

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SHENZHEN TUOZHU TECHNOLOGY CO., LTD.,

Petitioner

v.

STRATASYS, INC.

Patent Owner.

PETITION FOR *INTER PARTES* REVIEW
OF U.S. PATENT NO. 9,592,660

Case No. IPR2025-00257

PATENT OWNER'S SUR-REPLY

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Exhibit List

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2001	Docket Navigator – Judge Rodney Gilstrap Motion Success for Stay Pending IPR and Time to Milestones
2002	United States District Courts — Judicial Caseload Profiles for Eastern District of Texas (Sept. 30, 2024 and Dec. 31, 2024), available at https://www.uscourts.gov/data-news/reports/statistical-reports/federal-court-management-statistics
2003	Minute Entry for proceedings held before District Judge Gilstrap on Nov. 7, 2024, <i>Stratasys, Inc. v. Shenzhen Tuo Zhu Technology Co. Ltd.</i> , No. 2:24-cv-00644-JRG (E.D. Tex. Nov. 14, 2024)
2004	Discovery Order, <i>Stratasys, Inc. v. Shenzhen Tuo Zhu Technology Co. Ltd.</i> , No. 2:24-cv-00644-JRG, Dkt No. 35 (E.D. Tex. Dec. 2, 2024)
2005	Protective Order, <i>Stratasys, Inc. v. Shenzhen Tuo Zhu Technology Co. Ltd.</i> , No. 2:24-cv-00644-JRG, Dkt No. 36 (E.D. Tex. Dec. 3, 2024)
2006	e-Discovery Order, <i>Stratasys, Inc. v. Shenzhen Tuo Zhu Technology Co. Ltd.</i> , No. 2:24-cv-00644-JRG, Dkt No. 41 (E.D. Tex. Dec. 19, 2024)
2007	Invalidity and Ineligibility Contentions, <i>Stratasys, Inc. v. Shenzhen Tuo Zhu Technology Co. Ltd.</i> , No. 2:24-cv-00644-JRG, (E.D. Tex. Jan. 30, 2025)
2008	Transcript of Hearing on the Nomination of Howard Lutnick, of New York, to be Secretary of Commerce (Jan. 29, 2025)
2009	Declaration of Dr. Tim A. Osswald
2010	Transcript of the Deposition of Dr. Michael Hickner
2011	Temperature Sensors – RTD (Resistance Temperature Detector), Digi-Key Electronics, https://web.archive.org/web/20161217230700/https://www.digikey.com/products/en/sensors-transducers/temperature-sensors-rtd-resistance-temperature-detector/535
2012	Temperature Sensors - Thermostats - Solid State, Digi-Key Electronics, https://web.archive.org/web/20170210040250/http://www.digikey.com/products/en/sensors-transducers/temperature-sensors-thermostats-solid-state/564
2013	Temperature Sensors, Analog and Digital Output, Digi-Key Electronics, https://www.digikey.com/en/products/filter/temperature-sensors/analog-and-digital-output/518

2014	Technical Data Sheet, Eastman Tritan™ Copolyester TX1000, Eastman Chemical Co., July 15, 2020
2015	Dinwiddie, R., et al. (2013). Real-time Process Monitoring and Temperature Mapping of a 3D Polymer Printing Process: Infrared Imaging of the Polymer 3D-Printing Process, Proceedings of SPIE - The International Society for Optical Engineering
2016	Hua, T. et al., Research on molten pool temperature in the process of laser rapid forming, J. of Materials Processing Technology 198 (2008) 454-462
2017	Shreir, L. L., et al., Corrosion: Corrosion Control, Vol. 2 (1976), pp. 15:81-15:92, 22:3-22:16, Index
2018	Bambu's P.R. 4-2 List of Preliminary Claim Constructions and Extrinsic Evidence, <i>Stratasys, Inc. v. Shenzhen TuoZhu Technology Co. Ltd.</i> , No. 2:24-cv-00644-JRG (E.D. Tex. Aug. 20, 2025)

I. INTRODUCTION

Pursuant to 35 U.S.C. § 316 and 37 C.F.R. § 42.23, Stratasys, Inc. (“Stratasys” or “Patent Owner”) hereby submits this Sur-Reply to Petitioner’s Reply (“Reply”) to Patent Owner’s Response (“Response” or “POR”) to the Petition for *inter partes* review (“Petition” or “Pet”) filed by Shenzhen Tuozhu Technology Co., Ltd. (“Petitioner”), challenging claims 1–15 (“challenged claims”) of U.S. Patent No. 9,592,660 (“the ’660 Patent”) (EX1001).

Petitioner alleges that the challenged claims are invalid based on five different grounds. First, Petitioner argues in Ground 1A that claims 1–13 and 15 are obvious over U.S. Patent Publication No. 2016/0075091 (“Cable”) (EX1006) in view of U.S. Patent Publication No. 2016/0096326 (“Naware”) (EX1007). Second, Petitioner argues in Ground 1B that claims 1–2, 4, 6–12, and 15 are obvious over Cable in view of U.S. Patent Publication No. 2006/0054039 (“Kritchman”) (EX1009). Third, Petitioner argues in Ground 1C that claims 7, 8, and 14 are obvious over Cable in view of Naware or Kritchman and U.S. Patent No. 9,744,730 (“Comb”) (EX1004). Fourth, Petitioner argues in Ground 2A that claims 1–3 and 5–15 are obvious over Comb in view of U.S. Patent Publication No. 2013/0310507 (“Tummala”) (EX1005). Fifth, Petitioner argues in Ground 2B that claims 1–15 are obvious over Comb in view of Tummala and Kritchman.

Petitioner's Reply presents arguments regarding Grounds 1A, 1B, 1C and 2A, but admits that the parties' dispute for Ground 2B is subsumed by the disputes for Grounds 2A and 1B. These arguments specifically address claims 1, 4, 7, and 11. However, Petitioner still fails to carry its burden to show unpatentability of any challenged claim. Petitioner's attempts to inject wholly new theories at this late stage of briefing should be rejected, and, regardless, those arguments fail on the merits as well. Petitioner has not and cannot rebut Patent Owner's showings that there are multiple deficiencies in Grounds 1A and 2A for claim 1, in addition to further deficiencies for claims 4, 7, and 11 in Ground 1A and claim 11 for Ground 2A. Further, the addition of Kritchman in Grounds 1B and 2B is fundamentally flawed and overlooks Kritchman's teachings in relation to the combinations. Thus, the Grounds fail to render the challenged claims obvious.

II. CLAIM CONSTRUCTION

Petitioner implicitly attempts to redefine the claims, asserting that "damage" or "damaging" does not encompass residue. *See* Reply, 3-4 (defining damage as scratching, puncturing, and wear from removal with a blade or wedge).

This argument is untimely, because Petitioner could and should have raised this argument in its Petition, and thus forfeited. *See GCE Gas Control Equipment Inc. v. VBOX, Inc.*, IPR2023-00326, Paper 27, at 10-11 ("Petitioner cannot raise new claim construction issues in the Reply that were not previously raised in its

Petition.”); 37 C.F.R. § 42.104(b)(3); Consolidated Trial Practice Guide 44–45; *see also* Pet. 7 (arguing for no claim construction).

Even if the Board were to consider the untimely construction, it should reject it as incorrect. There is no rationale for narrowing the plain meaning of “damage” or “damaging” to exclude the presence of residue. *See* EX1001, 6:39-47.

Petitioner’s argument that the ’660 Patent does not mention residue rests on an incorrect understanding of claim construction.

Claim terms “are generally given their ordinary and customary meaning.” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005). While this analysis considers “the context of the specification and prosecution history,” there are “only two exceptions to this general rule: 1) when a patentee sets out a definition and acts as his own lexicographer, or 2) when the patentee disavows the full scope of a claim term either in the specification or during prosecution.” *Thorner v. Sony Computer Ent. Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012). As explained below, nothing warrants departing from the plain meaning of damaging, which encompasses transferring residue to the coated plate.

As Patent Owner explained, residue impacts the functioning of the coated plate, unless the residue is removed through chemical or mechanical means, thereby damaging the key functionality of the plate. *See* POR, 32-36; EX2009, ¶¶95-101; EX1006, [0085]. Patent Owner also explained that the object is damaged

when residue is left because the residue is a portion of the object that has been torn away. *See* POR, 32-33; EX2009, ¶¶106, 104.

As explained below, the intrinsic record indicates that “damaging” encompasses transferring residue to the coated plate. Further, as Patent Owner and its expert (whose testimony is unrebutted) previously explained, residue represents a portion of the object left behind on the substrate that requires chemical or mechanical removal to enable the substrate to function properly. *See* EX2009, ¶¶95, 97, 99-100, 102-108; POR, 32-39.

Claim 1 recites “a polymer coating attached to a surface of the thermally conductive plate which is capable of” both (i) “facilitating adhesion to the 3D object during printing” and (ii) “permitting removal of the 3D object once the 3D object has been formed and cooled.” It further requires removal “without damaging the polymer coating . . . or the 3D object.” Thus, “without damaging” simply means that removal does not destroy the coating’s ability to perform its stated functions and that removal does not separate a portion of the object, such as the bottom layers of the object, from the rest of the object.

The specification confirms this understanding. It describes examples of damage, such as air gaps creating an uneven surface, coatings that burn off with heat, adherence between the coating and 3D part, and coatings that easily scratch or puncture. *See* EX1001 at 1:49-64, 6:7-18; *see also id.* at 4:47–60, 5:6–12, 6:11–

15 (providing examples of avoiding damage). It also describes how to achieve no residue. In an embodiment “there is a significant difference in thermal contraction between the removable plate and the 3D printed polymer object” which enables “the object [to] pop off the plate 104 when the plate and part have cooled.” *Id.* at 5:15-20. It explains that this approach “efficiently avoids the general issue in the current art, where the 3D object sticks to the heated build platform.” *Id.* at 5:20-22. This avoids “an additional step” of “dissovl[ing]” (a chemical process) or “mechanical[] remov[al] (a mechanical process). *Id.* at 5:20-25. It also explains that having an “uneven” surface of the coated plate means “the printing process doesn’t have a flat surface to print on.” *Id.* at 5:37-40. Thus, the specification confirms that removal “without damaging the polymer coating . . . or the 3D object” simply means that removal does not destroy the coating’s ability to perform its stated functions and that removal does not separate a portion of the object, such as the bottom layers of the object, from the rest of the object. Accordingly, the plain meaning should be applied consistent with the intrinsic record.

III. THE CHALLENGED CLAIMS ARE PATENTABLE OVER THE CABLE-NAWARE COMBINATION

A. There is no teaching of removing the 3D object without damage and without chemical or mechanical techniques

In its Reply, Petitioner argues that Cable teaches or discloses removal without damage or use of chemical/mechanical techniques (claim element 1.c.ii).

See Reply at 1-11.

First, it argues that Cable explicitly discloses removal and an argument based on “residue” is improper. *See* Reply at 1-2, 2-5. However, when considering Cable’s teachings as a whole, rather than improperly picking and choosing statements in isolation, it is clear that Cable teaches there is residue and/or a need for chemical/mechanical removal. In particular, Cable shows that there is residue, which indicates that the 3D object was not completely removed and that cleaning, via chemical or mechanical means, is necessary to reuse Cable’s substrate. *See* POR, 32-38; EX2009, ¶¶95-106; *see, e.g.*, EX1006, [0052], [0082], [0067], [0085]-[0087].

Moreover, Petitioner cannot avoid the full scope of Cable’s disclosure, which does not support Petitioner’s conclusion, by attempting to cabin Cable’s working examples as “the preferred embodiment” or blaming Patent Owner’s expert, Dr. Osswald for contradicting Cable. *See* Reply at 2-3, 4-5. Indeed, Petitioner makes a bold assertion that Dr. Osswald “has no corroborating

evidence” (Reply at 4), but Petitioner ignores the extensive evidence from Cable that Dr. Osswald discussed and analyzed. *See* EX2009, ¶¶95-106; *see also id.* at ¶¶97-101 (discussing Example 2 from Cable in the context of Cable’s teachings); ¶¶103-104 (discussing Example 1 from Cable); ¶¶105-106 (discussing Example 3 from Cable); *see also* EX1040, 17,19-21, 84:11-85:5 (explaining that he saw visible damage in the parts printed by Cable, contrary to Petitioner’s assertion that he did not describe residue (*see* Reply at 4-5)). Further, Cable never discloses or teaches that damage was avoided in Examples 1 and 3. Reply, 3. Cable only states that the object was not damaged *after removal*. It is silent as to whether there was damage caused during removal. *See* EX1006, [0085], [0087]. As Dr. Osswald explained, the visible residue represents a visible portion of the object that was not properly removed and that must be removed mechanically or chemically from the substrate before using the substrate again. EX2009, ¶¶103-104 (Example 1), 105-106 (Example 3). Thus, Dr. Osswald does not contradict Cable at all. His un rebutted testimony simply explains what Cable teaches to a POSITA.

In addition, Cable’s aspirational statements, such as that the object “*can be* removed” with “minimal or no damage” (*see, e.g.*, EX1006, [0052]), must be read in light of Cable’s full disclosure, including his working examples that illustrate his disclosure and teachings where there are residue and/or damage. *See W.L. Gore & Assoc., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1550 (Fed. Cir. 1983) (“In its

consideration of the prior art, however, the district court erred ... in considering the references in less than their entirety, i.e., in disregarding disclosures in the references that diverge from and teach away from the invention at hand.”).

Petitioner does not rebut Patent Owner's evidence that Cable's teachings, when considered as a whole, show there is residue and damage. *See* Reply, 2-3. Instead, Petitioner continues its approach of improperly picking and choosing statements from Cable divorced from their context. Petitioner asserts that Cable's examples do not limit his description that the Petition cites. *See id.* But Cable does not say his description is not limited by his examples, as Petitioner contends. Cable says the figures “do not limit the scope of the disclosure described in the claims.” EX1006, [0084]. In contrast to the claims that Cable says are not limited by his figures, Cable expressly links his examples to the very concepts and description that Petitioner relies upon, stating that the “concepts described herein will be further described in the following examples” *See id.* In short, Cable's examples illustrate his concepts, whereas his claims are not limited to his figures. *See id.*

Further, as explained above in the section on claim construction, Petitioner's claim construction argument is both untimely and incorrect. *Supra* Section II. Petitioner implicitly attempts to redefine the claims so that “damag[e]” does not encompass residue left on the plate from the bottom of the object. *See* Reply, 3-4.

As explained above, the plain meaning of “damag[e]” with respect to the polymer coating and 3D object is that removal does not destroy the coating’s ability to perform its stated functions and that removal does not separate a portion of the object, such as the bottom layers, from the rest of the object. As Patent Owner explained, Cable shows visual residue remaining on the surface of the build plate, indicating damage to both the plate and the 3D object, because the plate cannot be re-used without chemical or mechanical techniques and because a portion of the object (in the form of visible residue) has been separated from the rest of the object. *See* POR, 32-38; EX2009, ¶¶95-106; *see, e.g.*, EX1006, [0052], [0082], [0067], [0085]-[0087]. Under this plain meaning, Patent Owner’s explanation remains unrebutted.

Second, Petitioner argues that Cable has an enabling disclosure for 3D object removal without visual residue. Reply, 5-11. In support, Petitioner incorrectly describes the burden of rebutting enablement of a prior art reference as a “high hurdle.” *See Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1349 (Fed. Cir. 2015) (en banc) (rejecting a “heightened burden” in the context of a presumption invoking §112, para. 6 because it “is uncertain in meaning and application, and has the inappropriate practical effect of placing a thumb on what should otherwise be a balanced analytical scale.”).

Petitioner argues that there is insufficient evidence that experimentation would not be routine, that self-enablement is not necessary, and that less than perfect predictability is not sufficient. *See* Reply, 6-8. However, Petitioner's arguments overlook the facts of the cases it relies upon and the fact that there would have been undue experimentation.

In *Agilent Technologies, Inc. v. Synthego Corp.*, the Federal Circuit distinguished Agilent's arguments from those in other cases because the Board found a POSITA understood "how the different elements of a [] system are used and function together" and "the types of chemical modifications that had been successfully used in other systems to" achieve the invention. 139 F.4th 1319, 1329 (Fed. Cir. 2025). In contrast to the facts in *Agilent*, nothing in Cable or Petitioner's evidence explains how the different elements of Cable's system are used and function together to achieve removal without damage, much less how undue experimentation could be used to achieve the claims of the '660 Patent. *See* POR, 38; EX2009, ¶¶95-107; Pet. 9-26; *see also* EX1006, at [0085]-[0087], Figs. 7-11. Dr. Osswald detailed that Cable does not explain how to perform such experimentation. *See* EX2009, ¶107. He concluded that extensive experiments would need to be run, but even then, only "possible solutions" could be identified. *See id.* He also detailed the steps that could be required, including the need to identify possible materials for many things, possible sizes of the identified

materials, and other conditions. *See id.* He also concluded that “Cable does not have an enabling disclosure sufficient to allow a POSITA to practice claim 1 of the ’660 Patent without undue experimentation” (*see id.*) — a conclusion that directly contradicts Petitioner’s argument that the only critique was whether Cable was self-enabling. *See Reply* at 7.

Further, whether a reference has self-enablement “is not only relevant to the enablement analysis” it can be “dispositive” where the reference is the sole evidence for enablement. *Raytheon Techs. Corp. v. Gen. Elec. Co.*, 993 F.3d 1374, 1381-82 (Fed. Cir. 2021). Here, Petitioner relies on Cable to show enablement. *See Reply*, 8-11. However, Petitioner’s contention consists of unsupported attorney argument about Cable’s teachings. *See id.* Cable does not express “full confidence” as Petitioner alleges. Petitioner’s arguments that Cable provides teachings about surface energies, solubility parameters, materials, and temperatures, were recognized by Dr. Osswald. *See EX2009*, ¶107. But none of these teachings address the core problem for Cable: Cable can only speculate why his solution will not work to achieve no damage such that there is no visible residue. Cable expressly recognizes that he is not tied to “any particular theory” and merely suggests that “the differences between the physical characteristics of the substrate and the material of the object in addition to the lack of heating of the 3D printer

platform *may have* prevented sufficient bonding to take place.” EX1006, [0088]; *see also* EX2009, ¶107 (explaining the unpredictable nature of Cable’s teachings).

Petitioner attempts to play the role of a POSITA and claim with certainty that Cable would have been successful “had the surface energies of the substrate and build material been within” 10%. Reply, 9-10. But as discussed above, Cable can only speculate why his solution will not work; he does not provide certainty to a POSITA. *See* EX1006, [0088]; EX2009, ¶107. This is not optimization or a confirmation of Cable’s “earlier teachings,” as Petitioner claims. *See* Reply, 9-10. Rather, a POSITA has no direction on how the different elements of Cable’s system are used and function together to achieve removal without damage, much less the types of experiments to show successful removal without resorting to undue experimentation. *See* EX2009, ¶107.

Not only should Petitioner’s attorney argument be rejected, it yet again shows why Petitioner fails to appreciate the full disclosure of Cable, ignoring the teachings of Cable that are inconvenient for Petitioner. This approach is incorrect, as it resorts to hindsight. Based on the full disclosure and teachings of Cable, the record confirms that it is undue experimentation for a POSITA to determine how to achieve removal without damage such that there is no visible residue because Cable does not provide sufficient direction or guidance. *See* EX2009, ¶107; *see also Impax Labs., Inc. v. Aventis Pharms., Inc.*, 545 F.3d 1312, 1315 (Fed. Cir.

2008) (finding reference disclosing many “compounds” and “diseases” with “broad and general” guidelines is not enabled without “sufficient direction or guidance to prescribe a treatment regimen”).

Thus, Ground 1 cannot render the challenged claims unpatentable.

B. There is no teaching of a non-tape polymer coating

Petitioner also argues that Cable teaches a non-tape polymer coating or that it would have been obvious to modify Cable to use one (claim element 1.c.iii). *See* Reply at 11-13, 14-16.

First, Petitioner ignores Cable's teachings in asserting that Cable teaches a non-tape polymer coating. Reply, 11-13. It misinterprets Dr. Osswald's book to claim that he now takes a different position. *See id.* at 11-12 (citing EX1042, at 4). Dr. Osswald explained that “a POSITA would have understood that a coating can commonly refer to a tape that is used in the process of making a coated surface.” EX2009, ¶111. He provides examples from the '660 Patent, as well as other references. *See* EX1001, 1:54-56; EX1011, 269; EX2017, 14, 22 (describing “polymer tapes were also used as coatings in other fields”). Similarly, Dr. Osswald's book explains that one type of coating (“coating a liquid film”) can be done on “adhesive tapes.” EX1042, 4. That is, the adhesive tape includes a coating and therefore is considered a coating because it is applied to another surface. *See*

EX1040, 56:13 (“Films that are used for coatings like tape coatings”); *see also id.*, 75:9-12, 76:16-20, 78:24-25.

Petitioner proceeds to repeat its position from the Petition that tapes are not coatings. *See* Reply 12-13. Patent Owner explained in its Response that nothing in Cable teaches this flawed conclusion. *See, e.g.*, POR at 41; EX2009, ¶¶111-12. Petitioner also claims that Patent Owner should know the distinction by pointing to Comb (EX1004) and another reference (EX1043). *See* Reply 12-13. However, neither reference supports Petitioner's flawed conclusion — Comb does not teach that a coating connotes a structure that is not a tape (*see* POR, 63; EX2009, ¶168) and the other reference (EX1043) merely provides non-limiting examples of coatings without listing tapes. *See* EX1043, ¶[0043].

Petitioner also uses attorney argument to supplant how a POSITA would understand tapes, arguing that Patent Owner's evidence is “an exception” to Petitioner's “general rule.” Reply 13. What Petitioner contends is “cherry-picked” is a recognition by a POSITA that a polymer coating does not connote a non-tape structure, in the field of 3D printing and beyond. *See, e.g.*, EX2009, ¶111. Petitioner also raises a new, unsupported argument arguing that “tape coating” is different than “tape” in Cable. Reply, 13. Petitioner could and should have raised this untimely argument in its Petition. Also, it appears that Petitioner's own expert

disagrees with Petitioner. *See* EX1003, ¶98 (addressing Cable and “non-tape coating”). It remains rebutted that Cable does not teach a non-tape coating¹.

Second, Petitioner asserts that it would have been obvious to apply Cable's coating without using tape. Reply 14-16. In doing so, Petitioner presents a new obviousness theory: “two predictable choices” would have been obvious. Reply 14. This theory is waived as it is improper for Petitioner to present it in its Reply. *See Intelligent Bio-Systems, Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1369-70 (Fed. Cir. 2016).

To the extent Petitioner is relying on the obviousness theory it presented in its Petition (“obvious to pursue a non-tape solution” (Pet., 26)), Patent Owner explained why it would not be obvious to use a non-tape coating in Cable in its Response — arguments that remain unrebutted by Petitioner. *See* POR 44-46.

Even if the Board were to consider Petitioner's new arguments, there is still no teaching of a non-tape polymer coating. Petitioner's new arguments center on background references (EX1018/EX1019) and the '660 Patent. However, the background references teach a polymer for “a heated glass” whereas Petitioner relies on a metal plate as the “thermally conductive plate” in its grounds. Pet., 20. Petitioner provides no explanation why a polymer for glass would be applied to a

¹ Indeed, Petitioner fails to rebut that a POSITA would have understood Cable to teach using painter's tape. *See* POR 41; EX2009, ¶¶111-112. It merely speculates about what Cable would have done. Reply, 12.

metal plate in its combination with Cable. Moreover, relying on the '660 Patent to provide a motivation for the combination is hindsight. Petitioner's reliance on *Sanofi-Aventis Deutschland GmbH v. Mylan Pharms. Inc.* is unavailing because that non-precedential decision merely involved a patent cited to show that insulin was known. 791 F. App'x 916, 923 (Fed. Cir. 2019). However, using the patent to supply a motivation to combine is a different matter. The Federal Circuit has made it clear that "the suggestion to combine [] must not be derived by hindsight from knowledge of the invention itself." *Cardiac Pacemakers, Inc. v. St. Jude Medical, Inc.*, 381 F.3d 1371, 1376 (Fed. Cir. 2004). While using polyimide tape may have been known, there is no such evidence of the problems with polyimide tape that led to the invention itself, much less the newly raised genus-species argument by Petitioner (Reply, 16). See EX2009, ¶115 (explaining EX1011 provides "nifty way" to apply polyimide tape with known advantages); compare EX1001, 1:49 ("Polyimide tape **has been** applied") with 1:51-52 ("Applying polyimide tape **is** a difficult process").

C. Dependent Claims 4, 7, and 11

Petitioner raises arguments in its Reply for dependent claims 4, 7, and 11. Reply 17-19. For claim 4, it argues that thermocouples were known in 3D printing "for sensing the temperature of a heated printbed surface." Reply 17. Petitioner does not otherwise respond to Patent Owner's arguments. See *id.*; see also POR

47-48; EX2009, ¶¶119-122. Claim 4 recites thermocouples situated at one or several locations to provide feedback to a controller to maintain temperature set points. Petitioner does not provide any evidence that the thermocouples in 3D printing are used to provide this functionality. Instead, Petitioner points to some electronic main-boards that may have the capability of reading from thermocouples. EX1011, p.36. There is no teaching or suggestion that the thermocouple is used for the heated print-bed, as Petitioner adds with its own annotations (which are not evidence). Reply, 17. Nor is there any suggestion that thermocouples are used for feedback, much less feedback to maintain temperature set points.

For claim 7, Petitioner fails to show that the specific claimed plate materials in the context of the proposed combination. Reply 18. Even if the materials were selected, it remains uncontested that Patent Owner explained and provided evidentiary support that Cable's solution would not have worked. *See id.*; POR 48-51; EX2009, ¶¶125-129. Not working is far from a "suitable" option, as Petitioner contends. Reply, 18.

For claim 11, Petitioner attempts to fix its flawed rationale provided in its Petition by stating Cable curtails Petitioner's failure by restricting differences in surface energy. Reply 18-19. Petitioner looked to surface texturing for "increasing surface energy" to increase adhesion. Pet., 35. Patent Owner explained that

Petitioner's rationale conflicted with Cable's teachings. POR 51-52; EX2009, ¶¶134-136. Petitioner's attempt to change its rationale and theory to avoid conflict with Cable is untimely and should be rejected. *See Intelligent Bio-Systems*, 821 F.3d at 1369-70.

For these reasons, the Board should find that Petitioner has failed to show unpatentability of the challenged claims under Ground 1A.

IV. THE CABLE-KRITCHMAN COMBINATION IS FLAWED

Patent Owner explained in its Response that, among other things, Ground 1B does not teach claim 4. POR, 53-54. Petitioner argues that Patent Owner only addresses the references individually. Reply, 19-20. However, Petitioner ignores the very language of the Response, which addresses "Kritchman as described in the combination." POR 53. Petitioner's confusion in its Reply stems from its failure to understand Kritchman's disclosure as it relates to its combination. Patent Owner addressed Petitioner's design choice theory and Kritchman's teachings, which use a temperature sensor for controlling the temperature **of the object**, not for the controlling the temperature **of the printing tray**. POR, 53-54; EX2009, ¶¶143-144. There would have been no motivation to use thermocouples for the sensor used for controlling the printing-tray temperature, and thus there cannot be a "motivat[ion] to implement Kritchman's temperature sensor as thermocouples" in the Cable-Kritchman combination. POR, 54; EX2009, ¶¶144-146. Petitioner

plainly ignores Patent Owner's argument that there is no motivation to select thermocouples as a design choice for a temperature sensor in Ground 1B. POR, 53. Further, Petitioner's argument that the printed-tray temperature is measured and controlled is neither taught by Kritchman nor is there a motivation for such a combination. *See id.*

V. THE CABLE-NAWARE/KRITCHMAN-COMB GROUND IS ALSO FLAWED

The challenged claims are not unpatentable under Ground 1C for the reasons discussed above for claim 1.

VI. THE COMB-TUMMALA COMBINATION IS ALSO FLAWED

A. There is no teaching of a non-tape polymer coating

Petitioner repeats its arguments from the Petition on Comb's coating without addressing Patent Owner's arguments, including those related to the prosecution history involving Comb. Reply, 20-21; *see* POR, 62-63. Moreover, there is no rationale for applying claim construction principles to the word "or" in Comb's disclosure, much less to do so without consulting the intrinsic record of Comb as a whole. Patent Owner provided arguments in the context of Comb's full disclosure (POR, 62-63) and Petitioner does not address this in its Reply. Reply, 20-21.

Petitioner also argues that Comb has "a polycarbonate-coating top film" for ABS and polycarbonate part materials and asserts that these materials were "known to require heated print surfaces." Reply, 21. Petitioner's argument is

untimely and misses the mark. First, Petitioner should have raised this theory in its Petition. By failing to do so, Petitioner has waived the right to raise a new theory in its Reply.

Second, as Patent Owner's expert explained, a POSITA would have recognized that polycarbonate film for top film 36a in Comb is an example of using a tape to apply a coating. *See* EX2009, ¶169; EX1004, 8:29-42.

Third, the evidence that Petitioner presents with its untimely argument does not even show that ABS and polycarbonate require a heated build surface or plate. The reference states "the platform has to be kept warm" and recognizes that only some printers have heated platforms, but it merely states that printers without heated platforms "**probably**" cannot print in these materials. EX1045, 5. Contrary to this reference, however, Comb recognizes alternatives to heated platforms, such as a "heated chamber" that provides heat without directly providing a heated print surface or plate. EX1004, 7:48-53; *see also* EX1006, [0044] ("a chamber or other enclosure where temperature" is controlled). Thus, even if these materials need to be kept warm, there is no evidence that Comb, alone or in the combination, requires or teaches a heated build platform for these materials.

In addition, Petitioner relies on applying Comb's coating as a gel, as taught by Tummala. Reply, 21-22. Petitioner claims that polyimide is not the only polymer that Comb describes, pointing to polycarbonate, but presents no evidence

why polycarbonate would lead to a different result. *See id.* It also claims a distinction between making a gel at room temperature as opposed to applying the gel at room temperature, but it again fails to explain why a gel at room temperature is different than a gel made at room temperature. *See id.* Contrary to Petitioner's unsupported conclusion, Dr. Osswald recognized Tummala's teaching of a viscous gel at room temperature and yet concluded that it would not have been obvious to make Comb's gel at room temperature. *See* EX2009, ¶170. Petitioner also confuses the enablement of a reference for enablement of a combination. *See* Reply, 22. There is no presumption of obviousness or a reasonable expectation of success for a combination (e.g., applying Comb's coating as a gel according to Tummala).

B. There is no teaching of removing the 3D object without damage and without chemical or mechanical techniques

Petitioner claims for claim element 1.c.ii that Patent Owner focused solely on Tummala and not the disclosures of Comb. POR 22². But Patent Owner's argument is logically flawed. Patent Owner explained why Comb does not teach a non-tape polymer coating, much of which Petitioner does not rebut in its Reply. *See* POR 62-63; Reply 20-21. Patent Owner then addressed the combination of Comb and Tummala to modify Comb's coating in view of Tummala. *See* POR, 21.

² Petitioner does not address Patent Owner's arguments regarding claim element 1.c.i and facilitating adhesion. *See* Reply, 20-22; POR, 65-68.

There is no mapping or explanation in the Petition why Comb's disclosures about a tape coating would apply, in isolation and without consideration of Tummala, to a coating applied as a gel in view of Tummala. Pet., 62-68. If anything, Petitioner has waived any argument that Comb's disclosures apply, in isolation, in such a combination. *See In re Magnum Oil Tools Int'l, Ltd.*, 829 F.3d 1364, 1378-79 (Fed. Cir. 2016) (Petitioner bears the burden of proof).

Petitioner also relies on attorney argument to assert that Tummala teaches a reusable coating. Reply, 23. Patent Owner provided evidence from Tummala, supported by its expert, Dr. Osswald, that shows Tummala teaches a non-reusable coating that must be applied at the start of each print. POR 64-65; EX2009, ¶¶172-173 (citing and discussing numerous paragraphs of Tummala). Petitioner's unsupported attorney argument is apparent. It argues that reapplication would be "tedious and time consuming"³ but fails to appreciate that Tummala is not addressing removal of a gel coating but rather extruded material. EX1005, [0006] (desiring removal of "the extruded print material or support material" but it can be "tedious and time consuming"). Unlike extruded-material removal, Tummala teaches that many of its gel adhesives are water soluble and easily removable. *See* EX2009, ¶172; EX1005, [0058]. Petitioner cannot claim that these disclosures are

³ Petitioner cites to [0060] of Tummala, which does not mention "tedious and time consuming." Reply, 23.

enough to show that Tummala is capable of removal without damage and without chemical or mechanical removal given un rebutted explanation of Tummala's teachings.

Petitioner also argues that Tummala's extensive testing and examples are non-limiting. POR 23-24. It also points to "temperature dependent" embodiments. *See id.* It incorrectly claims there is no explanation for these teachings. Patent Owner's expert, Dr. Osswald explained that he interpreted Tummala's general statements in light of Tummala's entire disclosure. *See* EX2009, ¶¶174, 176; 174-179 (cited by POR, 65-66). This includes the statements that Petitioner raises in its Reply. POR 23-24. In addition, Dr. Osswald discussed the temperature dependent properties of Tummala's adhesive. *See* EX2009, ¶¶176-179 (cited by POR, 66). Thus, when a POSITA considered other aspects of Tummala's disclosure, as Dr. Osswald did, the result is the same: Tummala, whether considered alone or in the Comb-Tummala combination, does not teach or suggest claim 1.

C. Dependent Claim 11

Petitioner argues that implementation requirements are not necessary to the Petition's analysis. POR, 24. This conclusory assertion is factually and legally flawed. Petitioner plainly relies on its expert to argue claim 11 is obvious. Pet., 73. In response, Patent Owner argued that there would be no reasonable expectation of success in the combination Petitioner proposes. POR, 70-71; EX2009, ¶¶184-186.

Petitioner has the burden to show a reasonable expectation of success and has failed to do so by failing to rebut Patent Owner and the evidence presented. Thus, claim 11 is not obvious.

VII. THE COMB-TUMMALA-KRITCHMAN COMBINATION IS FLAWED

The challenged claims are not unpatentable under Ground 2B for the reasons discussed above for claim 1. Further, for the reasons provided above (and in Patent Owner's Response) for Kritchman and Ground 1B, the challenged claims are not rendered obvious in Ground 2B.

VIII. PETITIONER'S POSITIONS IN THE DISTRICT COURT DO IMPACT THIS IPR

Petitioner contends that the preliminary constructions in the district court litigation do not impact this proceeding. Reply, 24-25. However, Petitioner fails to address its contrary positions taken in district court. Petitioner has asserted that no construction is necessary for "a polymer coating ... wherein the polymer coating is not a polymer tape" and yet argues in this proceeding that tapes are not coatings. *See* EX2018, 14. Petitioner has also asserted in district court that several terms besides the thermally conductive plate are indefinite, including "without chemical or mechanically removing the polymer coating from the 3D object" and "without damaging the polymer coating" *See id.*, 15. Yet here, Petitioner's own expert testified that these terms, as others, should receive their plain meaning. *See, e.g.*, EX2010, 47:20-48:11, 48:20-49:6, 49:7-50:9, 51:8-18. Petitioner completely

ignores these inconsistent positions it has taken between the proceedings. It has not agreed to use the same claim construction between the proceedings, nor could it.

See Caption Health, Inc. v. The University of British Columbia, IPR2025-01422, Paper 15 at 3 (Dec. 18, 2025); *see also Revvo Tech., Inc. v. Cerebrum Sensor Tech., Inc.*, IPR2025-00632, Paper 20 (Nov. 3, 2025) (precedential). Petitioner's failure to explain its inconsistent positions underscores the fact that the co-pending district court litigation has and will continue to impact this IPR.

IX. CONCLUSION

For the foregoing reasons, Petitioner has failed to show by a preponderance of the evidence that any of the asserted grounds render any of the challenged claims obvious. The Board should find in favor of Patent Owner and uphold the validity of the challenged claims.

Respectfully submitted,

Dated: February 13, 2026

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CERTIFICATE OF COMPLIANCE

Pursuant to 37 C.F.R. § 42.24(d), I certify that this Sur-Reply complies with the type-volume limits of 37 C.F.R. § 42.24(c)(4) because it contains 5,541 words, excluding the parts that are exempted by 37 C.F.R. § 42.24(a), according to the word processing system used in preparation of this Sur-Reply.

Dated: February 13, 2026

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CERTIFICATE OF SERVICE

Pursuant to 37 CFR § 42.6(e)(4), the undersigned certifies that on February 13, 2026, a complete copy of the foregoing Patent Owner's Sur-Reply was served on Lead and Back-up Counsel for Petitioner at the service address provided in Petitioner's Mandatory Notices:

Email: IPR56224-0006IP1@fr.com

Dated: February 13, 2026

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