requirement to “solidify the coating” by “evaporating the solvent,” it emphasizes that the precursor is still liquid during the “depositing” step that precedes this solidification. This is consistent with the rest of the specification that uniformly confirms that the coating is formed by a liquid precursor.

Finally, Lam does not seek to import a process into product claims. Nothing about Lam’s proposed construction requires that the product claims include a depositing step. Rather, Lam’s construction clarifies a characteristic of the coating itself—that it was in liquid form when deposited. In any event, there is nothing improper about a construction that limits a claimed product to one made by a particular process. The *Vanguard* and *Nichia* cases cited by Inpria merely

stand for the general proposition that a claimed product is presumed to not be limited to the process by which it is made absent evidence to the contrary. In contrast, here, Lam's construction is fully supported by the intrinsic record and adheres to the patentee's definition.

3. Plaintiff's Reply Position

Lam's proposal to limit these terms to a process of formation is contrary to the intrinsic evidence. While Lam contends its construction "does not render any dependent *claims* superfluous," *supra* at 17 (emphasis added), it is undisputed that Lam's construction renders a *limitation* in dependent claim 9 superfluous ("forming the coating by depositing a liquid precursor solution"). That one portion of the claim ("evaporating the solvent to solidify the coating") would not be superfluous does not save Lam's argument because it flows from the claim's explicit recitation of "forming the coating by depositing a *liquid* solution." *See* Reply Decl. ¶ 26.

Lam also does not dispute "a claimed product is presumed to not be limited to the process by which it is made," but tries to sidestep by contending "formed through the deposition of a liquid precursor solution" is not a process limitation, but instead "a characteristic of the coating." *Supra* at 18. Lam's contention is inconsistent with precedent that confirms such limitations are processes. *See, e.g., Nichia Corp.*, 2020 WL 6318688, at *8-9 ("formed by" is a "process" limitation); *Greenliant Sys., Inc. v. Xicor LLC*, 692 F.3d 1261, 1269 (Fed. Cir. 2012) ("formed by a low pressure chemical vapor deposition" is a process limitation). Even if, as Lam contends, the coating "was in liquid form when deposited" is a characteristic (it is not), it is only a characteristic at the time of deposition, but the claims are not so limited. *See, e.g., '153 patent* at claim 18 ("A patterned structure comprising . . . a coating"); *'564 patent* at claim 9 ("wherein the coating material has been heated to temperatures from 45° C to 150° C").

Lam next incorrectly argues that the specification's statement "a coating material is formed through the deposition and subsequent processing of the precursor solution onto a selected

substrate” defined these terms. *Supra* at 16. This statement does not meet the “exacting” standards for lexicography, especially when considered in context. *Hill-Rom Servs.*, 755 F.3d at 1371 (citation omitted). For example, the patentee’s use of the term “define” for other terms (*see e.g.*, ’153 patent at 29:61-65) confirms that its statement regarding “a coating material” is not definitional. *See Meds. Co. v. Mylan, Inc.*, 853 F.3d 1296, 1306 (Fed. Cir. 2017) (a “statement . . . lacks the clear expression of intent necessary for a patentee to act as its own lexicographer” where it “does not accord with the linguistic formula used by the patentee to signal the designation of other defined terms”). Indeed, Lam implicitly admits the “exacting” standard is not met by modifying the purported definition to remove the phrase “and subsequent processing” and add the word “liquid.” *See also* Reply Decl. ¶¶ 21-24.

Nor is any definition implied in the specifications. For example, contrary to Lam’s assertion that the “specifications repeatedly refer to the ‘invention’ as a coating made by a ‘coating solution,’” *supra* at 16, the cited statements simply indicate that deposition of precursor solutions is “one way” to form such “organometallic coatings.” *See* ’153 patent at 1:24-29 (“precursor solutions . . . *can* be deposited to form organometallic coatings”) (emphasis added); ’564 patent at 1:30-34; ’684 patent at 1:17-21. The patents also do not “require[] that the coating is made by depositing a ‘solution,’” with the “solution” being a “liquid precursor,” *supra* at 16, as the patents repeatedly describe the claimed coating without imposing any requirements as to how it is formed. *See, e.g.*, ’153 patent at 1:22-24 (“The invention relates to radiation-based methods for the performance of patterning materials using an organometallic coating composition.”), 2:45-47 (“the invention pertains to a patterned structure comprising a substrate having a surface and a coating associated with the surface”); *see also supra* at 14-15. The patents are clear—a coating can be formed by any number of techniques, including “for example, using conventional coating

approaches,” which undisputedly comprise techniques that do not include deposition of a liquid precursor solution. *See supra* at 14-15; Reply Decl. ¶¶ 25, 27-30. Accordingly, there is no “clear intention to limit the claim scope using words or expressions of manifest exclusion or restriction.” *Liebel Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 906 (Fed. Cir. 2004).

4. Defendant’s Sur-Reply Position

Inpria does not dispute that where a specification describes **the invention** as having certain features or characteristics, this description limits the scope of the claims. The Asserted Patents’ specifications repeatedly refer to the “invention” as forming a coating by using “precursor solutions” or “coating solutions”—which Inpria’s expert does not dispute are liquids. *E.g.*, ’153 Patent, Title (“Organometallic Solution...”), 1:24-29 (“The **invention** further relates to precursor solutions...”), 2:13-20 (“[T]he **invention** pertains to a coating solution...”), 2:21-31 (“[T]he **invention** pertains to a coating solution...”); ’564 Patent, 1:30-34 (“This **invention** further relates to...precursor solutions...to form a coating...”), 2:25-31 (“[T]he **invention** pertains to a method for forming...[a] precursor solution...”), ’684 Patent, Title (“Organometallic Solution...”), 1:17-21 (“The **invention** further relates to precursor solutions...”), 2:31-32 (“[T]he **invention** pertains to a precursor solution...”). These unequivocal assertions about the “invention” limit the scope of the claims to coatings formed by deposition of liquid precursor solutions. *See, e.g., Honeywell Int’l, Inc. v. ITT Indus., Inc.*, 452 F.3d 1312, 1318 (Fed. Cir. 2006) (“fuel injection system component” construed to include fuel filter where the specification said “[t]his invention relates to a fuel filter”).

Inpria has no meaningful response. The word “define” is not required to limit claim scope. Ex. Q, Schanze Reb. ¶ 15. Also, the specifications never state that liquid solutions are only “one way” to form a coating. *Supra* at 20. Inpria puts “one way” in quotes and cites to the specifications, even though these words do not appear in these patents. Rather, the specifications provide

examples—“spin coating, spray coating, dip coating, knife edge coating, printing approaches, such as inkjet printing and screen printing, and the like” (’684 Patent, 13:12-16; ’564 Patent, 14:10-13, ’153 Patent, 18:36-41)—each of which deposits a liquid precursor solution. Ex. Q, Schanze Reb. ¶¶ 16-18.

C. “represented by the formula $\text{RSnO}_{(3/2-x/2)}(\text{OH})_x$ ” / “represented by the formulation $(\text{R})_z\text{SnO}_{2-z/2-x/2}(\text{OH})_x$ ” (Term No. 16)

Plaintiff Inpria’s Proposal	Defendant Lam’s Proposal
No construction is necessary. The ordinary and customary meaning of this claim term should apply, which is:	
Represented by the symbolic representation $\text{RSnO}_{(3/2-x/2)}(\text{OH})_x$ of the compound’s composition (claim 11); and	Represented by the molecular formula $\text{RSnO}_{(3/2-x/2)}(\text{OH})_x$ (claim 11)
Represented by the preparation according to the symbolic representation $(\text{R})_z\text{SnO}_{2-z/2-x/2}(\text{OH})_x$ of the at least portions of the coating’s composition (claim 18).	Represented by the molecular formula $(\text{R})_z\text{SnO}_{2-z/2-x/2}(\text{OH})_x$ (claim 18)

1. Plaintiff’s Opening Position

The Court need not construe these terms because their ordinary and customary meaning is clear and understood by a POSITA. *See* Coughlin Decl. ¶¶ 65-66. Indeed, Lam largely repeats the claim language in its proposed construction.¹⁹ *See* JCCC at 18-19. The primary dispute is whether Lam’s inclusion of the word “molecular” is appropriate. It is not.

The ordinary and customary meaning of “represented by the formula $\text{RSnO}_{(3/2-x/2)}(\text{OH})_x$,” as recited in claim 11 of the ’153 patent, means “represented by the symbolic representation $\text{RSnO}_{(3/2-x/2)}(\text{OH})_x$ of the compound’s composition,” and the ordinary and customary meaning of

¹⁹ For claim 18, Lam also inexplicably replaces the word “formulation” with the word “formula,” which lacks intrinsic support and is therefore improper. *See CAE Screenplates Inc. v. Heinrich Fiedler GmbH*, 224 F.3d 1308, 1317 (Fed. Cir. 2000) (explaining the “presum[ption] that the use of . . . different terms in the claims connotes different meanings”).

“represented by the formulation $(R)_z\text{SnO}_{2-z/2-x/2}(\text{OH})_x$,” as recited in claim 18 of the ’153 patent, means “represented by the preparation according to the symbolic representation $(R)_z\text{SnO}_{2-z/2-x/2}(\text{OH})_x$ of the at least portions of the coating’s composition.” The disputed terms’ constituent words—“represented,” “by,” “the,” “formula,” and “formulation”—are words of common parlance. *See, e.g.*, Citroen Decl., Ex. 5 (Webster’s II New College Dictionary (3d ed. 2005)) at 449, 963. The constituent terms—“ $\text{RSnO}_{(3/2-x/2)}(\text{OH})_x$ ” and “ $(R)_z\text{SnO}_{2-z/2-x/2}(\text{OH})_x$ ”—correspond to the “formula” (*i.e.*, “symbolic representation of the composition”) or “formulation” (*i.e.*, “preparation according to the symbolic representation of the composition”), respectively, as evidenced by claims 11 and 18 themselves.²⁰ *See id.* at 449; *see also* ’153 patent at 7:31-37 (“In other words, the resists with branched organic ligands contain alkyl or cycloalkyl ligands bonded to the Sn atom via secondary or tertiary carbon atoms, $\text{RSnO}_{(3/2-x/2)}(\text{OH})_x$, ($0 < x < 3$), where R is a secondary or tertiary alkyl or cycloalkyl group with 3 to 31 carbon atoms. Alternatively, this *composition* may be expressed as $\text{R}_1\text{R}_2\text{R}_3\text{CSnO}_{(3/2-x/2)}(\text{OH})_x\dots$ ”) (emphasis added); Coughlin Decl. ¶¶ 65-67.

Lam, by its own proposal, acknowledges that the constituent words of these disputed claim terms largely have well known meanings. For example, Lam’s proposed construction for “represented by the formula $\text{RSnO}_{(3/2-x/2)}(\text{OH})_x$ ” simply repeats the exact same verbiage of the term, but adds the word “molecular”—*i.e.*, “represented by the molecular formula $\text{RSnO}_{(3/2-x/2)}(\text{OH})_x$.” Lam’s proposed construction for “represented by the formulation $(R)_z\text{SnO}_{2-z/2-x/2}(\text{OH})_x$ ” repeats most of the term’s own verbiage but also adds the word “molecular” and recasts

²⁰ As recited in claim 11, “R,” as in “ $\text{RSnO}_{(3/2-x/2)}(\text{OH})_x$,” is “an alkyl group bonded to the tin” (Sn). As recited in claim 18, “R,” as in “ $(R)_z\text{SnO}_{2-z/2-x/2}(\text{OH})_x$,” is “an alkyl group bonded to the tin [Sn] at a secondary or tertiary carbon atom.” The variables “x” and “z” are further specified in these claims.

“formulation” as “formula”—*i.e.*, “represented by the molecular formula ~~formulation~~ $(R)_z\text{SnO}_{2-z/2-x/2}(\text{OH})_x$.”

On its face, Lam’s proposal provides no further clarity for the jury on what the disputed claim terms mean and introduces confusion by adding an additional *technical* limitation—“molecular”—into the claims seemingly out of thin air. There is no basis for Lam to add such a limitation. The ’153 patent specification repeats the disputed claim terms without using the narrowing word “molecular.” *See* ’153 patent at 2:23-24, 2:48-49, 2:61-62, 38:31-32. The specification recites “represented by the formula” or “represented by the formulation” multiple other times as well, again without using the word “molecular.” *See, e.g., id.* at 2:29, 9:63, 38:25, 38:36, 38:51-52. The terminology “represented by the formula” also appears in the ’153 patent prosecution history, again without using the term “molecular.” *See, e.g., Citroen Decl., Ex. 6* (’153 Non-Patent Literature of 02/18/2016) at 134.

Accordingly, Lam’s proposed construction should be rejected.

2. Defendant’s Answering Position

Claims 11 and 18 of the ’153 Patent recite a compound “represented by the formula $\text{RSnO}_{(3/2-x/2)}(\text{OH})_x$ ” and “represented by the formulation $(R)_z\text{SnO}_{2-z/2-x/2}(\text{OH})_x$,” respectively. Lam’s proposed construction is consistent with a POSA’s understanding of the claim language in view of the specification that the claims recite a “molecular formula.”

In contrast, Inpria contends that these terms need no construction, and that the plain and ordinary meaning should apply. Inpria’s alternative construction purportedly based on this ordinary meaning is circular, unhelpful, and would serve only to confuse the jury. Inpria’s construction replaces the words “formula” or “formulation” with the less clear phrase “symbolic representation” and adds the unnecessary words “of the . . . composition”:

	Claim 11	Claim 18
Disputed Term	represented by the formula $\text{RSnO}_{(3/2-x/2)}(\text{OH})_x$	represented by the formulation $(\text{R})_z\text{SnO}_{2-z/2-x/2}(\text{OH})_x$
Inpria's Proposed Construction	represented by the ~~formula~~ <u>the symbolic representation $\text{RSnO}_{(3/2-x/2)}(\text{OH})_x$ of the compound's composition</u>	represented by the ~~formulation~~ <u>the preparation according to symbolic representation $\text{RSnO}_{(3/2-x/2)}(\text{OH})_x$ of the at least portions of the coating's composition</u>

Inpria's construction appears calculated to confuse, not clarify, by adding uncertainty and using the word "represent[ation]" twice in the same definition. *Promptu Sys. Corp. v. Comcast Corp.*, 92 F.4th 1372, 1381 (Fed. Cir. 2024) ("[A] claim construction . . . should help resolve, not add to, uncertainty in the understanding the finder of fact is to use in applying a claim term."). Moreover, Inpria's unhelpful construction inappropriately relies on a non-technical dictionary and ignores how a POSA would understand the use of the term "formula" in the relevant context. *See Invitrogen Corp. v. Biocrest Mfg., L.P.*, 327 F.3d 1364, 1367 (Fed. Cir. 2003) ("[T]he understanding of skilled artisans generally is key to discerning the normal usage of words in any claim."); *Hoechst Celanese Corp. v. BP Chems. Ltd.*, 78 F.3d 1575, 1580 (Fed. Cir. 1996) ("[A] general dictionary definition is secondary to the specific meaning of a technical term as it is used and understood in a particular technical field.").

Conversely, Lam's proposed construction is consistent with the plain meaning of the claims as they would be understood by a POSA. Here, a POSA would recognize that " $\text{RSnO}_{(3/2-x/2)}(\text{OH})_x$ " and " $(\text{R})_z\text{SnO}_{2-z/2-x/2}(\text{OH})_x$ " are molecular formulas. There are various types of formulas commonly used in chemistry—relevant here are molecular and empirical formulas. An empirical formula identifies "which elements are present and the simplest whole-number ratio of their atoms, but not necessarily the actual number of atoms in a given molecule." Ex. A, Schanze Decl. ¶¶ 42-43. A molecular formula "shows the exact number of atoms of each element in the smallest unit of a substance." Ex. B at 52. When the term "formula" is used in the field without qualification, it

is generally understood to refer to a “molecular formula.” Ex. A, Schanze Decl. ¶ 43. Conversely, when a POSA intends to refer to an empirical formula, it is generally identified expressly as an empirical formula. *Id.* A common example illustrates the difference between the two. The molecular formula of hydrogen peroxide is H_2O_2 because a single molecule includes two hydrogen atoms and two oxygen atoms. *Id.* In contrast, the empirical formula for hydrogen peroxide is HO because the simplest whole number ratio of hydrogen and oxygen atoms is 1-to-1. *Id.*

The specification further supports Lam’s proposed construction as a “molecular formula.” For example, the specification uses the term “empirical formula[tion]” in instances when the patentee intended to refer to an empirical formula. *E.g.*, ’153 Patent, 27:46-50 (“Thermogravimetric-Mass Spectrometry analyses . . . are likewise consistent with an approximate empirical formulation (C_4H_9)SnOOH”), 28:9-10 (“approximate hydrolysate empirical formula of $\text{i-PrSnO}_{(3/2-x/2)}(\text{OH})_x$ where $x \approx 1$.”), 28:11-13 (“The results are consistent with the approximate empirical formula (C_3H_7)SnOOH”). A POSA would understand that if Inpria had intended the claimed “formula” to be an “empirical formula,” the claim would have used the term “empirical formula” as it did in the specification. *See Amgen Inc. v. Sandoz Inc.*, 923 F.3d 1023, 1031-32 (Fed. Cir. 2019) (rejecting Amgen’s construction because “[h]ad Amgen simply wanted to claim a method of mobilizing stem cells . . . it could have done so.”).

Finally, Inpria argues that Lam’s proposed construction “recasts ‘formulation’ as formula.” *Supra* at 23-24. However, the specification uses “formula” and “formulation” interchangeably, and Inpria has not articulated a difference. *Baran v. Med. Device Techs., Inc.*, 616 F.3d 1309 (Fed. Cir. 2010) (Although “the use of different terms implies that they have different meanings, . . . that implication is overcome where . . . the evidence indicates that the patentee used the two terms interchangeably.”). For example, Inpria refers to $\text{t-BuSnO}_{(3/2-x/2)}(\text{OH})_x$

and $\text{i-PrSnO}_{(3/2-x/2)}(\text{OH})_x$ as “formulations.” *E.g.*, ’153 Patent, 37:20-35 (Table 4). Lam’s proposed construction is consistent with a POSA’s understanding of the claims in view of the specification.

3. Plaintiff’s Reply Position

Lam’s attempt to import a “molecular” limitation into the claims should be rejected because it conflicts with express claim language. Neither the recited formula nor formulation is a “molecular” formula, which must “show the *actual* numbers of atoms of each element *in a molecule*.” See Citroen Decl., Ex. 34 (Atkins et al., *Chemical Principles: The Quest for Insight* (5th ed. 2010)) at B18 (emphases added); *see also supra* at 24-25 (“molecular formula ‘shows the *exact* number of atoms of each element in the smallest unit of a substance’”) (emphasis added). Because an atom is “the smallest particle of an element that can exist,” a “molecular formula” must identify *a whole number of atoms* of each constituent element. See Reply Decl. ¶ 33; Ex. 34 at F15. The recited formula and formulation are not “molecular” because they encompass *fractional numbers* of atoms. For example, claim 11’s “formula $\text{RSnO}_{(3/2-x/2)}(\text{OH})_x$ ” encompasses compositions with any “x” between 0 and 3. If, for example, $x=2$, the formula is $(\text{RSnO}_{1/2}(\text{OH})_2)$, which includes a fractional number of oxygen atoms ($1/2$) and therefore cannot be a “molecular formula.” See Reply Decl. ¶¶ 34-37. This is confirmed by the intrinsic evidence, which refers to such non-whole number compositions generally as “formulas,” not “molecular formulas.” See Citroen Dec., Ex. 6 (’153 Non-Patent Literature of 2/18/2016) at 134. Other Inpria patents do the same. See, e.g., ’048 patent at 4:53-54 (“[o]rganotin oxide hydroxides with the general formula $\text{R}_z\text{SnO}_{(2-(z/2)-(x/2))}(\text{OH})_x$, where $0 < (x+z) < 4$ and $z > 0$ ”), 19:65-66. Yet Lam ignores general formulas without reason, asserting that only “molecular” and “empirical” are relevant, despite admitting there are more than two types of formulas. *Supra* at 24; *see also* Reply Decl. ¶¶ 38-44.

The recited formula and formulation are also not “molecular formulas” because, as claimed, they “represent[]” “portions of” a “coating” (claim 18) and a “film compris[ing]” an

“organometallic compound” (claim 11), not necessarily “a molecule.” In fact, the coatings and films described in the specification may comprise a “network” structure instead of a collection of discrete molecules. *See* Reply Decl. ¶¶ 45-46; ’153 patent at 9:62-10:7 (describing “network formation” regarding “formulation $(R)_z\text{SnO}_{2-z/2-x/2}(\text{OH})$, $(0 < (x+z) < 4)$ ”); 8:4-15, 19:51-55.

Accordingly, these terms do not need construction, as their ordinary and customary meaning is clear. *Supra* at 21-22. Indeed, Lam itself has repeatedly used the terms “formula” and “formulation” without qualification in its own patent applications. *See, e.g.*, Citroen Decl., Ex. 33 (U.S. App. Pub. No. 2022/0244645) at [0045], [0049], [0050], [0052], [0087], [0091]; Citroen Decl., Ex. 46 (Worldwide App. No. 2020/264158) at [0044], [0048], [0049], [0051], [0086]. If, however, the Court deems express constructions necessary, Inpria’s proposals simply convey that well-understood meaning and should be adopted. *See* Reply Decl. ¶ 32.

4. Defendant’s Sur-Reply Position

Inpria challenges whether the claims recite “molecular formulas,” while offering a construction that says nothing about what type of formulas they are and what they encompass. Indeed, Inpria only asserts they relate to “general” formulas without any explanation as to what a POSA would understand this to mean. *Supra* at 27. Lam agrees that they are “general” formulas because they include a variable “R,” which is defined in the patents as any alkyl group. ’153 Patent, 39:1-2; 40:6-9; Ex. Q, Schanze Reb. ¶¶ 20-22. Thus, a POSA would understand the formulas to be general **molecular** formulas where the variable R describes a family of related compounds. *Id.* ¶ 22.

Inpria also argues that that the recited formulas are not molecular formulas because they could “encompass *fractional numbers* of atoms.” *Supra* at 28. But the presence of fractional numbers of atoms does not preclude these from being molecular formulas. For example, it is well-known that molecular formulas use fractional numbers to describe non-stoichiometric compounds

in which variations in molecules can occur, *e.g.*, a subscript of 0.5 means that an element is present in half of the molecules represented by the formula. Ex. Q, Schanze Reb. ¶ 22.

Finally, Inpria’s argument that the formula represents some cherry-picked “portion” of a coating or a “network” structure is baseless. The ’153 patent does not define the recited formula as a “network,” but merely explains that the “the alkyl ligand concentrations provide for a surprisingly large improvement in the precursor stability and control in network formation.” ’153 Patent, 10:4-6. The specification further explains that upon irradiation “the exposed coating material condenses, i.e. **forms an** enhanced metal oxo/hydroxo **network.**” *Id.*, 20:25-28 (emphasis added). Thus, a POSA would understand that the recited formulas do not refer to a network, but refer to molecules that, upon irradiation, could form a network. Ex. Q, Schanze Reb. ¶¶ 24-26.

D. “structure configured to deliver flow of a first precursor vapor from the supply of the organotin compound with the inert gas as a carrier gas to the inlet to provide for formation of an organotin layer on the substrate surface within the deposition chamber” (Term No. 20)

Plaintiff Inpria’s Proposal	Defendant Lam’s Proposal
Should not be interpreted as a means-plus-function term. Not indefinite.	Should be interpreted as a means-plus-function term. The function is “deliver flow of a first precursor vapor from the supply of the organotin compound with the inert gas as a carrier gas to the inlet to provide for formation of an organotin layer on the substrate surface within the deposition chamber,” and no structure is disclosed, rendering the claim indefinite.

1. Plaintiff’s Opening Position

This claim limitation, which appears in claim 1 of the ’048 patent, should not be construed as a means-plus-function term under 35 U.S.C. § 112(f). To begin, the limitation does not include the word “means,” which triggers a presumption that § 112(f) does not apply. *Phillips*, 415 F.3d at 1311; *see also LG Elecs., Inc. v. Bizcom Elecs., Inc.*, 453 F.3d 1364, 1372 (Fed. Cir. 2006). To

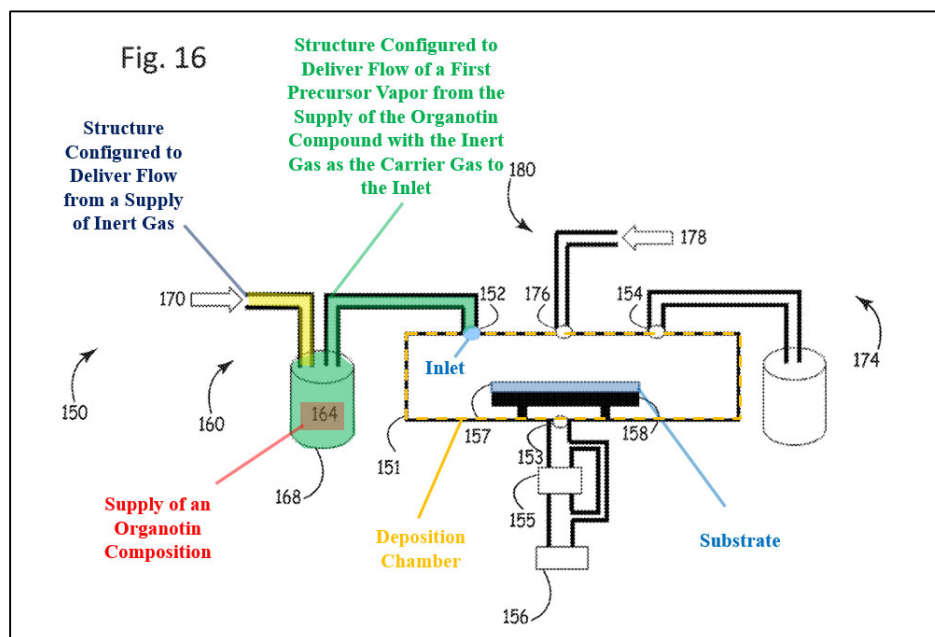
overcome this presumption, Lam must show that the challenged limitation “fails to recite sufficiently definite structure” to a POSITA. *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1349 (Fed. Cir. 2015). Both intrinsic and extrinsic evidence confirm that this claim limitation recites sufficiently definite structure to a POSITA. *See Dyfan, LLC v. Target Corp.*, 28 F.4th 1360, 1367 (Fed. Cir. 2022).

The claims themselves provide sufficient structure by describing the claimed structure’s “operation, such as its input, output, or connections.” *See Apple Inc. v. Motorola, Inc.*, 757 F.3d 1286, 1299-304 (Fed. Cir. 2014), *overruled on other grounds by Williamson*, 792 F.3d 1339; *see also* Coughlin Decl. ¶ 69. Claim 1 explains that the structure’s input is “the supply of the organotin compound with the inert gas as a carrier gas,” D.I. 141-2, Ex. A-5 (“’048 patent”) at 35:17-19, and the output is “the inlet,” *id.* at 35:19-21, which claim 1 elsewhere describes as “an inlet into the deposition chamber,” *id.* at 34:56. Claim 1 goes on to explain the operation of the structure, which is to “deliver flow” and “provide for formation of an organotin layer on the substrate surface within the deposition chamber.” *Id.* at 35:17-21. Additionally, dependent claim 4 explains that the structure comprises “an aerosol generator,” “a vaporization chamber,” “a flash evaporator,” or “a bubbler,” exemplary vessels that operate to introduce vapor flow. *Id.* at 35:35-44. And dependent claim 12 explains that it “comprises one or more vapor inputting structures.” *Id.* at 36:16-18. Based on this claim language, a POSITA would have understood that the claimed “structure” is a class of structures for delivering flow, *i.e.*, an interconnected vessel (such as a vaporization chamber, as recited in claim 4) and conduit (such as a pipe). *See, e.g., Dyfan*, 28 F.4th at 1366 (“Claim terms ‘need not connote a single, specific structure,’ and may instead ‘describe a class of structures’ and still recite ‘sufficiently definite structure’ to not invoke § 112[(f)].” (quoting *Apple*, 757 F.3d at 1300)); *Inventio AG v. Thyssenkrupp Elevator Ams. Corp.*, 649 F.3d 1350, 1358

(Fed. Cir. 2011) (finding a limitation was not means-plus-function, in part because dependent claims described structural aspects of the limitation), *overruled on other grounds by Williamson*, 792 F.3d 1339; *see also* Coughlin Decl. ¶¶ 69-73.

The specification also describes this class of structures. For example, the specification describes “an inert gas source connected” to “vessels,” including a “vessel [that] contains [an organotin compound] . . . for transport in the inert carrier gas.” ’048 patent at 19:64-20:4. That compound is then “transported . . . to a chamber,” *id.* at 20:5-10, which a POSITA would have understood requires a conduit, *see* Coughlin Decl. ¶¶ 69-70.

Figure 16 illustrates these structural details. For example, it illustrates an “apparatus 150 for the formation of an organotin oxide hydroxide layer on a substrate.” ’048 patent at 19:14-15. The apparatus includes “vessel 168 . . . connected to supply of inert gas 170,” where vessel 168 contains the “supply [of] organotin compound 164.” *Id.* at 19:19-23, Fig. 16. “Structure 160 is configured to supply organotin compound 164 to deposition chamber 151 through inlet 152.” *Id.* at 19:21-23. In addition to vessel 168, structure 160 includes conduit connecting vessel 168 to inlet 152 through which the supply of organotin compound 164 is transported.



Id. at Fig. 16 (annotated). Accordingly, the '048 patent describes the structure, how it operates, and “how [its] function is achieved in the context of the invention,” which provides sufficient structure to avoid § 112(f). *Apple*, 757 F.3d at 1299; *see also* Coughlin Decl. ¶¶ 69-74.

The prosecution history is similarly instructive. *See Dyfan*, 28 F.4th at 1365-66. In response to a rejection identifying this limitation as invoking § 112(f) and stating that the written description fails to disclose the corresponding structure, the applicant explained that this limitation is “not [a] means plus function limitation[]” and that “reaction chambers,” “feed lines into reaction chambers,” and “[t]ubing and other conduits” “are well within the well-established tool chest of the person of ordinary skill in the art.” *See* D.I. 141-4, Ex. A-43 ('048 Resp. of 1/20/2021) at 10-11. Indeed, in an earlier rejection, the examiner identified “conduit” in the prior art as structure configured to deliver flow. *See Citroen Decl.*, Ex. 10 ('048 Off. Act. of 10/8/2020) at 11. The applicant also amended the specification to add Figure 16 (based on incorporation by reference) and corresponding text to the written description, which illustrates the claimed “structure.” D.I. 141-4, Ex. A-43 ('048 Resp. of 1/20/2021) at 8-9. The examiner did not maintain its § 112(f)

and written description positions during the remaining prosecution history. And when identifying means plus function limitations in the Notice of Allowance, the examiner did not include this limitation. *See* D.I. 141-4, Ex. A-52 (11/10/2022 Notice of Allowance) at 2-3.

Taken together, this claim limitation connotes sufficient structure to a POSITA and therefore does not invoke § 112(f).

2. Defendant’s Answering Position

a. This is a means-plus-function limitation because “structure” is a nonce word limited only by being “configured to” perform a claimed function.

“[T]he presumption that a limitation lacking the word ‘means’ is not subject to § 112[(f)]” is not a “‘strong’ presumption.” *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1349 (Fed. Cir. 2015). Indeed, “generic terms such as ‘mechanism,’ ‘element,’ ‘device,’ and other nonce words that reflect nothing more than verbal constructs may be used in a claim in a manner that is tantamount to using the word ‘means’ because they ‘typically do not connote sufficiently definite structure.’” *Id.* at 1350. Here, the term “structure” is even more generic than “mechanism,” “element,” and “device”—it does not reflect *any* particular structure. *See* Ex. A, Schanze Decl. ¶¶ 54-55. Moreover, when a generic term, such as “structure,” is followed by “configured to” perform a specific function, as here, the limitation is even more clearly in means-plus-function format. *See, e.g., WSOU Invs. LLC v. Google LLC*, No. 2022-1063, 2023 WL 6889033, at *4 (Fed. Cir. Oct. 19, 2023) (finding “a processor configured to” is a means-plus-function limitation).

Inpria’s reliance on *Apple Inc. v. Motorola, Inc.*, 757 F.3d 1286 (Fed. Cir. 2014) is misplaced.²¹ *Supra* at 30. *Apple* explains that “[s]tructure may also be provided by describing the

²¹ Of note, *Apple* applied the “heightened bar to overcoming the presumption that a limitation expressed in functional language without using the word ‘means’ is not subject to § 112[f],” and was therefore overruled by *Williamson*, 792 F.3d at 1349.

claim limitation's operation, such as its input, output, or connections[, which] is more than just its function; it is how the function is achieved in the context of the invention.” *Apple*, 757 F.3d at 1299. In contrast, here, there is no recited structure that performs the “deliver flow” function—the limitation merely says that the flow is delivered from a “supply of organotin” to “the inlet,” both of which are separately claimed structures from the structure configured to deliver flow. In other words, the supply of organotin and the inlet into a chamber are two separate components to which the structure configured to deliver flow is connected, and in no way inform a POSA about the structure that actually performs the “flow delivery” function.

Moreover, a claim term recites “sufficient structure” only where “the claim language specifies the exact structure that performs the functions in question without need to resort to other portions of the specification or extrinsic evidence for an adequate understanding of the structure.” *TriMed, Inc. v. Stryker Corp.*, 514 F.3d 1256, 1259-60 (Fed. Cir. 2008). Yet, this is exactly what Inpria asks the Court to do. To explain what is meant by this term, Inpria repeatedly refers to the specification and extrinsic evidence, conceding that the claim itself does not provide the “exact structure” for performing the claimed function. *Supra* at 31-32.

b. This means-plus-function limitation is indefinite because the specification fails to disclose corresponding structure.

The “structure configured to deliver flow” is an indefinite means-plus-function limitation because “the specification fails to recite a corresponding structure.” *Cochlear Bone Anchored Solutions AB v. Oticon Medical AB*, 958 F.3d 1348 (Fed. Cir. 2020). Inpria points to the following passage in the ’048 Patent as allegedly disclosing the corresponding structures:

A vapor deposition method for direct deposition of organotin oxide hydroxides with the general formulae $\text{RSnO}(3/2-x/2)(\text{OH})_x$ ($0 < x < 3$) and can comprise in some embodiments an inert gas source connected to separate heated bubbler vessels. A first vessel contains a liquid alkyl tris(dialkylamido)tin compound of sufficient vapor pressure to produce suitable partial pressures for transport in the inert carrier gas.

Supra at 30-31. (citing '048 Patent at 19:64-20:4) (emphasis indicates Inpria's cited language). But this passage references only the sources of inert gas ("inert gas source") and the precursor ("bubbler vessels")—it does not describe any "structure configured to deliver flow ... from the supply ... to the inlet." Ex. A, Schanze Decl. ¶¶ 49-50.

Inpria also attempts to rely on Figure 16 to supply the missing "structural details." But Figure 16 and its related specification passage cannot provide the structure for multiple reasons.

First, Figure 16 and its related specification text quoted above cannot provide support for Inpria's construction because this figure and text were not a part of the original application to which Inpria claims priority. Instead, Figure 16 and related text are "new matter" that were improperly added during prosecution years after the original application was filed in violation of 35 U.S.C. § 132. *See* Ex. F at 8-10. The Federal Circuit has explained that, "[w]hen the applicant adds a claim or otherwise amends his specification after the original filing date ... the new claims or other added material must find support in the original specification." *Enzo Biochem, Inc. v. Gen-Probe Inc.*, 323 F.3d 956, 987 (Fed. Cir. 2002). Thus, for purposes of claim construction, Inpria cannot rely on Figure 16 and related text to find the missing structure for the "flow delivery" function because this is new matter is not in the originally filed specification.

Contrary to Inpria arguments during prosecution, Figure 16 and its related text are not supported by Figure 1 of a prior art article, Maeng et al., "Atomic Layer Deposition of Ta-Based Thin Films: Reactions of Alkylamide Precursor with Various Reactants," J. Vacuum Sci. & Technol. B 24:2276 (2006) ("Maeng Article"), purportedly incorporated by reference into the original specification. Rather than just inserting Figure 1 of the Maeng Article, Inpria altered Figure 16 not once, but twice during prosecution. *See* Ex. A, Schanze Decl. ¶¶ 52-54 (providing side-by-side comparison showing differences between Figure 16 and the Maeng Article's Figure

1). These alterations are substantial, including, for example, the addition of a third inlet not present in the Maeng Article Figure. *Id.* Inpria also added a new description for Figure 16 that was not present in the as-filed application or in the Maeng Article. Ex. F at 7. Therefore, Inpria's amendment to add Figure 16 improperly broadened the specification disclosure to include new structures not included in the original application or the Maeng Article it referenced.²² See *Baldwin Graphic Sys., Inc. v. Siebert, Inc.*, 512 F.3d 1338, 1344 (Fed. Cir. 2008) (upholding rejection of amendment during prosecution because it would have broadened the disclosure of what the inventors invented "and introduced impermissible new matter not included in the initial disclosure"); see also *Muncie Gear Works v. Outboard, Marine & Mfg. Co.*, 315 U.S. 759, 768 (1942) (claims to motor features that were not described in the original specification, but were described in amendments, would not be given benefit of the filing date of the original application); *Application of Myers*, 410 F.2d 420, 427, (1969) (affirming new matter rejection of claims specifically claiming cobalt and nickel binders where original disclosure did not specifically identify these two types of metal); *Cf. Schering Corp. v. Amgen, Inc.*, 222 F.3d 1347, 1352-53 (Fed. Cir. 2000) (amendment that merely renames the same invention using substitute terminology does not introduce new matter). Since the only corresponding structures for the "flow delivery"

²² It is also worth noting that during prosecution, Inpria specifically argued that support for new Figure 16 is found "via the incorporation by reference of Maeng et al. . . . in particular to Fig. 1 of Maeng et al. . . . No new matter is introduced," while simultaneously arguing that "[t]he systems of Maeng . . . are not suitable for deposition of tin compositions with radiation sensitive tin-carbon bonds or for forming oxo-hydroxo networks" and ". . . Maeng clearly teaches that there is not a reasonable expectation of success in using a different reagent in a given apparatus . . . One of ordinary skill in the art would have even less expectation of success if an organotin compound, . . . Maeng does not teach or suggest all of the features of Applicant's claimed invention . . . Maeng teach away from the presently claimed invention . . . the use of an organotin compound would render Maeng unsuitable for its intended purpose . . ." Ex. O, 6-7. In other words, Inpria new Figure 16 and accompanying description relied on Maeng Figure 1 for support for the very thing it said it did not teach.

function identified by Inpria constitute impermissible new matter, the claim is necessarily indefinite.²³

Second, even if Inpria could rely on Figure 16 and related text (which it cannot), the claims would still be indefinite because these disclosures fail to provide sufficient structure. Indeed, Figure 16 is a simple schematic where the “structure configured to deliver flow” is merely two lines connecting a supply of organotin and an inlet. ’048 Patent, Fig. 16; *see also id.*, 19:14-27 (likewise failing to describe sufficient structure). A POSA would not understand what types of structures would perform the claimed delivering flow function based on Figure 16’s disclosure.

Inpria argues that a POSA would have understood that the structure is a “conduit” and that during prosecution it explained that “feed lines,” “tubing,” and “other conduits” were “well within the well-established tool chest” of a POSA. *Supra* at 32. But it is improper to “use the knowledge of a skilled artisan as a gap-filler, rather than a lens for interpretation.” *WSOU*, 2023 WL 6210607, at *6. “[T]he understanding of one skilled in the art in no way relieves the patentee of adequately disclosing sufficient structure in the specification.” *Id.* The question is not whether a POSA could have devised a “flow delivery” system based on their skills and experience as Inpria suggests, but whether Inpria adequately disclosed structure for a flow delivery system that provides a definite scope for a means-plus-function limitation.

Contrary to its current position, Inpria argued during prosecution that prior art devices,

²³ By rule, Inpria cannot circumvent this new matter problem with Figure 16 by relying on the unaltered figure in the Maeng Article to supply the missing structure, even if the original specification states that the Maeng Article had been incorporated by reference. “Essential material” is that material necessary to provide a claim with the required support under Section 112 and “can be incorporated by reference but only by way of a U.S. patent or U.S. patent application publication.”. *Droplets, Inc. v. E*TRADE Bank*, 887 F.3d 1309, 1318 (Fed. Cir. 2018) (citing 37 C.F.R. § 1.57(c)). Because the Maeng Article is a non-patent publication it cannot be relied on to provide the “essential” structure needed to rescue the claim from indefiniteness. Apparently aware of this restriction, Inpria’s brief only relies on the new matter Fig. 16 to try to preserve the claim.

including specifically the device described in the Maeng Article that was purportedly incorporated by reference, were “not suitable for deposition of tin compositions with radiation sensitive tin-carbon bonds or for forming oxo-hydroxo networks.” Ex. O at 7. Accordingly, even if a POSA were to understand that the lines of Figure 16 depict a “conduit,” they would not know what types and configurations of “feed lines,” “tubing,” and “other conduits” were suitable for accomplishing the function of “delivering flow of a first precursor vapor from the supply of the organotin compound,” as required by the claim.

The '048 Patent fails to disclose any “corresponding structure” suitable for performing the claimed function of “deliver[ing] flow of a first precursor vapor from the supply of the organotin compound with the inert gas as a carrier gas to the inlet to provide for formation of an organotin layer on the substrate surface within the deposition chamber.” Inpria cannot use, what it now says is within the knowledge a POSA as a “gap-filler,” particularly after it represented that prior art vapor depositions were not suitable for the claimed function of delivering flow of an organotin compound. The term is therefore indefinite.

3. Plaintiff’s Reply Position

Lam has failed to overcome the presumption that § 112(f) does not apply, because, for example, the claims themselves provide sufficient structure by describing the disputed limitation’s “input, output, or connections,” as explained in Inpria’s opening brief. *Apple*, 757 F.3d at 1299.²⁴ That those inputs, outputs, or connections are described in the context of “separately claimed structures,” as Lam contends, is irrelevant. *Supra* at 32. For example, in *Inventio AG v.*

²⁴ Lam wrongly dismisses Inpria’s reliance on *Apple* because it was “overruled by *Williamson*.” See *Supra* at 32. As Inpria noted in its opening brief, however, *Apple* was overruled on other grounds. See *supra* at 28-29. This court (and others) continues to rely on *Apple* and other cases for the proposition that claims can provide sufficient structure by describing inputs, outputs, or connections. See, e.g., *TexasLDPC Inc. v. Broadcom Inc.*, No. 18-cv-01966, 2023 WL 2709746, at *5 (D. Del. Mar. 30, 2023) (citing *Apple*).

Thyssenkrupp Elevator Ams. Corp., 649 F.3d 1350, 1358-59 (Fed. Cir. 2011), the Federal Circuit held that “modernizing device” was not a means-plus-function limitation because the claims “delineate the components that the modernizing device is connected to, describe how the modernizing device interacts with those components, and describe the processing that the modernizing device performs.” Those “components,” *i.e.*, the “computing unit,” “elevator control,” and “floor terminals,” were separately claimed structure. *Id.*

Similarly, claim 1 here describes (i) the structure’s connections, which are the “structure configured to deliver flow from a supply of an inert gas” and the “inlet” of the “deposition chamber,” (ii) the structure’s input, which is an “organotin compound” and “an inert gas” as a “carrier gas,” and (iii) the structure’s output, which is the “organotin compound with the inert gas as a carrier gas” delivered through the “inlet,” such that the structure can “deliver flow of a first precursor vapor from the supply of the organotin compound with inert gas as a carrier gas” to “provide for formation of an organotin layer on the substrate surface within the deposition chamber.” ’048 patent at 34:49-35:30. Dependent claims 4 and 12 further describe the structure. *Id.* at 35:35-44 (the structure comprises a vessel, *e.g.*, “a vaporization chamber” or “a bubbler”), 36:16-18 (the structure “comprises one or more vapor inputting structures”). The claim language itself thus conveys a well-known class of structure to a POSA: an interconnected vessel (like a vaporization chamber) and a conduit (like a pipe). *Dyfan*, 28 F.4th at 1366 (claim terms may “describe a class of structures and still recite sufficiently definite structure to not invoke § 112[(f)]”) (citation omitted); Reply Decl. ¶¶ 48-49. Indeed, when the patentee identified such structure during prosecution, the Examiner did not maintain his § 112(f) position regarding this limitation, a fact Lam ignores. *See supra* at 30-31.

Even if claim 1 invokes § 112(f) (it does not), it is not indefinite because the specification

discloses “adequate defining structure to render the bounds of the claim understandable to” a POSA. *Telcordia Techs., Inc. v. Cisco Sys., Inc.*, 612 F.3d 1365, 1377 (Fed. Cir. 2010). For example, as explained in Inpria’s opening brief, *see supra* at 29-30, the specification describes “an inert gas source connected” to “vessels,” including a “vessel [that] contains [an organotin compound] . . . for transport in the inert carrier gas,” ’048 patent at 19:64-20:4, and “transport[ing]” the compound “to a chamber,” *id.* at 20:5-10. A POSA would have readily understood that such transporting requires any well-known conduit. *See* Reply Decl. ¶¶ 50-52. Additionally, Figure 16 illustrates this well-known structure, including the vessel 168 and the conduit extending from the vessel 168 to the inlet 152. ’048 patent at 19:14-23. In context, no POSA would understand this conduit in Figure 16 to be “merely two lines,” *see* Reply Decl. ¶ 70, as Lam incredibly asserts, *see supra* at 35. Accordingly, the specification “discloses sufficient structure that corresponds to the claimed function.” *Williamson*, 792 F.3d at 1351.

Lam incorrectly claims that these portions of the specification cannot be relied on because they constitute “new matter” that was not “part of the original application.” *Supra* at 33-35. First, the portion at column 19, line 64, to column 20, line 10, appeared verbatim in the original application and thus is not new matter. *See* D.I. 141-2, Ex. A-17 (U.S. Prov. App. No. 62/240,812) at 3:18-22 (reciting identical passage), Citroen Decl., Ex. 36 (U.S. App. No. 15/291,738) at 26:21-29 (same). Second, the subject matter disclosed in Figure 16 and the corresponding text in the specification were part of the original application, including through an incorporation by reference to the Maeng Article, which allowed the patentee to bodily incorporate Figure 16 and the corresponding text by amendment during prosecution. D.I. 141-2, Ex. A-43 (’048 Resp. of 01/20/2021); *see In re Hawkins*, 486 F.2d 569, 574-75 (C.C.P.A. 1973) (holding that material

incorporated by reference upon filing can be added to a specification by amendment).²⁵ Indeed, the amendment was made at the direction of the Examiner, who explained that, if the written description already “disclose[d] the corresponding structure” for the disputed limitation, then the patentee could “[a]mend[] the written description . . . such that it expressly recites the corresponding structure.” Citroen Decl., Ex. 10 (’048 Off. Act. of 10/8/2020) at 6. The Examiner rightly accepted the amendment and dropped the means-plus-function rejection. Ex. 44 (’048 Off. Act. of 02/05/21) (no longer raising this issue for this term).

Lam further contends that Figure 16 and the corresponding text are new matter because that figure is an “altered” version of Figure 1 in Maeng. *Supra* at 33-34. But Lam overlooks that the alterations are supported by the originally filed specification. *See* Reply Decl. ¶¶ 53-73. Lam also attempts to manufacture an inconsistency between the patentee’s position that Figure 16 is supported through the incorporation by reference of Maeng and the patentee’s arguments during prosecution to overcome Maeng. *Supra* at 34 n.20, 36. The patentee did not argue that Maeng’s “device” was “not suitable,” as Lam contends. *Id.* Instead, the patentee argued that Maeng’s “process conditions,” such as “high heating,” were not suitable for forming and preserving an organotin layer. D.I. 141-4, Ex. A-45 at 6-7; Citroen Decl., Ex. 39 (’048 Appeal Brief of 9/15/22) at 18-19. In sum, the ’048 patent’s specification discloses sufficient structure to a POSA.

4. Defendant’s Sur-Reply Position

Section 112(f) governs because there is no claimed structure that performs the “deliver flow” function. Claim 1 merely identifies what is flowing, and where it is flowing to and from.

Inpria’s reliance on *Apple*, *Dyfan*, and *Inventio* is misplaced. Both *Apple* and *Inventio* used the now-overruled “heightened burden” against applying § 112(f) when “means” is not recited.

²⁵ This procedure is also described in 37 C.F.R. § 1.57 and the Manual of Patent Examining Procedure § 608.01(p).

Williamson, 792 F.3d at 1349; *cf. Apple*, 757 F.3d at 1297; *Inventio*, 649 F.3d at 1360. *Apple* and *Dyfan*, involved software, which as this Court has recognized, “does not contain physical structures.” *Triplay, Inc. v. Whatsapp, Inc.*, No. 13-1703-LPS-CJB, 2016 WL 3574012, at *7 (D. Del. June 30, 2016) (Burke, J.). *Inventio* involved a “modernizing device” that functioned as an “electrical circuit,” the structure of which is provided by “a description of the circuit’s operations.” 649 F.3d at 1358. In contrast to systems using software and circuits, claim 1 recites a mechanical system and thus the recitation of function alone cannot connote sufficient structure.

The original specification contains no corresponding structure. Inpria points only to “vessels” containing the organotin compounds that are “transported” “to a chamber.” *Supra* at 40. But the vessels are “sources of ... the precursor” and the “chamber” is the destination. Inpria fails to identify any “structure configured to deliver flow...from the supply...to the inlet.” Ex. A, Schanze Decl. ¶¶ 49-50; Ex. Q, Schanze Reb. ¶¶ 30-32; *Supra* at 34. Inpria attempts to gap-fill with expert testimony, arguing “[a] POSA would have readily understood that such transporting requires any well-known conduit.” *Supra* at 40. Even if true, it is irrelevant. The question is not whether a POSA understood or could devise an adequate structure, but whether it is disclosed in the specification.

Figure 16 does not cure the deficiency. Indeed, Figure 16 is based on Maeng’s apparatus that Inpria argued was unable to perform the claimed functions. Specifically, Inpria argued that “Maeng is limited to one Ta-based precursor,” “PDMAT,” and that “[u]sing the same equipment with a different reactant...resulted in a ‘considerable incorporation of [carbon] impurity.’” Ex. O at 49. For this reason, Inpria asserted that “there is not a reasonable expectation of success in using **a different reagent in a given apparatus.**” *Id.* Inpria further argued that a POSA “would have even less expectation of success if [the claimed] organotin compound...were used in place of

[Maeng’s] PDMAT.” *Id.* Inpria went further still, arguing “Maeng teach[es] away” and that using “an organotin compound would render Maeng unsuitable for its intended purpose....” *Id.*

Inpria next argues that Figure 16 and related text, added during prosecution, modifies Maeng to use a different reagent so that it can somehow perform the claimed function. *Supra* at 41. But applicant’s modifications of the figure were not directed to adapting Maeng to deliver flow of an organotin compound and, thus, fail to address Inpria’s prior assertions that “there is no[] reasonable expectation of success” of using Maeng’s apparatus with the claimed organotin compound. Ex. O at 49. Even if they were, this would only confirm that these modifications—added years after filing—constitute impermissible new matter that cannot define the claim scope.

E. “no more than 0.5 mole % dialkyltin compounds as an impurity relative to the total tin amount” (Term No. 28)

Plaintiff Inpria’s Proposal	Defendant Lam’s Proposal
No construction is necessary. The ordinary customary meaning of this claim term should apply, which is: the composition must have no more than 0.5 mole % dialkyltin compounds as an impurity relative to the total tin amount.	No more than 0.5 mole % dialkyltin compounds as an impurity relative to the total tin amount prepared without the use of an alkyl lithium reaction, an alkyl lithium reaction with a subsequent conventional distillation step, or other synthesis and/or purification processes that were then known in the art (e.g., lithium reagents or organotin trichlorides), and limited to the use of the processes and reagents described in the working examples set forth in the ’903 patent.

1. Plaintiff’s Opening Position

This term, which appears in claim 1 of the ’903 patent (D.I. 141-2, Ex. A-6), should be construed to have its ordinary and customary meaning, which is clear from the claim language, *i.e.*, the composition must have no more than 0.5 mole % dialkyltin compounds as an impurity relative to the total tin amount. Indeed, Lam does not dispute the meaning of this language *per se*. See JCCC at 34 (Lam’s proposed construction repeating claim language). Instead, Lam seeks to limit this term to cover only the “synthesis and/or purification processes” explicitly described in

the specification based on a declaration from inventor Joseph Edson, Ph.D., submitted during prosecution, which stated that the claimed purity “was not achievable through the use of an alkyl lithium reaction, through the use of an alkyl lithium reaction with a subsequent conventional distillation step, or through other synthesis and/or purification processes that were then known in the art.” Citroen Decl., Ex. 11 (’903 Request for Continued Examination of 01/19/2021), Declaration under 37 C.F.R. § 1.132 at 2 ¶ 9. Lam’s proposed construction should be rejected.

Dr. Edson’s statement in his declaration does not invoke the doctrine of prosecution disclaimer because it was not “clear and unmistakable.” *Mass. Inst. of Tech. v. Shire Pharms., Inc.*, 839 F.3d 1111, 1119 (Fed. Cir. 2016). The declaration was submitted to address a rejection based on a particular prior art reference (*i.e.*, the Bernhardt reference). Citroen Decl., Ex. 11, at 6-7. The declaration presented “results of in-house experiments that followed the method of Hänsggen,” a separate publication, “since this reaction was considered to be the state of the art at the time of filing of the instant application.” *Id.*; *see also id.* Declaration at 2 ¶ 9. But, because “the experimental methods disclosed in the declaration . . . [were] not comparable to the Bernhardt reference,” the examiner found the declaration “insufficient to overcome the rejection.” Citroen Decl., Ex. 12 (’903 Off. Act. of 6/10/2021) at 9. Statements in a declaration “clearly and expressly rejected by the Patent Office” are not clear and unmistakable and therefore not a disclaimer. *See Galderma Labs., L.P. v. Amneal Pharms. LLC*, 806 F. App’x 1007, 1010-11 (Fed. Cir. 2020).

Even assuming *arguendo* that Dr. Edson’s statement constituted disclaimer (it did not), it was limited. The declaration described one specific experiment “following the method of Hänssgen,” which “considered the reaction of tBuLi with Sn(NEt₂)₄ in diethyl ether” and used “standard fractional distillation, as described by Hanssgen,” to purify the reaction product. Citroen Decl., Ex. 11 at 13 ¶ 8. The declaration concluded that this “post-distillation product had an

average of approximately 2% dialkyltin triamide.” *Id.* Thus, even if there was disclaimer, it would exclude only the specific alkyl lithium synthesis and fractional distillation purification processes described in the declaration. It would not extend to all “alkyl lithium reaction[s]” and all “other synthesis and/or purification processes that were then known in the art,” as Lam contends. *See* JCCC at 34. Nor would it limit the claim to “the use of the processes and reagents described in the working examples set forth in the ’903 patent.” *Id.* Dr. Edson’s statement that “the claimed purity of the monoalkyltin compounds was not achievable” using such reactions and prior art processes were made “[t]o the best of [his] knowledge” and are too general, vague, and ambiguous to qualify as a disavowal of claim scope. *Citroen Decl.*, Ex. 11 at 13 ¶ 8. *See, e.g., CUPP Computing AS v. Trend Micro Inc.*, 53 F.4th 1376, 1382 (Fed. Cir. 2022) (no disavowal “where the alleged disavowal is ambiguous, or even amenable to multiple reasonable interpretations”); *Phillips*, 415 F.3d at 1323 (explaining courts should avoid “the danger of reading limitations from the specification into the claim”); *Williamson*, 792 F.3d at 1346-47 (“caution[ing] against limiting the claimed invention to preferred embodiments or specific examples in the specification”); *Amgen Inc. v. Hoechst Marion Roussel, Inc.*, 314 F.3d 1313, 1347 (Fed. Cir. 2003) (vacating and remanding with instructions not to limit claim scope “to the examples in the specification”).

2. Defendant’s Answering Position

Claim 1 of the ’903 Patent recites a “monoalkyl tin triamide compound represented by the chemical formula $\text{RSn}(\text{NR}'_2)_3$ ” having “no more than 0.5 mole % dialkyltin compounds as an impurity relative to the total tin amount.” ’903 Patent, claim 1. During prosecution, Inpria asserted that this compound could not be synthesized with the claimed impurity levels using the methods taught by the prior art. Inpria secured allowance by disclaiming these prior art synthesizing methods and narrowing its claims to just the purportedly novel purification techniques described in the specification. Now, Inpria seeks to renege on its bargain with the Patent Office by seeking

a construction that attempts to reclaim the subject matter it expressly surrendered. Lam's construction properly limits the scope to exclude what Inpria gave up to secure its patent.

The Federal Circuit has found that product claims may be construed to contain process-based limitations based on prosecution disclaimer. *Chimie v. PPG Indus., Inc.*, 402 F.3d 1371, 1384-85 (Fed. Cir. 2005). In *Chimie*, the court affirmed the construction of "atomized precipitated silica particulates" in a product claim to mean "that a pulverized slurry of precipitated silica is spray dried using a liquid pressure nozzle as an atomizer to form the claimed silica particulates" because the patentee "distinguished the prior art by emphasizing that its claimed silica particulates could be obtained only by applying liquid pressure nozzle sprayers to a pulverized slurry." *Id.* at 1384. Just as in *Chimie*, Inpria repeatedly distinguished the prior art by arguing that the prior art methods could not achieve the claimed composition. Inpria cannot now recapture compositions synthesized using the methods of the prior art it distinguished from its invention. Lam's proposed construction does not seek to limit the scope simply because the patent identifies certain methods as preferred, but rather based on Inpria's disavowals of methods in the specification and prosecution history as unable to practice its invention. *See id.* at 1378-79, 1384-85.

The '903 Patent makes clear that the claimed high purity compositions cannot be made using the prior art methods. "[W]here the specification makes clear that the invention does not include a particular feature, that feature is deemed to be outside the reach of the claims of the patent, even though the language of the claims, read without reference to the specification, might be considered broad enough to encompass the feature in question." *Chicago Bd. Options Exchange, Inc. v. Int'l Sec. Exchange, LLC*, 677 F.3d 1361, 1372 (Fed. Cir. 2012). Here, the specification teaches three methods for synthesizing the claimed composition using: a Grignard reagent, a diorganozinc reagent, or a mono-organozinc amide. '903 Patent, 7:1-7. The specification

explains that the methods of synthesizing monoalkyl tin triamides known in the prior art, such as through alkyl lithium reactions as taught by Hanssen (J. Organometallic Chemistry 293 (1985): 191-195), “produce a mixture of mono-alkyl and dialkyl tin products”—*i.e.*, produce a composition lacking the claimed purity. *Id.* at 3:28-38. Thus, as in *Chicago Bd.* where the Court found disavowal, the “specification goes well beyond expressing the patentee's preference” and makes “repeated derogatory statements about the” prior art. 677 F.3d at 1372; *see also Openwave Sys., Inc. v. Apple Inc.*, 808 F.3d 509, 513 (Fed. Cir. 2015) (finding disavowal of embodiments having a certain feature disclosed in the prior art based on the specification's disparagement of such prior art).

The '903 Patent's prosecution history also reflects a clear and unmistakable disavowal of compositions made using an alkyl lithium reaction. When a patentee makes statements during prosecution “which draw distinctions between the patented invention and the prior art,” those statements can show “the patentee intended to surrender territory, since they indicate in the inventor's own words what the invention is not.” *MBO Lab 'ys, Inc. v. Becton, Dickson & Co.*, 474 F.3d 1323, 1330 (Fed. Cir. 2007). Here, Inpria distinguished the prior art synthesis methods as being unable to make the claimed composition, thereby surrendering this territory. For example, Inpria repeatedly argued that “at the time of filing the present application, the claimed purity of the monoalkyltin compounds was not achievable through the use of an alkyl lithium reaction, through the use of an alkyl lithium reaction with a subsequent conventional distillation step, or through other synthesis and/or purification processes that were then known in the art.” Ex I (1/19/21 Amendment) at 7; Ex J (2/28/2022 Amendment) at 5; Ex K (9/16/2022 Amendment) at 5. These unequivocal statements show Inpria distinguished the claimed compositions from the prior art synthesis techniques, surrendering this subject matter to secure allowance of the claims.

Inpria also submitted declarations during prosecution of the '903 Patent from inventor Dr. Joseph Edson where he describes experiments he conducted or oversaw that purportedly demonstrate that the synthesis methods of the prior art could not produce a compound having less than 0.5 mole % impurities as required by the claims. *See* Ex. L; Ex. M; Ex. N. Dr. Edson's statements clearly show that he viewed the scope of the invention as excluding the synthesis methods of the prior art, which he believed could not achieve the claimed compositions. *See Fenner Invs., Ltd. v. Cellco P'Ship*, 778 F.3d 1320, 1323 (Fed. Cir. 2015) ("Any explanation, elaboration, or qualification presented by the inventor during patent examination is relevant, for the role of claim construction is to 'capture the scope of the actual invention' that is disclosed, described, and patented").

Inpria's arguments that Dr. Edson's statements do not rise to the level of disclaimer are unpersuasive. Inpria first argues that Dr. Edson's statements were "too general, vague and ambiguous to qualify as a disavowal of claim scope." *Supra* at 45. First, as explained above, Inpria repeated the substance of Dr. Edson's statements in its Office Action responses as assertions of fact without using the purportedly "ambiguous" qualifying language from Dr. Edson's declaration that it seizes upon now. Ex. L, 2 ("To the best of my knowledge, at the time of filing the present application, the claimed purity of the monoalkyltin compounds was not achievable through use of the alkyl lithium reaction, through the use of an alkyl lithium reaction with a subsequent distillation step, or through other synthesis and/or purification process that was then known in the art."); Ex. N, 3 ("To the best of my knowledge, the claimed high purity liquid compositions according to claim 1 are not achievable through the method disclosed by Deelman et al., [the cited prior art].")) at X; Ex. M, 3. Additionally, unlike *CUPP*, neither Dr. Edson's declaration nor Inpria's prosecution arguments were "ambiguous" or "amenable to multiple reasonable interpretations."

CUPP Computing As v. Trend Micro Inc., 53 F.4th 1376, 1382-83 (two reasonable interpretations of inventor’s statement explaining how claimed invention was different from prior art). Inpria also mischaracterizes the prosecution history by asserting that the “examiner found the declaration ‘insufficient to overcome the rejection.’” *Supra* at 44. Unlike *Galderma*, the examiner here did not “clearly and expressly rejected the patentee’s proposed construction.” *Galderma Lab’ys., L.P. v. Amneal Pharms. LLC*, 806 F. App’x 1007, 1010-11 (Fed. Cir. 2020). Indeed, after Dr. Edson submitted his January 19, 2021 declaration, the Examiner withdrew an anticipation rejection and maintained only obviousness rejections. Ex. F, 4-9.

Inpria’s attempt to reclaim subject matter surrendered during prosecution should be rejected. In light of the express statements in the ’903 Patent’s specification and prosecution history distinguishing the claimed compositions from compositions made using prior art methods, the claims must be limited to compositions prepared without the use of an alkyl lithium reaction, an alkyl lithium reaction with a subsequent conventional distillation step, or other synthesis or purification processes that were then known in the art (*e.g.*, lithium reagents or organotin trichlorides), and limited to the use of the processes and reagents described in the working examples set forth in the ’903 patent. Any other construction will allow Inpria to recover the subject matter it surrendered to secure allowance of the ’903 Patent’s claims.

3. Plaintiff’s Reply Position

Citing three inventor declarations filed during prosecution, Lam seeks a broad disclaimer of all “alkyl lithium reaction[s]” and all “other synthesis and/or purification processes that were then known in the art.” *Supra* at 43, 45. But “[c]ourts have refused to find prosecution history disclaimer where the alleged disclaimer was not accepted by the PTO.” *Bausch & Lomb Inc. v. SBH Holdings LLC*, C.A. No. 20-1463-GBW-CJB, 2024 WL 489355, at *5 (D. Del. Feb. 8, 2024). Here, both the first two declarations were rejected by the Examiner, and therefore cannot

support disclaimer.²⁶ Citroen Decl., Ex. 12 ('903 Off. Act. of 6/10/2021) at 9 (“The [first] declaration . . . is insufficient to overcome the rejection.”); D.I. 141-4, Ex. A-53 ('903 Off. Act. of 10/27/2022) (same regarding second declaration).

To the extent the first two rejected declarations constitute disclaimer (they do not), they—along with the third declaration not rejected by the PTO—evidence, at most, a limited disclaimer of the specific processes described therein. The first declaration described a specific experiment “following the method of Hänssgen,” Citroen Decl., Ex. 11, Declaration at 2 ¶ 8, and the latter two described an experiment “following the method of Deelman,” D.I. 141-5, Ex. A-69 (Declaration of 9/14/2022) at 2 ¶ 6, A-70 (Declaration of 2/9/2023) at 2 ¶ 6. Accordingly, any disclaimer should be limited to the processes described in those references, not every process in every piece of prior art, as Lam argues. And while the patentee made certain general boilerplate statements about the prior art, such statements cannot be a blanket disclaimer of all prior art processes. *Ventana Med. Sys., Inc. v. Biogenex Lab'ys, Inc.*, 473 F.3d 1173, 1181 (Fed. Cir. 2006) (“general statements, without more, will not be interpreted to disclaim every feature of every prior art device”).

Lam’s cited case law does not support a finding of its purported disclaimer. Unlike in *Chimie*, the patentee here did not state that the claim could be achieved “only by” following the processes recited in the specification. *See Chimie v. PPG Indus., Inc.*, 402 F.3d 1371, 1384 (Fed. Cir. 2005). And the specification has only a single reference to the Hänssgen process. '903 patent at 3:32-38. It therefore does not contain “repeated derogatory statements.” *Chicago Bd.*

²⁶ Contrary to Lam’s assertion, Inpria did not “mischaracterize[]” the prosecution history by asserting that the examiner found the declaration “insufficient to overcome the rejection.” *Supra* at 47. Inpria quoted the examiner’s finding of insufficiency verbatim. Lam ignores that the applicant also made amendments to the claims and numerous arguments in its office action response, *see* Citroen Decl., Ex. 11 ('903 Request for Continued Examination of 1/19/2021), which were also before the examiner, *see* Citroen Decl., Ex. 12 ('903 Off. Act. of 6/10/2021).

Options Exch., Inc. v. Int'l Sec. Exch., LLC, 677 F.3d 1361, 1372 (Fed. Cir. 2012). Nor is it “rife with remarks that disparage” the prior art. *Openwave Sys., Inc. v. Apple Inc.*, 808 F.3d 509, 514-17 (Fed. Cir. 2015).

Finally, Lam does not meaningfully address the clause in its proposed construction limiting the claim to “the working examples set forth in the ’903 patent,” which constitutes a waiver. *Bench Walk Lighting*, 530 F. Supp. 3d at 477. Nevertheless, it is improper to “limit[] the claimed invention to preferred embodiments or specific examples in the specification.” *Williamson*, 792 F.3d at 1346-47 (citation omitted). This is especially true in view of the specification’s statement that “other methods not explicitly described herein” can be used to produce the claimed “monoalkyl tin triamides.” ’903 patent at 9:39-41.

4. Defendant’s Sur-Reply Position

Inpria appears to acknowledge that, at a minimum, the inventors’ third declaration constitutes a disclaimer “limited to the processes described in those references.” *Supra* at 50. This declaration was submitted to overcome an obviousness rejection over “Deelman” (Ex R) in view of “Meyers” (Ex S). Deelman and Meyers disclose forming monoalkyl tin triamides using “monoalkyltin trihalides” (*i.e.*, organotin trichlorides) and alkyl lithium reagents. Ex. R ¶¶ 10, 13; Ex. S ¶¶ 150-151 (disclosing use of $i\text{-PrSnCl}_3$), ¶ 125 (citing the “Hänssgen” method). Inpria therefore disclaimed at least any monoalkyl tin triamide compound synthesized using “monoalkyltin trihalides” (*i.e.*, organotin trichlorides) or an alkyl lithium reagent.

Inpria’s disclaimer, however, precludes it from recovering the entirety of what it surrendered to secure allowance of the patent. Inpria argues that the Examiner did not accept the disclaimer in the first and second declarations and that Lam ignores the amendments made to overcome rejections. *Supra* at 50. But Inpria’s arguments and amendments confirm a broad disclaimer. Indeed, Inpria amended the claims to align with the impurity levels described in the

inventor declarations and repeatedly stated that the 0.5% impurity level could not be achieved via an alkyl lithium reaction (*i.e.*, the “Hänssgen method”) “or **through other synthesis and/or purification processes that were then known in the art.**” *Id.*; Ex. L (1/19/21 Edson Dec.) at 2; Ex. I (1/19/21 Response) at 5-7. Clearly relying on this disavowal, the Examiner **withdrew** the pending anticipation rejection. Ex. AC at 3 (6/10/21 Office Action) (“The rejection of [the claims] . . . as being anticipated by Bernhardt is withdrawn in view of Applicants [sic] amendment.”). The Examiner then rejected the claims over Deelman in view of Meyers. To distinguish this prior art, Inpria submitted a second declaration purporting to show that the organotin trichloride Deelman method was also incapable of achieving the claimed impurity levels. Ex. M (Edson Decl. 9/14/2022) at 5-7. Inpria again argued that **no** synthesis and/or purification processes known in the art were capable of achieving the claimed impurity levels. *Id.*

Inpria now asserts these arguments were mere “boilerplate.” To the contrary, Inpria expressly distinguished the claimed composition from the prior art, **repeatedly** asserting that “at the time of filing the present application, **the claimed purity of the monoalkyltin compounds was not achievable** through the use of an alkyl lithium reaction, through the use of an alkyl lithium reaction with a subsequent conventional distillation step, or through other synthesis and/or purification processes that were then known in the art” including processes requiring the “the use of organotin trichlorides.” Ex I at 7; Ex Jat 5; Ex K at 5; Ex T (10/1/2021 Amendment) at 6.

These statements are not just “general statements by the inventors indicating that the invention is intended to improve upon prior art.” *Ventana Med. Sys.*, 473 F.3d at 1181 (citing specification’s background of the invention section). Rather, they were made to secure allowance by disclaiming **any** method “then known in the art,” and limited the claimed composition to the synthesis methods in the specification. *See Springs Window Fashions LP v. Novo Industries, L.P.*,

323 F.3d 989, 993-96 (Fed. Cir. 2003).

Inpria fails to distinguish *Chimie*. Here, Inpria stated that no prior art method could achieve the claimed composition and, in *Chimie*, the applicant stated the claimed composition could be achieved “only by” the specific methods of the specification. *Chimie*, 402 F.3d at 1384-85. Both statements mean the only way to achieve the composition is by the method described in the specification. Accordingly, like the patentee in *Chimie*, Inpria chose to limit the claimed invention to the specific synthetic methods described in the specification.

F. **“A method for forming a radiation patternable film comprising an oxo-hydroxo network with metal cations having organic ligands with metal carbon bonds and metal oxygen bonds” (Term No. 1)**

Plaintiff Inpria’s Proposal	Defendant Lam’s Proposal
Preamble is limiting.	Preamble is not limiting.

1. Plaintiff’s Opening Position

The preamble of claim 1 of the ’505 patent, which recites a “method for forming a radiation patternable film comprising an oxo-hydroxo network with metal cations having organic ligands with metal carbon bonds and metal oxygen bonds,” is limiting. First, the preamble recites, *inter alia*, “forming a radiation patternable film” comprising “an oxo-hydroxo network with metal cations having organic ligands with metal carbon bonds and metal oxygen bonds,” which provides structure or steps “underscored as important by the specification” of the ’505 patent and gives the claim “life, meaning, and vitality.” *Catalina Mktg. Int’l, Inc. v. Coolsavings.com, Inc.*, 289 F.3d 801, 808 (Fed. Cir. 2002). For example, the patent’s Title refers to metal (specifically, tin as in “organotin”) “oxide hydroxide” patterning. ’505 patent at Title. The Abstract describes “the formation of . . . patterning coatings based on metal oxide hydroxide chemistry.” *Id.* at Abstract. The Field of the Invention explains that “[t]he invention relates to . . . form[ing] coatings comprising organotin oxide hydroxide” that are “radiation sensitive.” *Id.* at 1:27-29. The

Summary of the Invention explains that “the invention pertains to a method for forming a radiation patternable coating” comprising such a network and bonds, as “represented by the formula $R_zSnO_{(2-(z/2)-(x/2))}(OH)_x$.” *Id.* at 2:47-3:3; *see also id.* at 3:4-17 (“the invention pertains to a method for forming a radiation patternable coating comprising a metal oxo-hydroxo network with metal cations having . . . metal oxygen bonds”). The Detailed Description of the Invention further describes the “radiation patternable coatings” (*see, e.g., id.* at 4:31-38) and consistently discloses the formation of such radiation patternable coatings as having the network and bonds recited in the preamble. *Id.* at 4:25-50 (discussing the “radiation patternable coatings generally compris[ing] $R_zSnO_{(2-(z/2)-(x/2))}(OH)_x$ compositions”); *see also, e.g., id.* at 4:51-57, 5:41-44, 5:48-6:12, 6:13-39, 6:40-7:3, 8:59-9:4, 10:5-38, 17:27-37, 20:14-38. Every drawing shows the characteristics or improved patterning performance of the claimed “radiation patterned” structure (*e.g., a film*) comprising such a network and bonds. *Id.* at 3:45-4:20, Figs. 1-15. According to the specification, it is this network that enables the film to be “finely patterned using radiation” “according to a selected pattern.” *Id.* at 20:14-29 (explaining that the exposed film “forms an enhanced metal oxo-hydroxo network”); *see also id.* at 4:47-50 (“The patterning compositions are particularly useful for EUV patterning at reduced doses, and low line width roughness can be obtained for small features.”). Thus, “[t]he title of the patent, the summary of the invention, and every drawing describe the invention as a” radiation patternable film with the specific characteristics recited in the preamble, and therefore the preamble is “necessary to understand the subject matter encompassed by the” independent claim. *Deere & Co. v. Bush Hog, LLC*, 703 F.3d 1349, 1357-58 (Fed. Cir. 2012).

In this context, it is clear that claim 1 is not intended to be a disembodied set of steps, but rather a method of forming a “film” that (i) is “radiation patternable” and (ii) comprises an “oxo-

hydroxo network with metal cations having organic ligands with metal carbon bonds and metal oxygen bonds.” Only the preamble of claim 1 describes these characteristics of the *formed film* itself. The remainder of claim 1 describes the “inputting” method steps, characteristics of the “first precursor” and “second precursor” used in the method *for forming the film*, and the formed “composition with non-volatile components and a volatile component.” Thus, the preamble does not merely state a name for, or intended use of, the claimed method; rather, it describes required “fundamental characteristic[s]” of the film formed by the claimed method. *Poly-Am., L.P. v. GSE Lining Tech., Inc.*, 383 F.3d 1303, 1310 (Fed. Cir. 2004). Accordingly, the preamble is “necessary to give life, meaning, and vitality” to the claim and is therefore limiting. *Catalina*, 289 F.3d at 808.

Second, the preamble is limiting because it provides necessary antecedent basis for terms in ten dependent claims, *i.e.*, claims 10, 11, 13, and 16-21 (“the radiation patternable film”) and claims 19, 20, and 22 (“the film”). *See, e.g., Deere*, 703 F.3d at 1357 (finding preamble limiting because, among other things, it provided antecedent basis for a dependent claim term); *Pacing Techs., LLC v. Garmin Int’l, Inc.*, 778 F.3d 1021, 1024 (Fed. Cir. 2015) (same); *Super Interconnect Techs, LLC v. Huawei Device Co.*, No. 2:18-cv-00462, 2020 WL 60145, at *10-13 (E.D. Tex. Jan. 5, 2020) (same); *PersonalWeb Techs. LLC v. Int’l Bus. Machs. Corp.*, No. 16-cv-01266, 2017 WL 2180980, at *13-14 (N.D. Cal. May 9, 2017) (same); *Whirlpool Corp. v. TST Water, LLC*, No. 2:15-cv-01528, 2016 WL 3959811, at *7 (E.D. Tex. July 22, 2016) (same). Indeed, these dependent claims would lack meaning without the preamble, indicating that the inventors intended for the preamble of claim 1 to be limiting.

In sum, the intrinsic evidence makes clear that the inventors chose “to use both the preamble and the body to define the subject matter of the claimed invention.” *Bell Commc’ns*

Rsch., Inc. v. Vitalink Commc'ns Corp., 55 F.3d 615, 620 (Fed. Cir. 1995). The preamble is therefore limiting.

2. Defendant's Answering Position

The preamble of claim 1 of the '505 Patent is no exception to the long-standing rule that “[g]enerally, a preamble is not limiting.” *Summit 6, LLC v. Samsung Elecs. Co.*, 802 F.3d 1283, 1292 (Fed. Cir. 2015). In this regard, the Federal Circuit has repeatedly held that a preamble is not limiting where the body of the claim defines a “structurally complete invention” and the preamble states nothing more than “a purpose or intended use for the invention.” *Catalina Mktg. Int’l, Inc. v. Coolsavings.com, Inc.*, 289 F.3d 801, 808 (Fed. Cir. 2002). In *Catalina*, the Federal Circuit held that the preamble phrase “located at predesignated sites such as consumer stores” was not a limitation. *Id.* at 810. The court reasoned that although the specification referred to “terminals located at points of sale,” the preamble did “not affect the structural definition or operation” of the invention itself and the claim body defined “a structurally complete invention.” *Id.* The Federal Circuit similarly held that the preamble—“[a] method of venting a slip joint assembly”—was not limiting because the claim defined “a structurally complete invention,” and the preamble was “not essential to understand any claim terms.” *Neapco Drivelines LLC v. Am. Axle & Mfg., Inc.*, 847 F. App’x 856, 857-59 (Fed. Cir. 2021).

Here, in Inpria’s own words, the body of the claim fully describes the entire claimed method reciting “the [two] ‘inputting’ method steps, characteristics of the ‘first precursor’ and ‘second precursor’ used in the method for forming the film, and the formed ‘composition with non-volatile components and a volatile component.’” *Supra* at 55. While the preamble may recite an intended outcome of forming “a radiation patternable film” comprising certain characteristics, this is just the intended result of performing the claimed method.

Inpria fails to explain how the claim recites an incomplete invention, or how the preamble

recites anything more than an intended result. Instead, Inpria relies on the fact that a few terms like “radiation patternable” and “oxo-hydroxo network” are both used in the specification and in claim 1’s preamble, and a misrepresentation about what “every drawings” describes. *Supra* at 54. The preamble terms that appear in the specification do not describe “steps of the patented process,” but merely refer to the “the objective [they] achieve[.]” *Rothschild v. Cree, Inc.*, 567 F. Supp. 2d 572, 577 (S.D.N.Y. 2008) (distinguishing *Poly-Am., L.P. v. GSE Lining Tech., Inc.*, 383 F.3d 1303, 1310 (Fed. Cir. 2004), on which Inpria relies). Indeed, in *Neapco*, the Federal Circuit rejected the patentee’s argument that the preamble was limiting because the specification described “venting the entire slip joint assembly ... ‘from top to bottom’” as the intended purpose. 847 F. App’x at 858. And as to the drawings, Figures 1 and 2, for example, show a “patterned structure” with “irradiated” and “un-irradiated” coating material regions, without the additional detail recited in claim 1’s preamble. ’505 Patent, 21:63-22:7.

Deere does not support Inpria’s construction. In that case, the preamble term, “rotary cutter deck,” directly informed the meaning of another claim term, “torsional stiffness.” *Deere & Co. v. Bush Hog, LLC*, 703 F.3d 1349, 1358 (Fed. Cir. 2012). As the Federal Circuit explained, the preamble described a “fundamental characteristic of the claimed invention” because “the claimed structure must possess sufficient stiffness to withstand the torsional loads imposed by the operation of a rotary cutter.” *Id.* In contrast, nothing in claim 1’s preamble informs the meaning of the recited method steps. Indeed, Inpria characterizes the preamble as describing the “‘fundamental characteristic[s]’ of the film,” not any characteristic of the claimed method. *Supra* at 55. This is the antithesis of breathing “life, meaning, and vitality” into the claim. *See Rothschild* at 577.

Lastly, Inpria contends that because certain dependent claims recite “the film” or “the radiation patternable film,” the preamble provides “necessary antecedent basis” and is therefore

limiting. *Supra* at 55. But a preamble, or portion thereof, might be found limiting for providing antecedent basis only where, and to the extent, the term “recites essential structure or steps, or if it is necessary to give life, meaning, and vitality to the claim.” *Am. Med. Sys., Inc. v. Biolitec, Inc.*, 618 F.3d 1354, 1358 (Fed. Cir. 2010) (quotations omitted); *TomTom, Inc. v. Adolph*, 790 F.3d 1315, 1322-24 (Fed. Cir. 2015) (explaining that even when a preamble term “provides a necessary structure” to the claim, it “does not necessarily convert the entire preamble into a limitation”). Here, the preamble terms do not meet this standard as they are merely a “convenient label for the invention as a whole”—the desired result of a film formed from carrying out the claimed steps.)²⁷; *Storage Tech. Corp. v. Cisco Sys., Inc.*, 329 F.3d 823, 831 (Fed. Cir. 2003) (preamble term “policy caching method” did not limit claims).

²⁷ The district court cases cited by Inpria are distinguishable because the preambles at issue therein all described essential characteristics of structures recited in the claim bodies. *See Super Interconnect Techs., LLC v. Huawei Device Co.*, No. 2:18-cv-00462, 2020 WL 60145, at *10-13 (E.D. Tex. Jan. 5, 2020) (holding the preamble to apparatus claims as limiting because it was required to give “life, meaning, and vitality” to the term “output signal”); *PersonalWeb Techs. LLC v. Int’l Bus. Machs. Corp.*, No. 5:16-cv-01266, 2017 WL 2180980, at *13-14 (N.D. Cal. May 9, 2017) (holding the preamble to a system claim was limiting because “the body of the claim does not completely set forth the invention”); *Whirlpool Corp. v. TST Water, LLC*, No. 2:15-cv-01528, 2016 WL 3959811, at *7 (E.D. Tex. July 22, 2016) (holding the preamble to apparatus claims was limiting because it was “necessary to understand the structures recited even in the bodies of the independent claims”).

3. Plaintiff's Reply Position

The preamble of claim 1 of the '505 patent does not merely recite an intended outcome of the claimed method, as Lam asserts, but instead recites “fundamental characteristic[s]” of the “radiation patternable film” formed by the claimed method, *i.e.*, “an oxo-hydroxo network with metal cations having organic ligands with metal carbon bonds and metal oxygen bonds.” *Poly-Am*, 383 F.3d at 1310; *see* Reply Decl. ¶¶ 92-100. Without the preamble, the claimed method lacks context, because while it describes the steps required to *form* the film, it does not describe the characteristics of the *formed film* itself, which, as explained in detail in Inpria's opening brief, *see supra* at 51-53, are “underscored as important by the specification,” *Catalina*, 289 F.3d at 808.²⁸ Indeed, as a POSA would have understood, it is possible to follow the claimed method steps and arrive at a film that does not have these characteristics. For example, during prosecution of the related '048 patent, in response to the Examiner's identification of prior art references (Maeng and Kane) allegedly disclosing the use of an organotin composition, the patentee explained that the teachings of those references would not “provide for formation of an organotin layer” (*i.e.*, a layer having a R-Sn bond, which is a metal (Sn)-carbon (R) bond), as recited in the pending claim, because the use of plasma (in Maeng) or high temperatures (in Kane) would not result in an “intact” R-Sn bond. Citroen Decl., Ex. 39 ('048 Appeal Brief of 9/15/2022) at 18-19. The preamble here similarly requires a metal carbon bond, and without it, the formed film is not “radiation patternable,” defeating the ultimate purpose of the '505 patent of forming patternable films. *See, e.g.*, '505 patent at Abstract (describing purpose of forming “patterning coatings”), 20:13-22 (patterning requires “break[ing] the bonds between the metal and alkyl ligands,” which are metal-carbon bonds); *see* Reply Decl. ¶ 99. The preamble thus directly informs the meaning of the claim and gives it “life, meaning, and vitality.” *Catalina*, 289 F.3d at 808.

Furthermore, though it superficially addresses Inpria's cited case law regarding antecedent

basis in a footnote, Lam does not explain why the preamble should not be limiting where, as here, it provides antecedent basis for multiple dependent claims. *See, e.g., Deere*, 703 F.3d at 1357 (preamble limiting where, *inter alia*, it provides antecedent basis for a dependent claim); *Pacing Techs.*, 778 F.3d at 1024 (same); *supra* at 53 (collecting cases). Dependent claims 10, 11, 13, and 16-21 rely on the antecedent basis provided by claim 1’s preamble, which Lam does not and cannot deny. Instead, Lam merely repeats its argument that because the preamble does not, in Lam’s view, recite essential structure, it therefore cannot be limiting. *Supra* at 55-56 (citing *TomTom, Inc. v. Adolph*, 790 F.3d 1315 (Fed. Cir. 2015)). But *TomTom* stands for the proposition that a portion of a preamble can be limiting even if another portion is not. *See* 790 F.3d at 1323.²⁹ Here, in contrast, the parties dispute whether the preamble is limiting in its entirety.

Lam’s other cited cases are similarly distinguishable. In *Rothschild*, the Southern District of New York found that the disputed preamble described only the objective achieved by the claimed method. 567 F. Supp. 2d 572, 577 (S.D.N.Y. 2008). And in *Neapco*, the Federal Circuit (in an unpublished opinion) explained that the “claim body defines a structurally complete invention.” 847 F. App’x 856, 858 (Fed. Cir. 2021). In contrast, the preamble here is limiting because it recites “fundamental characteristic[s]” of the film formed by the claimed method. *Poly-Am.*, 383 F.3d at 1310. Because the preamble gives “life, meaning, and vitality” to the claim language, it is limiting. *Catalina*, 289 F.3d at 808.

G. “A method for forming a radiation patternable organometallic coating, the method comprising” (Term No. 36)

Plaintiff Inpria’s Proposal	Defendant Lam’s Proposal
Preamble is limiting.	Preamble is not limiting.

²⁹ Similarly unconvincing is Lam’s citation of *Storage Tech. Corp. v. Cisco Sys.*, 329 F.3d 823 (Fed. Cir. 2003). There, the preamble was merely a “convenient label for the invention.” *Id.* at 831. Here, the preamble recites required characteristics of the formed film.

1. Plaintiff's Opening Position

Similar to the preamble for claim 1 of the '505 patent, the preambles for claims 1 and 27 of the '081 patent recite “a radiation patternable organometallic coating,” which is limiting because it gives the claims “life, meaning, and vitality.” *Catalina*, 289 F.3d at 808. The specification underscores the importance of such “radiation patternable” coatings. For example, the Title refers to organometallic (specifically, “organotin oxide hydroxide”) “patterning compositions,” D.I. 141-2, Ex. A-8 (“’081 patent”) at Title, and the Abstract explains the invention relates to precursors for “the formation of ... patterning coatings,” which are formed from “[o]rganometallic precursors” and “effective for high resolution patterning at relatively low radiation doses,” *id.* at Abstract. This refrain continues throughout the specification: the Field of the Invention is “radiation sensitive organotin oxide hydroxide coatings that can be patterned effectively,” *id.* at 1:33-36, the Background of the Invention describes “radiation patterned resists,” *id.* at 1:51-54, and the Summary of the Invention explains that “the invention pertains to a method for forming a radiation patternable coating,” which is formed from an “organometallic” precursor, *id.* at 2:50-55; *see also id.* at 3:7-8. The specification consistently describes organometallic radiation patternable coatings, *see, e.g., id.* at 2:50-55, 3:7-20, 4:36-43, 9:32-35, 10:5-9, 18:7-11, and explains the claimed “[p]atterning and [p]atterned [s]tructure [p]roperties,” *id.* at 20:33-22:27.

Importantly, only the preambles of claims 1 and 27 explain that the formed “coating” is “radiation patternable” and “organometallic.” The remainder of claims 1 and 27 does not describe these characteristics of the *formed* “coating” itself and instead describes (i) the method step of “depositing a tin composition” used in the method *for forming the coating* and (ii) characteristics of that composition. Thus, the preambles “disclose[] a fundamental characteristic of the claimed invention” and are limiting. *Poly-Am., L.P.*, 383 F.3d at 1310.

Further, the preamble provides necessary antecedent basis for terms in seven dependent

claims, *i.e.*, claims 18 and 20 (“the radiation patternable organometallic coating”) and claims 21-25 (depending from claim 20). This fact supports finding the preamble limiting because without the preamble, these dependent claims would lack context and meaning.

The prosecution history further establishes that the preamble was understood to be limiting by both the patentee and the examiner. For example, the examiner rejected claims for double patenting in part because earlier Inpria patents allegedly disclosed “a method for forming a radiation patternable organometallic coating.” Citroen Decl., Ex. 2 (’081 Off. Act. of 01/10/2023) at 3. The patentee disagreed, explaining that the claims of the earlier patent were directed to “[a] method of patterning a substrate with radiation,” “[a] coated substrate,” and “[a] precursor solution,” not a “method for forming a radiation patternable organometallic coating which uses a vapor deposition process, as specified in instant claim 1.” Citroen Decl., Ex. 3 (’081 Amendment of 03/30/2023) at 6. The language used by both the patentee and examiner—“radiation patternable coating”—is only present in the preamble, thus confirming the patentee’s intent and examiner’s understanding that the preamble is limiting.

2. Defendant’s Answering Position

The preambles of claims 1 and 27 of the ’081 Patent are also no exception to the general rule that a preamble is not limiting. These claims recite steps including where a composition with “radiation sensitive Sn-C bonds” is “deposit[ed]” to “form a coating.” Nothing in the preambles adds anything to the claimed process or provides anything essential to understand them. Nor does Inpria dispute that the bodies of the claims recite complete methods.

Instead, the preambles merely recite the intended outcome of forming “a radiation patternable organometallic coating,” which is legally insufficient to make them limiting. Inpria’s assertion that the preambles are limiting because they are the only part of the claims that recite the “characteristics of the formed ‘coating’” is a red herring. *Supra* at 61. These characteristics only

refer to the intended result stated in the preambles; they do not describe or add anything to the recited steps. The fact that this intended result—*i.e.*, forming a radiation patternable organometallic coatings—is referenced in the specification does not change the outcome to render the preambles limiting. *See Neapco*, 847 F. App'x at 857-59.

Inpria's antecedent basis argument is also unsupported. Inpria asserts in conclusory fashion that "dependent claims would lack context and meaning" without the preamble. *Supra* at 62. But Inpria has not presented any evidence that a POSA would need the preamble to understand the meaning of any other term or limitation, or that the preamble's absence would create ambiguity in any claim meaning. Inpria's failure to show that the preamble breathes meaning into any limitation further supports Lam's position that the preamble is not limiting.

Moreover, construing the preamble to be limiting would inject ambiguity into the claims. Both claims 1 and 27 recite "a radiation patternable organometallic coating" in the preamble, and separately recite "to form a coating" in the claim body. If the preamble, as Inpria suggests, refers to the coating resulting from carrying out the claimed method, then it is unclear to what "a coating" in the body refers. It would be unclear, for example, if infringement requires carrying out the claimed method that results in both "a radiation patternable organometallic coating," and "a coating" that is separate and additional to the former. Indeed, the recitation of both "a radiation patternable organometallic coating" in the preamble, and "a coating" in the body of claims 1 and 27, suggests that the patentee did not intend or understand the preamble to provide an antecedent basis for the term "coating" in the body of the claims. Inpria's final argument paints an incomplete picture of the prosecution history. Considered altogether, the prosecution history shows that the Examiner allowed the claims because they were convinced none of the prior art disclosed the method steps recited in claim 1, which are also recited in claim 27, without reference or reliance

on the preamble. Lyons Decl., Ex. P, 2 (Reasons for Allowance). Thus, the preamble was “insignificant for patentability,” and is therefore not limiting. *Catalina*, 289 F.3d at 808.

3. Plaintiff’s Reply Position

Similar to its argument for claim 1 of the ’505 patent, Lam argues that the preambles of claims 1 and 27 of the ’081 patent recite only the intended outcome of the claimed method. But, like the preamble of claim 1 of the ’505 patent, the disputed preambles recite similar “fundamental characteristic[s]” of the film formed by the claimed method, *Poly-Am.*, 383 F.3d at 1310, which are “underscored as important by the specification,” *Catalina*, 289 F.3d at 808; *supra* at 58-60. Specifically, the preambles require the coating be “patternable” and “organometallic,” meaning it contains a metal-carbon bond, while the claim bodies merely describe the tin composition that is deposited and the deposition process itself. *See* Reply Decl. ¶¶ 102-07. Thus, the preambles are limiting.

Lam argues, without evidence, that the preambles being limiting would make the claims ambiguous, because the word “coating” is used in both the preamble and claim bodies. *Supra* at 60-61. In context, however, a POSA would have understood “coating” in the body of the claim to be referring to “coating” in the preamble, and that the preamble simply describes additional characteristics of the “coating.” *See* Reply Decl. ¶¶ 103-11; *Energizer Holdings, Inc. v. ITC*, 435 F.3d 1366, 1371 (Fed. Cir. 2006) (reversing invalidity holding because the claim “has a reasonably ascertainable meaning . . . in context”). The preambles are therefore limiting for the additional reason that they “serve[] as antecedent basis for a term appearing in the bod[ies] of the claim[s].” *In re Fought*, 941 F.3d 1175, 1178 (Fed. Cir. 2019).

H. “thickness” (Term Nos. 4, 7, 13, 31)

Plaintiff Inpria’s Proposal	Defendant Lam’s Proposal
Not indefinite.	Indefinite.

1. Defendant's Opening Position

The claim term “thickness” is indefinite because a POSA would not know whether a particular film on a substrate falls within the claim scope, as the thickness of a film varies significantly between wet and dry states and the claim is silent as to when the thickness is determined. A claim is indefinite when a POSA would not know whether “a particular composition standing alone is within the claim scope or not.” *Geneva Pharms., Inc. v. GlaxoSmithKline PLC*, 349 F.3d 1373, 1384 (Fed. Cir. 2003). In *Geneva*, plaintiffs argued for a construction of “synergistically effective amount” of an antibiotic to treat bacterial infections where “a formulation [would] fall[] outside the scope of the claims if a given antibiotic, bacteria, and disease combination provides no synergy.” *Id.* The court found that that construction would be indefinite because “a given embodiment would simultaneously infringe and not infringe the claims, depending on the particular bacteria chosen for analysis.” *Id.* Here, as in *Geneva*, a POSA cannot know whether a particular film “thickness” is within the scope of the claims because the thickness of a given film changes “based on changing circumstances,” including whether the film is wet or dry. *Id.* Accordingly, the term “thickness,” as used in the claims, is indefinite.

The Asserted Patents’ specifications provide only that the thickness may be measured using “x-ray reflectivity and/or ellipsometry.” ’564 Patent, 14:43-47; ’153 Patent, 19:4-8; ’684 Patent, 13:45-49; ’505 Patent, 16:67-17:1. However, the measurement of the thickness of a given film or coating will vary based on a variety of factors and will change depending, for example, whether the measurement is taken before or after a heating or “prebaking” step. Ex. A, Schanze Dec. ¶¶ 59-61. Dr. Jason Stowers, an inventor of the ’564 and ’312 Patents, has explained that a “prebake will . . . reduce the thickness of the film.” Ex. H at 6. The Asserted Patents’ specifications also acknowledge that the thickness may change and, in some instances, the specifications refer to the specific thickness of a given film “after drying.” ’153 Patent, 19:10-18; ’684 Patent, 13:52-69;

'505 Patent, 16:56-63.

The claims of the '505, '564, '684, '153, and '312 Patents, however, do not specify whether the claimed “thickness” is a wet thickness or a dry thickness (*i.e.*, after a prebaking or other drying step). In contrast, the thickness of the coating claimed in the '081 Patent, which Lam does not contend is indefinite on this basis, is limited to “a dry thickness.” '081 Patent at 34:51-60 (claim 1). Therefore, the unqualified term “thickness” in the '505, '564, '684, '153, and '312 Patents' claims would encompass both a wet thickness and dry thickness. In light of this, as in *Geneva*, “a given embodiment would simultaneously infringe and not infringe the claims” depending on the “particular [circumstances] chosen for analysis.” *Geneva*, 349 F.3d at 1384. For example, a given film may simultaneously infringe and not infringe the claims, if it has a wet thickness after deposition that meets the claims and a dry thickness after it is baked that does not meet the claims. Ex. A, Schanze Decl. ¶ 64. Additionally, the amount of time a substrate undergoes a prebake would affect the thickness and therefore whether a given film would infringe. *Id.* at ¶ 61. Accordingly, because a POSA would not know whether “a particular [embodiment] standing alone is within the claim scope or not,” the term “thickness” is indefinite as used in the '505, '564, '684, '153, and '312 Patents' claims. *Geneva*, 349 F.3d at 1384.

2. Plaintiff's Answering Position

The “thickness” terms are not indefinite. Lam's contention that a POSA would not have reasonable certainty as to the meaning of “thickness” because the claims are “silent” as to whether the thickness is measured in a wet or dry state fails for several reasons. *See supra* at 62-64.

First, Lam assumes the claimed film/coating starts in a “wet” state and then necessarily moves to a “dry” state based on example spin-on deposition techniques for forming the film/coating cherry-picked from the patent specifications. *Supra* at 63. The claim language, however, is not limited to spin-on deposition. Lam's attempt to read limitations into the claims

from the specifications to manufacture an indefiniteness issue is therefore improper and should be rejected. *See Phillips*, 415 F.3d at 1323 (warning against the “danger of reading limitations from the specification into the claim”).

Second, for certain claims, Lam ignores claim language explicitly describing the film/coating that must satisfy the requirements of the “thickness” terms. *See Reply Decl.* ¶¶ 75-78. Specifically, claim 1 of the ’684 patent recites “irradiating a coated substrate . . . wherein the coated substrate comprises a coating having an average thickness from about 5 nm to about 200 nm.” Similarly, claim 11 of the ’153 patent recites “exposing the film with patterned EUV . . . wherein the film has an average thickness from about 2 to about 50 nm.” In these claims, “thickness” refers to the thickness of the coating/film at the time of radiation exposure, regardless of its state at that time. Additionally, claim 22 of the ’505 patent refers to the “film” described in claim 1, which is formed using “precursor vapor[s].” It is this vapor-deposited film that must satisfy the “thickness” limitations recited in claim 22. Such films are not formed using spin-on deposition, which Lam contends includes “wet” and “dry” states. Lam’s reference to such states is therefore nonsensical when the language of claim 22 is considered in context. Claim 1 of the ’081 patent only supports this conclusion, because it recites a “coating” formed using a “vapor-based deposition process,” which necessarily results in a “dry” coating having a “dry thickness.” *Id.* ¶ 76-78. In other words, the inclusion of “dry” here does not imply that the coating can be “wet,” as Lam contends.

Third, Lam improperly equates claim breadth with indefiniteness. A claim is not indefinite simply because it encompasses different possible “states” of a film/coating, as Lam contends. *supra* at 62-64. Absent claim language to the contrary, Inpria “is entitled to a broad[] scope that is not time-limited, one that reads on any [film/coating] at any time,” so long as the other claim

limitations are met. *Exxon Chem. Pats., Inc. v. Lubrizol Corp.*, 64 F.3d 1553, 1558 (Fed. Cir. 1995). Furthermore, Inpria's broad claims do not run afoul of *Geneva Pharmaceuticals, Inc. v. GlaxoSmithKline PLC*, 349 F.3d 1373, 1383-84 (Fed. Cir. 2003), which rejected a proposed construction because "a given embodiment [could] simultaneously infringe and not infringe the claims" "in changing circumstances." Here, the thickness of a film/coating may differ from one state (*e.g.*, a "wet state") to the next (*e.g.*, a "dry state"), each of which would be a separate embodiment that could infringe, but there could be no simultaneous infringement or non-infringement in one state (*e.g.*, a "wet state"). *See Exxon*, 64 F.3d at 1558 (explaining "composition" claims could be infringement "at any time from the moment at which the ingredients are mixed together," including "a composition existing during manufacture" as well as the resulting "end product composition[]"). The "thickness" terms are either met or not met in a given state. *See Reply Decl.* ¶ 79. And there is no dispute that thickness can be measured in any given state. Accordingly, the "thickness" terms are not indefinite.

3. Defendant's Reply Position

Inpria expressly admits that "the thickness of a film/coating may differ from one state (*e.g.*, a 'wet state') to the next (*e.g.*, a 'dry state')." *Supra* at 68. Inpria also does not dispute that the '564, '684, '153, '312, and '505 Patents' claims do not specify whether "thickness" is measured when the film is wet or dry.³⁰ *Id.* at 66. These concessions confirm indefiniteness under *Geneva* because a given method or article would simultaneously infringe and not infringe depending on the state of the film, wet or dry, when the thickness is measured.

Inpria cannot avoid this result by relying on *Exxon Chem.*, which involved a claimed chemical composition that was infringed whenever it existed, *e.g.*, during manufacture or as an

³⁰ Lam did not challenge claim 1 of the '081 Patent because it expressly recites that the claimed thickness is a "dry thickness." Inpria does not address the '564 Patent in connection with this term.

end product. But the claims here are not mere compositions. Instead, they recite methods for forming and patterning films and articles comprising substrates with coating materials for patterning based on exposure to radiation. Thus, it is not enough to simply measure a film in isolation to determine infringement as could be done for the *Exxon Chem* compositions. Rather, the film thickness must be considered in the context of the overall claimed process or structure.

Inpria wrongly contends that the claimed thickness is not indefinite because, according to Inpria, the thickness can be determined separately for each state of the film, *e.g.*, wet or dry, and Inpria can then assert infringement based on whatever thickness measurement it chooses. This argument contradicts *Geneva*. In that case, the claimed “synergistically effective amount” was indefinite, even though the specific “amount” could have been determined for each bacteria under analysis (just as thickness here could be determined for each state of the film). The claim was still found to be indefinite, however, because infringement for any given “amount” would depend on the bacteria chosen (just as infringement here would depend on the state of the film chosen).

Inpria next argues that ’684 Patent’s claim 1 and the ’153 Patent’s claim 11 are not indefinite because they impliedly “refer[] to the thickness of the coating/film at the time of radiation exposure, regardless of its state at the time.” *Supra* at 67. But these claims do not expressly require thickness to be measured then. And even if this implied reading were accepted, it still leaves uncertain whether the thickness is measured when the film is wet or dry, as irradiation could occur in either state and, in fact, irradiation contributes to further drying. *Ex. Q, Schanze Reb.* ¶ 40.

- I. **“wherein exposure of the film to EUV radiation breaks at least some of the bonds between the metal ions and the radiation sensitive ligands in exposed regions of the film” (Term No. 32)**

Plaintiff Inpria’s Proposal	Defendant Lam’s Proposal
Not indefinite.	Indefinite.

1. Defendant's Opening Position

Claim 1 of the '312 patent is invalid as indefinite because it is a mixed-claim type, combining both structural elements and a method step (*i.e.*, “exposure ... to EUV radiation breaks ... bonds”) in an apparatus or article claim.³¹ When a single claim is directed to an apparatus or article, but requires a method step, the claim is indefinite. *IPXL Holdings, LLC v. Amazon. com, Inc.*, 430 F.3d 1377 (Fed. Cir. 2005).

The disputed claim in *IPXL* recited “[t]he *system of claim 2* [including input means] wherein . . . *the user uses the input means* to either change the predicated transaction information or accept the displayed transaction type and transaction parameters.” *Id.* (emphasis and alteration in original). The Federal Circuit found the claim indefinite because “it is unclear whether infringement [] occurs when one creates a system that allows the user to change the predicted transaction information or accept the displayed transaction, or whether infringement occurs when the user actually uses the input means to change transaction information or use the input means to accept a displayed transaction.” *Id.* at 1384.

Claim 1 of the '312 Patent is indefinite for similar reasons. Claim 1 recites “[a]n *article* comprising: *a substrate* comprising a semiconductor wafer; and *a film* on a surface of the substrate . . . wherein *exposure of the film to EUV radiation breaks at least some of the bonds*.” Like in *IPXL*, claim 1 is directed to an apparatus (here an article), including the structures of “a substrate” and “a film,” but also includes a method step applied to the article (*i.e.*, exposure of the film to EUV radiation breaks at least some of the bonds). Thus, just as in *IPXL*, claim 1 is indefinite

³¹ This wherein clause is a limitation of the claim because it expresses an inventive aspect of the claimed invention. *See Allergan Sales, LLC v. Sandoz, Inc.*, 935 F.3d 1370, 1374 (2019). The '312 patent is directed to “radiation patterned coating material” ('312 Patent, Abstract) and thus “exposure . . . to EUV radiation” is material to patentability.

because it is unclear whether infringement occurs when an article with a film is created with bonds that can be broken by an exposure to EUV radiation, or whether infringement occurs when the film is actually exposed to EUV radiation that breaks the bonds.

Further compounding the indefiniteness of claim 1 is the lack of any claimed **structure** that performs the claimed “exposure” step. Although an apparatus claim with functional language used to describe capabilities *of the claimed structure* may in some cases survive indefiniteness, courts have made clear that an apparatus claim that recites a functional or method step that is not performed by any claimed structure is necessarily invalid as indefinite. *Bardy Diagnostics, Inc. v. Vital Connect, Inc.*, No. 1-22-cv-00351-CJB at 1 (D. Del. Jul. 19, 2024) (D.I. 122) (“[W]hen such functionality is performed not by the claimed apparatus but instead by some unclaimed structure, that would render the claim indefinite.”) (internal quotations omitted); *see also In re Katz Interactive Call Processing Patent Litigation*, 639 F.3d 1303 (Fed. Cir. 2011); *Rembrandt Data Techs. v. AOL, LLC*, 641 F.3d 1331 (Fed. Cir. 2011)).

As noted above, claim 1 is an “article” claim that requires the act of exposing a film to EUV radiation in such a way that it breaks the bonds between the recited ions and ligands. None of the recited structures—the “substrate” or the “film”—are capable of exposing the film to EUV radiation. The specification explains that “radiation pattern[ing]” of resist films involves “exposing the resist to a selected energy source” (’312 Patent, 1:59-67), and “EUV light has been used for lithography at 13.5 nm, and this light is generated from a Xe or Sn plasma source excited by high energy laser or discharge pulses” (*id.*, 16:25-28). Accordingly, a POSA would understand that the “exposure of the film to EUV radiation” as recited in claim 1, is performed by a system that first creates this EUV radiation, apparently by using a device capable of exciting a Xe or Sn plasma using high energy laser or discharges pulses, and then exposes the film to this EUV radiation.

Thus, the claim requires some unclaimed and unidentified structure to perform this exposure step. Because an unrecited structure is required to generate EUV light from some unclaimed source and direct it onto the film, claim 1 is necessarily invalid for this additional reason.

The disputed functional language is further indefinite because it recites that “exposure . . . breaks at least some of the bonds . . . in exposed regions of the film.”³² Because the claim requires the “exposure” step to apply selectively to only the “exposed regions of this film,” the claimed “exposure” step must be performed to only expose certain regions. The specification indicates that exposed and unexposed regions are created during exposure by using a specific structure—a mask. *See, e.g.,* ’312 Patent, 1:65-66 (“[P]atterning of the resist [film] generally involves several steps including exposing the resist to a selected energy source, such as through a mask.”). Accordingly, to perform the claimed exposure step, an unclaimed EUV radiation source must be used in combination with a mask to create the “exposed” and “unexposed regions” which are “selectively removable.” *Id.*, 2:1-5. Because this method step is performed by unclaimed structures, claim 1 is indefinite for this additional reason. Indeed, this Court has found *IPXL*-type indefiniteness when claimed functionality “is performed not by the claimed apparatus but instead by some unclaimed structure.” *Bardy*, 1-22-cv-00351-CJB at 1. In *Bardy*, this Court held a claim indefinite where it recited that signals “are retrieved,” but no structures for performing this retrieval were claimed. *Id.* Like the claim in *Bardy*, claim 1 is indefinite “because it recites functional language divorced from any recited structure” and “[t]here is no recited structure in the claim that arguably provides” the exposure to EUV radiation that breaks bonds in exposed regions of the film. *Power Integrations, Inc. v. ON Semiconductor Corp.*, No. 16-cv-06371-BLF, 2018 WL 5603631, at *17 (N.D. Cal.

³² Claim 1 fails to provide an antecedent basis for “the bonds” as recited in the disputed language and should be found indefinite on this basis alone. A POSA would not be able to ascertain the scope of “bonds” as used in claim 1 because it is unclear what type of bonds fall under this claim.

Oct. 26, 2018); *see also, e.g., Bardy* at 1-2; *Ariba, Inc. v. Emptoris*, No. 9:07-CV-90, 2008 WL 3482521, at *7-8 (E.D. Tex. Aug. 7, 2008) (claim for “bidding device” invalid for reciting “method step that is conducted by some person or system other than the claimed device”).

2. Plaintiff’s Answering Position

Claim 1 of the ’312 patent is not indefinite because it does “not reflect an attempt to claim both an apparatus and a method, but instead claim[s] an apparatus with particular capabilities.” *UltimatePointer, LLC v. Nintendo Co.*, 816 F.3d 816, 828 (Fed. Cir. 2016). The apparatus of claim 1 is “[a]n article comprising,” among other things, “a film,” and the disputed limitation describes a particular capability (or characteristic) of that film, *i.e.*, when exposed to EUV radiation, the bonds between the metal ions and ligands in exposed regions will break.³³ *See* Reply Decl. ¶ 81-84. The disputed limitation is therefore permissible “functional” language. *Leader Techs., Inc. v. Facebook, Inc.*, 770 F. Supp. 2d 686, 708-10 (D. Del. 2011) (apparatus claim requiring “wherein the user accesses the data from the second context” not indefinite); *HTC Corp. v. IPCom GmbH & Co.*, 667 F.3d 1270, 1277-78 (Fed. Cir. 2012) (apparatus claim not indefinite because limitations like “storing” were functional); *Microprocessor Enhancement Corp. v. Tex. Instruments Inc.*, 520 F.3d 1367, 1375 (Fed. Cir. 2008) (claim not indefinite because “clearly limited to a” processor “capable of performing the recited functions”).

Lam’s reliance on *IPXL Holdings, LLC v. Amazon.com, Inc.*, 430 F.3d 1377, 1384 (Fed. Cir. 2005), is misplaced. “[T]he rule established in *IPXL Holdings* has been repeatedly recognized to be a narrow one.” *Bayer Pharma AG v. Watson Laby’s, Inc.*, C.A. No. 12-1726-

³³ In a footnote, Lam argues that claim 1 is indefinite because there is no antecedent basis for “the bonds.” *Supra* at 69. In context, it is clear that “the bonds between the metal ions and the radiation sensitive ligands” refers to prior language describing “a first material comprising metal ions with radiation sensitive ligands.” *See Energizer*, 435 F.3d at 1370-71 (holding claim “has a reasonably ascertainable meaning . . . in context”).

LPS-CJB, 2014 WL 4954617, at *6 (D. Del. Sept. 30, 2014) (collecting cases). The disputed limitation here falls outside that “narrow” rule because claim 1 does not “claim activities performed by the user,” which renders it “distinguishable from those at issue in *IPXL Holdings*.” *Mastermine Software, Inc. v. Microsoft Corp.*, 874 F.3d 1307, 1316 (Fed. Cir. 2017). Furthermore, in *IPXL*, the court was “concerned that claiming both an apparatus and a method of using the apparatus within a single claim can make it unclear whether infringement . . . occurs when one creates an infringing system” or “when the user actually uses” the system in an infringing manner. *Id.* (citing *IPXL*, 430 F.3d at 1384) (cleaned up). Claims that “merely use permissible functional language to describe the capabilities of the claimed system,” like the claim at issue here, “do not pose this problem.” *Id.* It is clear that the disputed claim is infringed when one creates an “article” comprising, among other things, “a film” having the claimed capability described above.

Lam also sets up a strawman, arguing that the claim lacks “structure that performs the claimed ‘exposure’ step.” *Supra* at 68-69. But, as discussed above, the disputed limitation does not require the performance of a method step; instead, it simply requires that, *if* the claimed article were to be “expos[ed] . . . to EUV radiation,” a particular reaction would occur. *See, e.g., Yodlee, Inc. v. CashEdge, Inc.*, No. C 05-01550, 2006 WL 3456610 at *2-6 (N.D. Cal. Nov. 29, 2006) (claim not indefinite where it “seeks only to patent a device which performs certain functions if and when” certain external actions are taken). Accordingly, counter to Lam’s assertions, “there is nothing in the claim[] that requires the . . . perform[ance of] certain steps or tak[ing of] certain actions for the claim elements to be satisfied.” *Leader Techs.*, 770 F. Supp. at 710.

Lam’s reliance on *Bardy Diagnostics, Inc. v. Vital Connect, Inc.*, No. 1-22-cv-00351-CJB, D.I. 122 at 1 (D. Del. Jul. 19, 2024), fails for similar reasons. In that case, this Court held a claim invalid as indefinite for reciting signals that “are retrieved” by an unclaimed structure. *Id.* In

contrast, the functional language in dispute here describes the capability of the claimed article, *i.e.*, the “film,” not some unclaimed structure. Claim 1 is thus not indefinite.

3. Defendant’s Reply Position

Inpria argues that the challenged claim is not an indefinite mixed-claim type, combining both structural “article” limitations with a method step, because the claimed “exposure” step purportedly refers only to a “capability (or characteristic)” of the claimed “film.” *Supra* at 73. But “exposure of the film” is “a method step *applied to* the article,” *supra* at 69 (emphasis added), because “exposure...to EUV radiation” is an action directed at the claimed “film”; because this exposure breaks the film’s bonds, it cannot be a capability of the film itself. Inpria’s cases are inapposite because each describes a system or apparatus that includes structures actually capable of performing the recited functions. *See e.g., Mastermine*, 874 F.3d at 1316 (“reporting module” capable of performing recited function). Here, no recited structures are capable of “exposure.”

Inpria’s assertion that the “limitation does not require the performance of a method step” because it only requires that “**if** the claimed article were to be ‘expos[ed]...to EUV radiation,’ a particular reaction would occur” ignores the lack of any such conditional language in the claims. Moreover, the argument is inconsistent with the dependent claims, which confirm that “exposure” is an actual step that must occur. Indeed, dependent claims 3 and 5 recite additional limitations “*following* exposure” of claim 1, and claims 4 and 6-10 recite “the exposed film,” which confirms the film was actually exposed. Thus, the challenged claims are indefinite as apparatus claims where an “action ... [is] required to establish infringement.” *Leader Techs.*, 770 F. Supp. at 710.

J. “wherein the substrate is maintained at a temperature of less than 200°C” (Term No. 22)

Plaintiff Inpria’s Proposal	Defendant Lam’s Proposal
Not indefinite.	Indefinite.

1. Defendant’s Opening Position

Claim 1 of the '048 Patent is also indefinite under *IPXL* and its progeny because the disputed language is a method step (*i.e.*, “substrate is maintained at a temperature of less than 200°C”) in an apparatus claim (*i.e.*, “a system” for vapor deposition). *See Rembrandt*, 641 F.3d at 1339 (finding “data transmitting device” claim indefinite because it also included the claimed method step of “transmitting the trellis encoded frames”).

Here, the specification makes clear that maintaining a temperature is a functional step which requires some further action to take place regarding the operation and use of the claimed system. For example, the specification states that “[t]he pressure and temperature in the reaction chamber can be selected to control the reaction process.” ’048 Patent, 18:63-65. The specification further describes “controlling vessel temperatures” in the context of vapor deposition. *Id.*, 20:4-10. Thus, the step of maintaining a substrate temperature of less than 200°C is described in the specification as requiring an action by a user of the claimed system to select a temperature. Just as in *IPXL*, it is unclear if infringement of claim 1 occurs simply by making a system that is capable of maintaining the substrate at a temperature of less than 200°C, or whether infringement occurs when the claim system is operated by a user who selects a temperature where the “substrate is maintained at a temperature of less than 200°C.” As in *IPXL*, because the claim “recites both a system and the method for using the system,” it is invalid as indefinite. *IPXL*, 430 F.3d at 1384.

The specification also makes clear that maintaining the temperature of the substrate at less than 200°C is accomplished by a controllable heat source. For instance, the specification states that “[t]he substrate and/or chamber and/or vapors may be heated to promote reaction and deposition on the substrate surface” and that “[r]eaction temperatures below about 200°C can be desirable in some embodiments.” ’048 Patent, 20:12-14. Further, the specification describes various temperature ranges (*e.g.*, “40° C. to about 175° C” and “50° C. to about 160° C”) to which

“the substrate can be heated.” *Id.*, 20:19-23.

None of the structures recited in claim 1 can perform the step of maintaining the temperature of the substrate. The only recited structures are “a deposition chamber,” “a substrate,” “an inlet,” a “structure configured to deliver flow from a supply of an inert gas,” a “structure configured to deliver from of a first precursor vapor,” and a “structure to deliver a second precursor vapor.” Thus, there is no structure in the claim that can perform the functional step of maintaining the substrate at a temperature less than 200°C. Ex. A, Schanze Decl. ¶¶ 69-71. Accordingly, claim 1 of the '048 Patent is indefinite under *IPXL*. See *Bardy*, at 1; *Power Integrations*, at *17.

2. Plaintiff's Answering Position

Claim 1 of the '048 patent is not indefinite under *IPXL* because, like claim 1 of the '312 patent, the claim describes (i) a “system comprising,” among other things, “a deposition chamber” and “a substrate within the interior of the deposition chamber,” and (ii) the system’s “capabilities,” e.g., “wherein the substrate is maintained at a temperature of less than 200°C.” *Mastermine*, 874 F.3d at 1316. It is therefore clear to a POSA when this claim is infringed: upon creation of such a “system” having a “deposition chamber” that is capable of “maintain[ing the substrate] at a temperature of less than 200°C.”

The case law supports this conclusion. In *Mastermine*, for example, a claim reciting a system comprising “a reporting module,” “wherein the reporting module” “*presents* a set of user-selectable database fields,” “*receives* from the user a selection of one or more of the . . . database fields, and *generates* a database query” was not indefinite because the “active verbs . . . represent permissible functional language used to describe the capabilities of the ‘reporting module.’” 874 F.3d at 1315 (emphasis in original). And, in *Bardy*, this Court found the claim limitation “an electrocardiography monitor . . . , wherein the electrocardiographic signals are converted to a different format and processed,” not indefinite because the specification indicated the disputed

limitation was not “performed by some unclaimed structure” but rather “describ[ed] capabilities of the claimed processor.” No. 1-22-cv-00351-CJB, D.I. 122 at *1.

Similarly, here, a POSA would have understood that the disputed limitation is functional language describing the capability of the claimed “deposition chamber.” Reply Decl. ¶¶ 86-89. The specification describes the operation of the deposition “chamber” and that, to “facilitate deposition,” the “substrate may be heated or may be cooled.” ’048 patent at 18:51-19:13. The specification goes on to describe that the “[s]ubstrate 157 [may be] mounted within the interior of deposition chamber 151 on thermal block 158,” *id.* at 19:17-19, which a POSA would have understood is a structure capable of maintaining the claimed “substrate” “at a temperature of less than 200°C.” Reply Decl. ¶ 87. Other portions of the specification also describe the chamber’s ability to maintain certain temperatures. *See, e.g.*, ’048 patent at 18:63-65; 34:9-11; 36:8-9; 36:42-43. No other structure is disclosed for maintaining substrate temperature. The disputed limitation thus does not attempt to claim action taken by “some unclaimed structure,” but rather the capabilities of the claimed “deposition chamber.” *Bardy*, No. 1:22-cv-00351-CJB, D.I. 122; *see also, e.g., 3G Licensing, S.A. v. Blackberry Ltd.*, C.A. No. 17-82-LPS-CJB, 2018 WL 4375091, at *10 (D. Del. Sept. 13, 2018) (claim limitations not indefinite where “the system ‘possess[es] the recited structure capable of performing the recited functions’” (quoting *Microprocessor*, 520 F.3d at 1375)). The limitation therefore does not run afoul of *IPXL* and is not indefinite.

3. Defendant’s Reply Position

Just like in *IPXL*, this claim is indefinite because it is unclear whether infringement occurs by creating a system capable of maintaining a substrate at less than 200°C or whether infringement occurs after the system is operated by a user who selects a temperature within the claimed range. Inpria’s asserts that the claim should be construed broadly to cover any system with the capability of performing the infringing step, but fails to reconcile this view with the claim language. Indeed,

the claim says the “substrate **is** maintained” at the claimed temperature.

Claim 1’s indefiniteness is also confirmed by Inpria’s admission that a thermal block—an unclaimed structure—is responsible for maintaining the substrate temperature. Inpria tries to avoid this by conflating the claimed “deposition chamber” with the unclaimed thermal block simply because the patent shows thermal block 158 located inside deposition chamber 151. *Supra* at 78. But the specification and Figure 16 make clear that the deposition chamber 151 and thermal block 158 are separate and distinct structures. ’048 Patent, 19:17-19. A POSA would recognize that a thermal block is separate from a deposition chamber because it performs a different function and is not a component that is inherently included in all deposition chambers. Ex. Q, Schanze Reb. ¶ 43.

Because the parties agree the thermal block is responsible for maintaining substrate temperature, this claim is indefinite as in *Bardy*. There, the claim stated that signals “‘are retrieved’ and that “it is undisputed that the thing that **actually does the retrieving** is an unclaimed structure—the server, client computer or mobile device.” *Bardy* at 1. Here, it is undisputed that the component that does the actual maintaining of the temperature is an unclaimed structure—a thermal block. Accordingly, claim 1 of the ’048 patent is indefinite.

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