

UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO. LTD.,
SAMSUNG ELECTRONICS AMERICA, INC.,
SAMSUNG SEMICONDUCTOR, INC., and
SAMSUNG AUSTIN SEMICONDUCTOR, LLC

Petitioner

v.

CHIEN-MIN SUNG

Patent Owner

Case: IPR2024-00533

U.S. Patent No. 8,974,270

CORRECTED PATENT OWNER'S PRELIMINARY RESPONSE

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TABLE OF EXHIBITS

Exhibit	Description
2001	Data on EDTX Motions to Stay Pending Inter Partes Review compiled by www.docketnavigator.com
2002	Declaration of Stanley Shanfield, Ph.D. in Support of Defendants' Proposed Claim Constructions in <i>Chien-Min Sung v. Samsung Electronics Co. Ltd., Samsung Electronics America, Inc., Samsung Semiconductor, Inc., and Samsung Austin Semiconductor, LLC</i> (E.D. Tex.), executed May 15, 2024
2003	Volume 2 of Deposition Transcript of Stanley Shanfield in <i>Chien-Min Sung v. Samsung Electronics Co. Ltd., Samsung Electronics America, Inc., Samsung Semiconductor, Inc., and Samsung Austin Semiconductor, LLC</i> (E.D. Tex.), held on May 28, 2024

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Through the undersigned Counsel, Patent Owner Chien-Min Sung (“Dr. Sung,” “Patent Owner,” or “PO”) submits the following Patent Owner Preliminary Response (“POPR”) pursuant to 37 C.F.R. § 42.107(a):

I. INTRODUCTION

The *Inter Partes* Review Petition (the “Petition”) filed by SAMSUNG ELECTRONICS CO. LTD., SAMSUNG ELECTRONICS AMERICA, INC., SAMSUNG SEMICONDUCTOR, INC., and SAMSUNG AUSTIN SEMICONDUCTOR, LLC (“Samsung” or “Petitioners”) against U.S. Patent No. 8,974,270 (“’270 Patent”) should be denied for two reasons.

First, the Board should exercise its discretion under 35 U.S.C. § 314(a) to deny the Petition because there exists a parallel district court proceeding between the parties in which the ‘270 Patent is asserted, and the district court will likely have addressed the validity of the challenged claims over the same prior art references cited in the Petition by the projected date of a Final Written Decision (“FWD”) in late September 2025. The district court proceeding is already at an advanced stage, with the parties set to have a Final Pretrial Conference on September 3, 2025, and trial to follow shortly thereafter, *before* the projected date of the FWD in this proceeding.

Pursuant to *NHK Spring Co. v. IntriPlex Techs.*, IPR2018-00752, Paper 8, at

19–20 (P.T.A.B. Sept. 12, 2018) (precedential), and on a balancing of the factors enumerated in *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11, at 6 (P.T.A.B. Mar. 20, 2020) (precedential) (“*Fintiv I*”), it would be an inefficient use of the Board’s, parties’, and judicial resources to institute the present proceeding under these circumstances. Indeed, the possibility of duplication of efforts here is high, as is the potential for inconsistent results, should the Board decide to institute.

Second, even if the Board declines to exercise its discretion, the instant Petition should be denied because it fails to establish a reasonable likelihood that any of the challenged claims is unpatentable. More specifically, Petitioners’ cited references do not teach or suggest “a first monolayer of superabrasive particles . . . , wherein the difference in protrusion distance between the highest protruding tip and the second highest protruding tip of the monolayer of superabrasive particles is less than or equal to about 50 microns,” as recited in claim 1. Further, Petitioners’ collateral estoppel argument does not apply to these proceedings because the claims of the ’270 patent present new issues of validity from those of the previous proceeding. Petitioners also fail to meet their burden regarding any motivation to combine the cited references, and Petitioners fail to identify with particularity how its cited references are applicable given the conflicting testimony of its expert in this proceeding versus that of the district court litigation.

For each of these reasons, the Petition should be denied.

II. REVIEW SHOULD BE DENIED BECAUSE THE COURT CASE BETWEEN THE PARTIES WILL TRY VALIDITY TO A JURY BEFORE THIS IPR WOULD CONCLUDE

The Board should exercise its discretion under § 314(a) and deny the Petition because institution of this proceeding would not be consistent with the objective of the AIA to “provide an effective and efficient alternative to district court litigation.” *NHK*, IPR2018-00752, Paper 8, at 20 (citing *General Plastic Indus. v. Canon Kabushiki Kaisha*, IPR2016-01357, Paper 19, at 16–17 (P.T.A.B. Sept. 6, 2017) (precedential)).

In keeping with the precedential decision in *NHK*, “a parallel proceeding in an advanced state implicates considerations of efficiency and fairness, which can serve as an independent reason to apply discretion to deny institution.” *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 15, at 11 (P.T.A.B. May 13, 2020) (“*Fintiv II*”). Indeed, the Board held in *NHK* that the state of a parallel district court proceeding may be an additional factor (beyond those identified in *General Plastic*) that weighs in favor of denying a petition under § 314(a). *IPR2018-00752*, Paper 8, at 20.

Here, there exists a parallel district court proceeding between the same parties (Petitioners and Patent Owner) regarding the same '270 Patent: *Sung v. Samsung*

Electronics Co. Ltd., et al., Case No. 4:23-cv-752-SDJ (E.D. Tex.) (Aug. 21, 2023). (Pet. at 1.) That action has already begun claim construction briefing, with a claim construction hearing scheduled to occur on September 4, 2024, almost a month **prior to** the Board’s institution decision deadline. (Ex. 1012 at 2.) Further, any trial before the Board here will likely not conclude until the end of September 2025—almost a month after the final pretrial conference, and likely weeks after the district court trial. (Ex. 1012 at 5.) This relative timeline strongly favors denial of the Petition in accordance with *NHK* and *Fintiv I*.

The totality of these circumstances is contrary to the AIA’s goal of providing “an effective and efficient alternative to district court litigation.” *See NHK*, IPR2018-00752, Paper 8, at 20. Indeed, allowing this IPR to proceed in parallel with the district court proceeding would increase, rather than limit, the parties’ litigation costs.

A. *NHK* and Its Progeny

The circumstances here are the type that the Board has consistently found warranted a denial of institution under 35 U.S.C. § 314(a) and *NHK*.

In the precedential *NHK* decision, on efficiency grounds, the Board exercised discretion under § 314(a) to deny a petition involving the same patent, the same parties, the same claim construction standard, and “the same prior art and

arguments” as the district court proceeding set to begin trial approximately six months before the statutory deadline for a Final Written Decision (“FWD”). IPR2018-00752, Paper 8, at 20.

Since *NHK*, the Board has continued to exercise its discretion to deny petitions in similar circumstances. For example, in *Supercell Oy v. GREE, Inc.*, the Board denied institution of a petition in view of the advanced state of a parallel district court proceeding involving the same parties—one that would be scheduled for trial before the Board on the same date, and also on the same schedule, as the parallel district court proceeding. IPR2020-00310, Paper 13 (P.T.A.B. June 18, 2020).

Similarly, in *Fintiv I*, the Board, relying on *NHK*, denied institution where: (a) “[t]he same art” was presented in both proceedings; and (b) jury trial in the district court proceeding was set to begin “approximately two months before a final written decision would be due in [the Board] proceeding.” IPR2020-00019, Paper 15, at 7–17.

B. Analysis of the *Fintiv I* Factors Favors Denial

The facts surrounding the present Petition warrant exercise of the Board’s discretion to deny institution under § 314(a) for the same reasons as in *NHK* and its progeny. Indeed, each of the Board’s identified factors relating to “whether efficiency, fairness, and the merits support the exercise of authority to deny

institution in view of an earlier trial date in the parallel proceeding” in line with *NHK*—supports denial here. *Fintiv I*, IPR2020-00019, Paper 11, at 6. A balancing of these factors demonstrates that efficiency and integrity of the AIA are best served by denying institution.

1. *Fintiv* Factor 1: No Stay Has Been Granted in the District Court Proceeding and No Evidence Exists that One May Be Granted If a Proceeding Is Instituted

This factor weighs in favor of discretionary denial because while a district court determines whether to grant a stay to resolve an IPR based on the facts of each case, there is little evidence here to suggest that the district court would grant such a stay if a proceeding is instituted. In fact, a stay is extremely unlikely.

Indeed, the courts in Eastern District of Texas “have uniformly denied motions for a stay” “when the PTAB has not yet acted on a petition for inter partes review.” *Trover Group, Inc. v. Dedicated Micros USA*, No. 2:13-cv-1047-WCB, 2015 U.S. Dist. LEXIS 29572, at *6 (E.D. Tex. Mar. 11, 2015) (Bryson, J.). The *Trover* ruling was further solidified in *AR Design Innovations LLC v. Ashley Furniture Indus., Inc.*, No. 4:20-CV-392, 2021 U.S. Dist. LEXIS 250577 (E.D. Tex. Jan. 11, 2021) (Jordan, J.), denying as premature motions to stay patent cases prior to institution. Since Judge Jordan assumed office on August 20, 2019, the Eastern District of Texas has granted 51 Motions to Stay Pending Inter Partes Review and

denied 87, not counting those that were granted and denied in part, creating a greater-than 60% chance a stay would be denied. (Ex. 2001.) Given the district court litigation is in the Eastern District of Texas, is in Judge Jordan's Court, and Judge Jordan decided the *AR Design Innovations* decision, it is unlikely that any stay would be granted prior to institution. The parties met and conferred on a proposed stay related to a motion for summary judgment but no agreement was reached.

As noted above, any decision from this Board regarding institution is due after the claim construction hearing, just two months prior to the burden-of-proof expert report deadline, and less than a year before trial. By that time, the late stage of the district court proceeding will even further weigh against a stay.

Accordingly, this first *Fintiv* factor weighs in favor of discretionary denial.

2. *Fintiv* Factor 2: The Court's Trial Date Is Before, or Contemporaneous with, the Board's Projected Statutory Deadline for a FWD

"If the court's trial date is earlier than the projected statutory deadline, the Board generally has weighed this fact in favor of exercising authority to deny institution under *NHK*." *Fintiv I*, IPR2020-00019, Paper 11, at 9. Such is the case here.

In the parallel proceeding, the Final Pretrial Conference is currently scheduled for September 3, 2025, with trial expected to begin as soon as practicable thereafter.

(Ex. 1012 at 5.) In other words, if the Board were to institute trial here, the district court trial is scheduled to conclude before, or contemporaneously with, the expected FWD in late September 2025.

As noted above, the Board has consistently denied institution in cases involving similar or smaller gaps between the trial date and the statutory deadline for a FWD. *See, e.g., E-One, Inc. v. Oshkosh Corp.*, IPR2019-00161, Paper 16, at 6–9 (P.T.A.B. May 15, 2019) (***one-month gap***); *ZTE USA Inc. v. Fractus SA*, IPR2018-01461, Paper 10, 16-17 (P.T.A.B. Feb. 28, 2019) (“substantially the same grounds” raised, claim construction issued, court “likely to go to trial before a final decision is reached”).

Petitioners admit that Final Pretrial Conference is scheduled for September 3, 2025, but claims without support that the trial “is expected to occur” after the statutory deadline for the Board’s FWD. (Pet. at 63.) PO has no reason to believe that trial will be scheduled to occur more than a month after the Final Pretrial Conference. In PO’s experience, trial usually occurs within a week or two of the final pretrial conference in the Eastern District of Texas.

The second *Fintiv* factor therefore weighs in favor of discretionary denial.

3. *Fintiv* Factor 3: There Has Been Immense “Investment in the Parallel Proceedings by the Court and Parties”

This factor weights strongly in favor of denying institution because the parties

and the district court here have already invested substantial resources, and will have invested even more resources, in the parallel district court proceeding by the institution deadline of September 28, 2024. For example, in addition to the extensive, hard-fought third-party discovery already obtained, and continuing to be obtained, by both parties, the parties have spent or will have spent considerable time and resources in completing claim construction, with the opening claim construction brief filed on June 12, 2024 (Dkt. 64), the responsive claim construction brief due on July 3, 2024, the reply claim construction brief due on July 17, 2024, the technology tutorial due July 31, 2024, and the *Markman* hearing scheduled for September 4, 2024. (Ex. 1012); Additionally, expert reports for which each party has the burden of proof are due on November 27, 2024, just two months after the institution deadline, with rebuttal expert reports due a month later on December 23, 2024.

In granting a discretionary denial in *Cisco Sys., Inc. v. Ramot at Tel Aviv Univ. Ltd.*, IPR2020-00122, Paper 15 (P.T.A.B. May 15, 2020), the Board considered facts very similar to those here. There, the Board found Factor 3 favored denying institution, noting that “at the time of this decision, the parties have spent months briefing the district court on the claim construction issues,” that “[t]he parties submitted claim construction charts and briefs,” a claim construction hearing was

held prior to the institution decision date, and expert discovery was scheduled to be completed within two months of the institution decision deadline. *Id.* at 8–9.

The facts are similar here. Claim construction briefing will have been concluded for two months, with the *Markman* hearing scheduled weeks before the institution decision deadline. The deadline for initial expert reports is also within two months of the institution deadline, with rebuttal expert reports due just a month later. The hefty investment scheduled to occur before this Board decides whether or not to institute indicates that the district court parallel litigation will be in an advanced state and, thus, weighs against institution.

Petitioners contend that the parallel litigation is “in its early stages” and “the investment in it has been minimal” because the parties “have not exchanged preliminary positions on claim construction, and discovery has just begun.” (Pet. at 63.) First, Petitioners knew that claim construction would be in an advanced stage by the time this POPR was due, let alone by the statutory institution deadline. Petitioners agree that the *Markman* hearing is scheduled for September 4, 2024 (Pet. at 63-64), but Petitioners incorrectly guessed that the statutory institution deadline would be before that date. Instead, as noted above, the institution deadline is not for almost a month *after* the *Markman* hearing. Second, Petitioners also knew that three additional months of discovery would pass from filing of the Petition to this POPR,

and six months would pass from filing to the statutory institution deadline. The parties are now entrenched in discovery amongst themselves and several third parties, incurring considerable expense.

As shown above, the parties have invested, and will continue to invest, substantial time and capital in the parallel proceeding prior to an institution decision. Petitioners' statements hold no sway, and this third *Fintiv* factor weighs heavily in favor of discretionary denial.

4. *Fintiv* Factor 4: There Is “Overlap Between Issues Raised in the Petition and in the Parallel Proceedings”

Fintiv factor 4 weighs in favor of discretionary denial as “the petition includes the same or substantially the same claims, grounds, arguments, and evidence as presented in the parallel proceeding.” *Fintiv I*, IPR2020-00019, Paper 11 at 12. Though Petitioners have not served invalidity contentions for the '270 patent in the district court parallel litigation, Petitioners have the burden of proof for invalidity when serving its expert reports, which are due on November 27, 2024. (Ex. 1012.) Petitioner has not presented a meaningful *Sotera*-type stipulation and is thus free to assert substantially the same grounds of invalidity alleged in the Petition. Though Petitioners “stipulate[s]” that if instituted, Petitioners “will not pursue the same grounds in the district court litigation,” Petitioners do not mention pursuit of invalidity using the *same references* or *substantially similar arguments*.

Petitioners’ own cited case, *Sand Revolution II LLC v. Continental Intermodal Group – Trucking LLC*, IPR2019-01393, Paper 24 at 7, specifically cautions Patent Owners against Petitioners’ type of “stipulation” because IPR Petition grounds are very specific. *See Sand Revolution II*, IPR201-01393, Paper 24 at n.5. That case favors a stipulation that Petitioners “would not pursue any ground raised or that could have been reasonably raised in an IPR.” *Id.* It is telling that Petitioners knew they could make such a stipulation but chose not to. Thus, it is reasonable to conclude that Petitioners will make the same or similar arguments in the district court litigation.

In this regard, it should be noted that the Board has previously found that mere use of the same two references in a Petition and corresponding district court litigation favored discretionary denial, even though the grounds were not identical. *See Apple Inc. v. Maxell, Ltd.*, IPR2020-00203, Paper 12 at 14 (July 6, 2020) (“Although there may be some differences in the reasoning presented in the various obviousness grounds for combining the prior art teachings, we nevertheless find the assertion of Waldroup and Nakayama in both proceedings may result in duplication of work and create the potential for inconsistent decisions.”) So, even if Petitioners do not use the same grounds in the district court litigation that they use in the Petition, but use the same references for invalidity (which is likely given Petitioners’ toothless

stipulation), duplication of work is likely and favors discretionary denial.

There is also overlap between the claims challenged. In the district court, Patent Owner asserted infringement of claim 1 of the '270 patent in the complaint¹, the only independent claim. (Dkt. 1.) In the instant Petition, Petitioners challenge claim 1. (Pet. at 1); *see Fintiv II*, IPR2020-00019, Paper 15, at 15 (“Thus, because the identical claims are challenged based on the same prior art in both the Petition

¹ Plaintiff’s Complaint (Dkt. 1) asserts infringement of the '270 patent via certain pad conditioners designed, developed, manufactured or supplied by, among others, Minnesota Mining and Manufacturing Company (“3M”) used by or on behalf of Samsung. Samsung represents in a declaration (Dkt. 30-1) that Samsung does not use double-sided conditioners from 3M. Relying on Defendants’ representation, Plaintiff is no longer alleging infringement based on those pad conditioners. However, should discovery reveal (1) that Samsung’s representation is false or incorrect and/or (2) that Samsung designs, develops, manufactures, or supplies their own infringing pad conditioners, or uses infringing double-sided pad conditioners designed, developed, manufactured or supplied by a party other than 3M, Dr. Sung reserved the right to amend his infringement contentions accordingly. The '270 patent has not been withdrawn from the district court litigation and is still at issue.

and in the District Court, this factor weighs in favor of discretionary denial in this case.”). Petitioners additionally challenge claims 2-8 of the ’270 patent, though those claims all depend from independent claim 1.

Because it is likely that the same claims, same references, and substantially similar arguments and evidence will be presented in the parallel district court proceeding as in the Petition, this fourth *Fintiv* factor weighs in favor of discretionary denial.

5. *Fintiv* Factor 5: The Petitioner and the Defendant in the Parallel Proceeding Are the Same Party

Fintiv factor 5 favors discretionary denial because the Petitioners here and the defendants in the parallel proceeding are the same. *See Fintiv II*, IPR2020-00019, Paper 15 at 15. There is no unrelated third party involved in either the IPR or the district court parallel litigation, and adjudication in the district court proceeding will therefore resolve all claims between the parties. Thus, this factor favors denying institution.

6. *Fintiv* Factor 6: Petitioner’s Grounds Do Not Rise to the Level of “Compelling Evidence of Unpatentability”

With respect to this *Fintiv* factor, as described in detail below, there are substantial issues with Petitioners’ analysis of the challenged independent claims and, thus, even if the Board were to determine that Petitioners met the lower threshold for instituting IPR, the evidence does not rise to the level of being

“compelling.” Petitioners also failed to present a meaningful *Sotera*-type stipulation not to pursue in the parallel proceeding the same grounds or any grounds that could have reasonably been raised before the Board. Therefore, Factor 6 weighs in favor of denial.

As the Board has explained, an objective of the AIA is to provide “an effective and efficient alternative to district court litigation.” *NHK*, IPR2018- 00752, Paper 8, at 20. Where no such “effective and efficient” alternative is needed in view of a district court’s just and speedy adjudication of the same issue, there is no need for the Board to unnecessarily duplicate the district court’s efforts at the expense of the Board’s time and resources—which are appropriately and best applied elsewhere. (*Id.*)

Because all six of the *Fintiv* factors weigh in favor of discretionary denial, the Board should deny institution under § 314(a).

III. THE CITED REFERENCES

The Petition cites the following references:

- U.S. Patent Application Publication No. 2010/0022174 (“Chou”) (Ex. 1004), published on January 28, 2010;
- U.S. Patent Application Publication No. 2008/0096479 (“Sung ’479”) (Ex. 1005), published on April 24, 2008;

- U.S. Patent Application Publication No. 2008/0004743 (“Goers”) (Ex. 1006), published on January 3, 2008; and
- Sung et al. “Polycrystalline Diamond (PCD) Shaving Dresser: The Ultimate Diamond Disk (UDD) for CMP Pad Conditioning,” *ECS Transactions*, 18 (1) 523-528 (2009) (“SungECS”) (Ex. 1007), published on March 6, 2009.

IV. LEVEL OF ORDINARY SKILL IN THE ART

For the purposes of this Preliminary Response, Patent Owner does not contest the definition of POSITA provided by Petitioners’ expert Dr. Stanley Shanfield. (Ex. 1002 at ¶¶ 21-23.) However, should trial be instituted, Patent Owner contends that Dr. Shanfield is not qualified as a POSITA..

V. CLAIM CONSTRUCTION

Claims in an *inter partes* review are construed using the same claim construction standard as in a civil action. 37 C.F.R. § 42.100(b). Under this standard, claims are construed in accordance with their ordinary and customary meaning as understood by a POSITA. *Id.* The POSITA is deemed to read the claim term in the context of the entire patent, including the specification and prosecution history. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313-1316 (Fed. Cir. 2005) (en banc). Indeed, claims must be construed so as to be consistent with the specification.

Id.

The Petition alleges that no express constructions of the claims are necessary to assess whether the cited art reads on the challenged claims. (Pet. at 19-20.) However, Petitioners then argue that Patent Owner acted as its own lexicographer to define “superabrasive,” “protrusion,” “sharp portion,” and “attitude.” (Pet. at 20-21.)

For purposes of this Preliminary Response only, Patent Owner adopts Petitioners’ proposed claim constructions. Patent Owner reserves the right to propose alternative constructions of these and other terms should *inter partes* review be instituted.

VI. LEGAL STANDARDS

“In an *inter partes* review, the burden of persuasion is on the petitioner to prove ‘unpatentability by a preponderance of the evidence,’ 35 U.S.C. § 316(e), and that burden never shifts to the patentee.” *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1375 (Fed. Cir. 2016). Specifically, the Petition must “identif[y] in writing ***and with particularity***, each claim challenged, the grounds on which the challenge to each claim is based, and the evidence that supports the grounds for the challenge to each claim.” 35 U.S.C. § 312(a)(3); *see also Intelligent Bio-Systems, Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1369 (Fed. Cir. 2016) (“[i]t is of the

utmost importance that petitioners . . . adhere to the requirement that the initial petition identify ‘with particularity’ the ‘evidence that supports the grounds for the challenge to each claim.’”). An IPR cannot be instituted unless “there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a).

In addition, the Board must make its determination regarding institution based on what the Petition *actually presents* and not what it could have reasonably contained had it been reformulated. *Magnum Oil*, 829 F.3d at 1381 (holding that the Board is *not* “free to adopt arguments on behalf of petitioners that could have been, but were not, raised by the petitioner during [a post-grant proceeding]”). The Board cannot “deviate from the grounds in the petition and raise its own” theories of invalidity. *Sirona Dental Sys. GmbH v. Institut Straumann AG*, 892 F.3d 1349, 1356 (Fed. Cir. 2018).

Petitioner raises grounds based on 35 U.S.C. § 103. To prevail on obviousness under 35 U.S.C. § 103, Petitioner must demonstrate based on “record evidence” that the claimed “structural features . . . were known prior art elements.” *K/S Himpp v. Hear-Wear Techs., LLC*, 751 F.3d 1362, 1365 (Fed. Cir. 2014). “[W]hile ‘common sense’ can be invoked, even potentially to supply a limitation missing from the prior art, it must still be supported by evidence and a reasoned

explanation.” *Arendi S.A.R.L. v. Apple Inc.*, 832 F.3d 1355, 1363 (Fed. Cir. 2016). Moreover, “[o]bviousness requires more than a mere showing that the prior art includes separate references covering each separate limitation in a claim.” *Unigene Labs., Inc. v. Apotex, Inc.*, 655 F.3d 1352, 1360 (Fed. Cir. 2011). “Rather, obviousness requires the additional showing that a person of ordinary skill at the time of the invention would have selected and combined those prior art elements in the normal courses of research and development to yield the claimed invention.” *Id.* And, Petitioners have the burden to demonstrate “that a skilled artisan would have been motivated to combine the teachings of the prior art references to achieve the claimed invention, and that the skilled artisan would have had a reasonable expectation of success in doing so.” *Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1367–1368 (Fed. Cir. 2016); *see also In re Stepan Co.*, 868 F.3d 1342, 1345-46 (Fed. Cir. 2017). These additional requirements cannot be met by “conclusory statements”—“there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006); *see also KSR Int’l. Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007).

VII. ARGUMENT

A. THE PETITION FAILS TO ESTABLISH A REASONABLE LIKELIHOOD THAT ANY OF THE CHALLENGED CLAIMS

ARE UNPATENTABLE

As noted above, the petitioner in an *inter partes* review bears the burden of proving that there is a reasonable likelihood that it will prevail with respect to at least one of the challenged claims. 35 U.S.C. § 314(a). Petitioners have failed to meet this burden. Specifically, Petitioners have failed to show that all of the claimed elements “were known prior art elements,” *K/S Himpp v. Hear-Wear Techs., LLC*, 751 F.3d at 1365; and, even if the claimed elements were known prior art elements (which has not been shown), Petitioners have failed to show that a POSITA at the time of the invention would have selected and combined those prior art elements to yield the claimed invention with a reasonable expectation of success. *Intelligent Bio-Sys.*, 821 F.3d at 1367–1368; *In re Stepan Co.*, 868 F.3d at 1345-46.

1. Ground 1: The Combination of Chou and Sung ’479 Does Not Render Obvious Claims 1 and 3-8

With regard to claim 1, Petitioners have failed to show a reasonable likelihood that the combination of Chou and Sung ’479 renders obvious claim 1 by expressly or inherently disclosing the elements of claim 1.

a. Collateral Estoppel Does Not Apply

Petitioners claim that Patent Owner “is collaterally estopped from re-litigating the issue of whether the Chou reference discloses at least [1Pre] and [1D] of the ’270 Patent” due to a previous IPR asserted against Patent Owner with respect to an

entirely different patent, U.S. Patent No. 8,777,699 (the “’699 patent”). (Pet. at 57.) Specifically, the Board instituted IPR2014-01523 and issued a Final Written Decision (“’699 Kinik IPR”), invalidating the ’699 patent. *See Kinik Co. v. Chien-Min Sung*, IPR2014-01523, Paper 26 (Nov. 4, 2015). Petitioners proceed to walk through a collateral estoppel analysis in an attempt to deprive PO from arguing against the applicability of the Chou reference against various claim limitations. But Petitioners ignore clear Federal Circuit precedent.

Though “[i]t is well established that patent claims need not be identical” for collateral estoppel to apply, collateral estoppel “requires that the issues of patentability be identical.” *Google LLC v. Hammond Dev. Int’l, Inc.*, 54 F.4th 1377, 1381 (Fed. Cir. 2022) (citing *Soverain Software*, 778 F.3d 1311, 1319 (Fed. Cir. 2015) and *Ohio Willow Wood*, 735 F.3d 1333, 1342 (Fed. Cir. 2013)). “Thus, collateral estoppel may apply even if the patent claims ‘use slightly different language to describe substantially the same invention,’ so long as ‘the differences between the unadjudicated patent claims and adjudicated patent claims do not materially alter the question of invalidity.’” *Id.* (citing *Ohio Willow Wood*, 735 F.3d at 1342). “Whether the differences between the patent claims materially alter the question of patentability is a legal conclusion based on underlying facts.” *Id.*

Here, the differences between the unadjudicated patent claims—the claims of the ’270 patent—and the adjudicated patent claims, *do* materially alter the question of invalidity, so collateral estoppel does not apply. In the ’699 Kinik IPR, only Chou was needed for invalidity; claim 1 of the ’699 patent was deemed anticipated by Chou. *Kinik*, IPR2014-01523, Paper 26 at 23. But, as set forth below, Petitioner attempts to prove invalidity necessitated introduction of the Sung ’479 reference, which was not considered in the ’699 Kinik IPR. Indeed, Petitioners admit that the Chou reference does not teach claim element “[1B]” of claim 1 of the ’270 patent. (Pet. at 30.) Thus, at least the addition of this claim element “materially alter[s] the question of invalidity” such that additional analysis and prior art references are required beyond that of the ’699 Kinik IPR. Collateral estoppel does not apply.

- b. **Chou and Sung ’479 Do Not Disclose “a first monolayer of superabrasive particles . . . , wherein the difference in protrusion distance between the highest protruding tip and the second highest protruding tip of the monolayer of superabrasive particles is less than or equal to about 50 microns”**

Claim 1 recites a CMP pad dresser comprising, *inter alia*, the following elements:

a first monolayer of superabrasive particles disposed on and protruding from one side of a metal support layer, *wherein the difference in protrusion distance between the highest protruding tip and the second highest protruding tip of the monolayer of*

superabrasive particles is less than or equal to about 50 microns;

(Ex. 1001 at 17:35-18:2) (emphasis added). The Petition states that “Chou teaches that ***all*** of the first monolayer of particles 232 are designed to participate in the grinding action, which a POSITA would have recognized to be achievable by reducing the protrusion distance differences between the particles.” (Pet. at 28) (original emphasis). But Petitioners provide no evidence that “participat[ion] in the grinding action” requires, or that any such “reducing” would be performed such that, “the difference in protrusion distance between the highest protruding tip and the second highest protruding tip of the monolayer of superabrasive particles is less than or equal to about 50 microns,” as required by the claim language.

The Petition relies on an annotated version of Fig. 5D of Chou (reproduced below) to state that Chou teaches all particles are the same height. However, when a reference does not disclose that its drawings are to scale and is silent as to dimensions, arguments based on measurement of the drawing features are of little value. *See Hockerson-Halberstadt, Inc. v. Avia Group Int’l*, 222 F.3d 951, 956, 55 USPQ2d 1487, 1491 (Fed. Cir. 2000) (“[I]t is well established that patent drawings do not define the precise proportions of the elements and may not be relied on to show particular sizes if the specification is completely silent on the issue.”). Chou makes no mention of its drawing being made to scale. Nor does Chou make any

mention of protrusion distances of particles. Therefore, Petitioners cannot rely on Chou's figures to obviate the numerical bounds of the claim language.

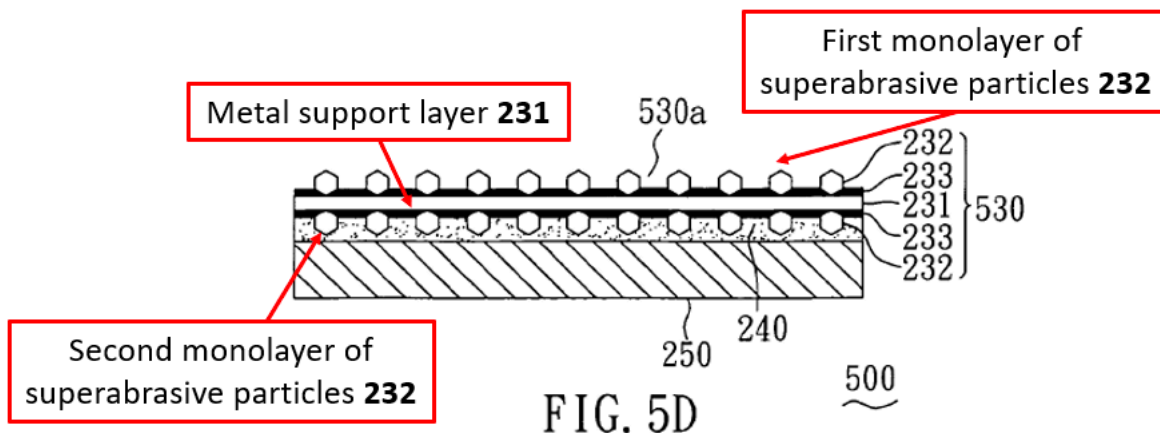


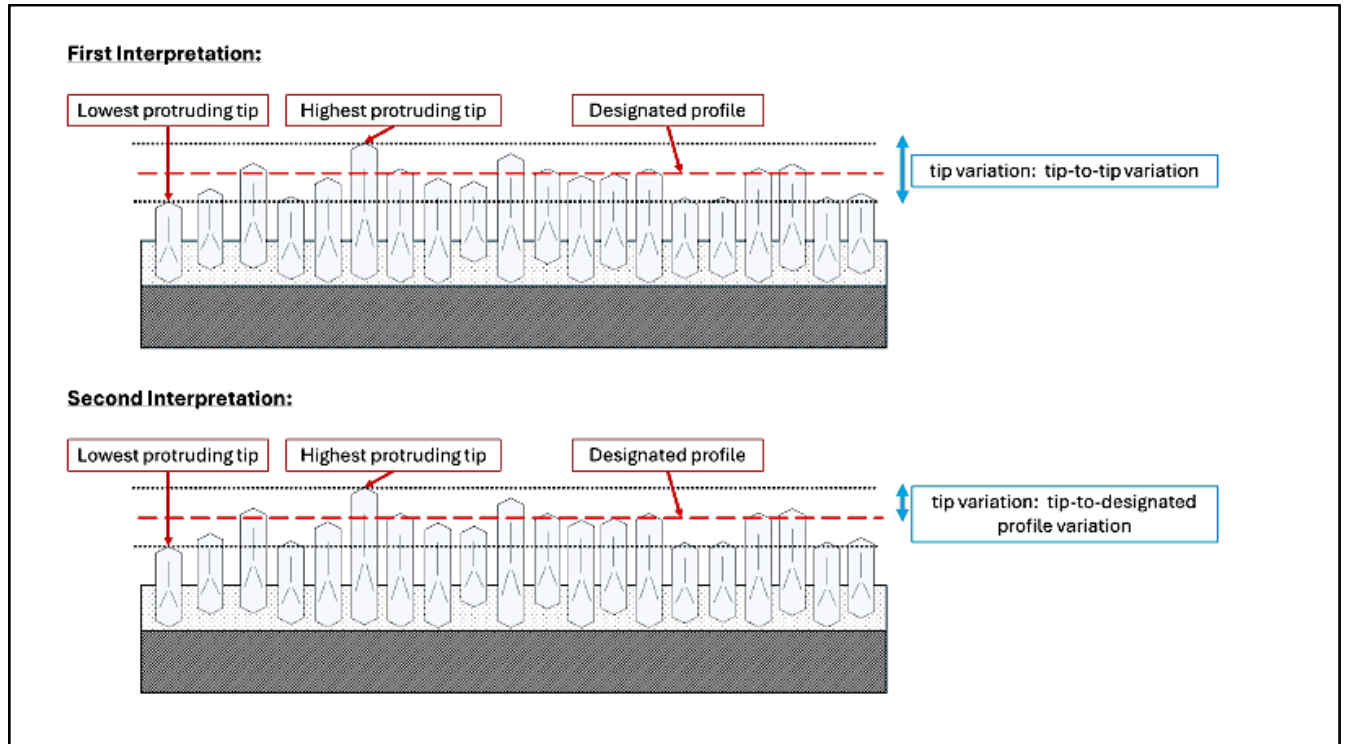
FIG. 5D of Chou (Ex. 1004) (Annotated by Petitioner)

Petitioners, recognizing Chou's shortcomings, admit that Chou "does not explicitly teach" this claim element. (Pet. at 28-29.) Instead, Petitioners look to Sung '479, alleging it "teaches tip height variations of only 2 microns or less across all superabrasive particles." (Pet. at 29.) For support, Petitioners cite that, in Sung '479, "the plurality of superabrasive particles is arranged such that their tips vary from the designated profile by less than about 1 microns." (Pet. at 30-31.) But this sentence says nothing about a "highest protruding tip," a "second highest protruding tip," or any "difference" between them, as required by claim 1.

Petitioners and their expert, Dr. Shanfield, equate the term "designated profile" to the term "protrusion distance" to make it read on the claim language,

relegating this implicit claim construction position to a footnote. (Pet. at 31 n.8.) There, Petitioners and Dr. Shanfield improperly interpret that “[d]esignated profile” refers to ‘a predetermined height’ ‘for the superabrasive particles to protrude from the solidified braze layer,’” citing paragraph [0069] of Sung ’479. (*Id.*) But Sung ’479 does not equate “predetermined height” or “designated profile” with “protrusion distance,” as recited in the claim language. In fact, Sung ’479 expressly distinguishes the designated “profile” with protrusion distance, defining “profile” as “*a contour* above a solidified braze layer surface to which the superabrasive particles *are intended to protrude.*” See Sung ’479 at [0038]. By contrast, the ’270 patent does not define the term “designated profile” to make such a connection. Again, neither does Chou.

Additionally, as explained in Patent Owner’s Preliminary Response in co-pending IPR2024-00535, Petitioners’ argument and Dr. Shanfield’s opinion here directly contradict Dr. Shanfield’s declaration and deposition testimony in the underlying litigation that “tip-to-tip variation” (i.e., difference in tip height or protrusion distance) is separate and distinct from “tip-to-designated profile variation.”



Specifically, as reflected in Dr. Shanfield’s declaration submitted in the underlying litigation, Dr. Shanfield opined that the term “tip variation” is purportedly indefinite because, in his view, the “tip variation” limitation “can also be *reasonably interpreted to mean that the tip-to-designated profile* variation of the plurality of superabrasive particles is from ‘about 5 microns to about 100 microns.’ In other words, *the distance between the highest / lowest tip and the designated profile* is between ‘about 5 microns and about 100 microns.’” (Ex. 2002 at ¶ 110.) This “tip-to-designated” interpretation, which Dr. Shanfield labels as the “second interpretation, is substantively different from the “tip-to-tip

variation” interpretation, which he labels as the first interpretation. Dr. Shanfield’s position here seems to reflect that he is talking out of both sides of his mouth.

In fact, Dr. Shanfield illustrated his own confusion with his own “tip-to-tip” interpretation when he testified that comparing the highest protruding tip to the second highest protruding tip does not constitute a difference in protrusion distance between “tip to tip.” (Ex. 2003 (Shanfield Dep. Tr.) at 121:15-21 (“Q: It says ‘highest protruding tip and second highest protruding tip,’ do you see that? A: Yes. Q: So that’s comparing tip-to-tip, right? A: No.”).)

Without explicit definitions tying Sung ’479’s or Chou’s specifications to the claim language, Petitioners rely on inherency. (Pet. at 31-32.) But to establish inherency, the anticipatory feature or result must be consistent, **necessary**, and inevitable, **not simply possible or probable**, and it should be clear that it would be so recognized by persons of ordinary skill. *Atofina v. Great Lakes Chemical Corp.*, 441 F.3d 991, 1000 (Fed. Cir. 2006); *In re Robertson*, 169 F.3d 743, 745 (Fed. Cir. 1999). That is, inherency “may not be established by probabilities or possibilities,” and “the mere fact that a certain thing may result from a given set of circumstances is not sufficient” to show inherency. *In re Robertson*, 169 F.3d at 745. While Petitioners’ figures show one possibility taken from Sung ’479 (Pet. at 32), Petitioners do not show, or even state, that “the difference in protrusion distance

between the highest protruding tip and the second highest protruding tip of the monolayer of superabrasive particles is less than or equal to about 50 microns,” as claimed, will *necessarily* be true in every instance where “the plurality of superabrasive particles is arranged such that their tips vary from the designated profile by less than about 1 microns,” as stated in Sung ’479. Therefore, Petitioners have not met their burden to establish inherency.

For example, assume only two particles are present on a CMP pad dresser. The first particle has a protrusion distance of 1 micron and the second particle has a protrusion distance of 100 microns. The difference in protrusion distance between the particles is 99 microns. A “designated profile” for this CMP pad dresser, as defined by Petitioners, may be a flat line, but one that is *not parallel* to the base of the CMP pad dresser. This designated profile may be defined by heights ranging from 1 micron to 100 microns. The tips of the first particle and second particle match the heights of this flat profile envisioned by Petitioners exactly, such that their tips vary from the designated profile by 0 microns. Thus, the particles have tips that vary from the designated profile by “less than about 1 microns,” but “the difference in protrusion distance between the highest protruding tip and the second highest protruding tip of the monolayer of superabrasive particles” is 99 microns, which is greater than the claimed “about 50 microns.” This single counter example shows

that Petitioners' inherency argument is flawed, and Petitioners are improperly extrapolating from the Sung '479 reference.

There is no disclosure, inherently or otherwise, of this claim element.

- c. There Is No Motivation to Combine Chou and Sung '479 to Obviate “a first monolayer of superabrasive particles . . . , wherein the difference in protrusion distance between the highest protruding tip and the second highest protruding tip of the monolayer of superabrasive particles is less than or equal to about 50 microns”**

Even if all of the claim elements were in the cited art (which has not been shown), Petitioners have not met their burden to show why and how a POSITA would combine Chou with Sung '479 to make obvious “a first monolayer of superabrasive particles . . . , wherein the difference in protrusion distance between the highest protruding tip and the second highest protruding tip of the monolayer of superabrasive particles is less than or equal to about 50 microns,” as recited in claim 1. *Unigene Labs.*, 655 F.3d at 1360; *In re Kahn*, 441 F.3d 977, 988.

Petitioners state that it would have been obvious to a POSITA to have “precisely leveled protrusion distances,” and that a POSITA “would have been able to achieve such precisely leveled CMP pad dressers.” (Pet. at 32-34.) But Petitioners make no mention of how such “level[ing]” would be achieved or even if the claimed “difference in protrusion distance” being “less than or equal to about 50

microns” is considered “level.” Regardless, Petitioners set forth five supposed reasons to combine Chou and Sung ’479. (Pet. at 34-39.)

First, Petitioners argue that Chou and Sung ’479 are analogous art. (Pet. at 34.) But Chou makes no mention of the CMP process or CMP pad dressers. It may be true that both references concern “abrasive tools,” but the fields of use do not necessarily overlap, and Petitioner does not state (1) why references being analogous art implies that a POSITA would combine them and/or (2) why a POSITA would combine tools from disparate fields of use.

Second, Petitioners argue that Chou and Sung ’479 “disclose that the abrasive tools perform better if the abrasive particles are leveled,” so a POSITA would combine references “that recognize benefits of having leveled height of abrasive particles.” (Pet. at 34-36.) Petitioners then mention again that such a combination would allow a POSITA to consider leveling heights of particles to match “tip-to-tip variation” associated with a “designated profile.” As discussed above in Section VII.A.1.b, Petitioner has not established that a “designated profile” is equivalent to, or otherwise discloses, “the difference in protrusion distance between the highest protruding tip and the second highest protruding tip,” as claimed. This supposed motivation also falls flat.

Third, Petitioners argue that a POSITA would have been motivated to

combine Chou and Sung '479 because both use brazes, with Sung '479 utilizing a low-melting point braze to bond particles because such brazes “do not generate significant warpage due to the lower temperatures utilize (sic) to construct the tool” and “the variance between the tip heights of a plurality of superabrasive particles in a tool can be greatly reduce by utilizing a braze having a low-melting point to bond the superabrasive particles.” (Pet. at 36.) But Chou purports to solve these problems by itself. *See, e.g.*, Ex. 1004 at [0024] (“[T]he method provided by the present invention can inhibit the precision errors caused by the thermal deformation of the backplane.” And, “[b]y the method for fabricating a grinding tool according to the present invention, the height of the abrasive particles can be precisely controlled.”). Petitioners provide no reasoning as to why a POSITA would look to the teachings of Sung '479 to solve problems purportedly already solved by Chou.

Fourth, Petitioners state that Chou and Sung '479 “teach attaching a monolayer of diamond particles to both sides of the substrate.” (Pet. at 36-38.) The Petition makes no additional assertions, regarding combining the references or otherwise. Petitioners provide no reasoning as to why a POSITA would combine references simply because they may share certain characteristics.

Fifth, Petitioners assert that “it would have been a trivial modification by POSITA to level the heights of the Chou’s abrasive tool to the precision as disclosed

by Sung '479" because "Sung '479 provides specific numeric values that were well-known to be achievable and suitable for various grinding application, such as CMP." (Pet. at 38.) But Petitioners do not explain why any such "trivial modification" would give a POSITA motivation to combine references. Petitioners arguments are insufficient.

Petitioners further contend that a POSITA "would have been able to combine" the teachings of Chou and Sung '479 with a reasonable expectation of success because "both use the similar brazing method for attaching abrasive particles to the metal substrate." (Pet. at 38-39.) However, the brazing methods in the two-sided embodiments of Chou and Sung '479 are not similar. Chou shows particles 232 in separate braze layers 233 on opposite sides of a substrate 231, whereas Sung '479 shows particles 14 on opposite sides of a single braze 16. Petitioners have not explained how these very two different brazing methods demonstrate that a POSITA would be able to combine their teachings with a reasonable expectation of success. Moreover, Petitioners give no indication how a POSITA would combine the "designated profile" aspects of Sung '479 with Chou's two-sided grinding tool or why the results of the combination would be predictable. For example, Petitioners fail to address whether protrusion distances of particles would be the same or different on opposite sides of the CMP pad dresser and/or how similarities or

differences in such protrusion distances on opposite sides of a CMP pad dresser might affect warpage. Petitioners' argument is therefore lacking.

Petitioners have failed to evidence a motivation to combine Chou and Sung '479 to obviate the language recited in claim 1.

d. Petitioners' Fail to Identify with Particularity How Sung '479 Is Applicable Given Its Expert's Conflicting Testimony

The Board should deny institution because Petitioners have failed to explain, with particularity, their obviousness grounds. 35 U.S.C. § 312(a)(3) (A petition for *inter partes* review must identify “**with particularity**, each claim challenged, the grounds on which the challenge to each claim is based, and the evidence that supports the grounds for the challenge to each claim.” (emphasis added)); *Adaptics Limited v. Perfect Co.*, IPR2018-01596, Paper 20 at 17 (P.T.A.B. Mar. 6, 2019) (informative) (“Because the Board’s practice, in light of *SAS*, is to institute on all grounds asserted in a petition, the Board may consider whether a lack of particularly as to one or more of the asserted grounds justifies denial of an entire petition.” (citing *SAS Institute Inc. v. Iancu*, 138 S. Ct. 1348, 1355 (2018))).

Petitioners' expert, Dr. Shanfield, provides conflicting declarations with respect to the phrases “designated profile” and “second highest protruding tip.” Dr. Shanfield provided an expert declaration accompanying the Petition, Ex. 1002

(“First Declaration”). Dr. Shanfield also provided an expert declaration in support of Petitioners’ proposed claim constructions in the parallel district court litigation. (Ex. 2002 (“Second Declaration”).)

In Dr. Shanfield’s First Declaration, Dr. Shanfield agrees with Petitioner that “particles align along a designated profile” and “the plurality of . . . particles is arranged such that their tips vary from the designated profile by less than about 1 micron” teaches “a first monolayer of superabrasive particles . . . , wherein the difference in protrusion distance between the highest protruding tip and the second highest protruding tip of the monolayer of superabrasive particles is less than or equal to about 50 microns,” as recited in claim 1. (*See* Pet. at 30-32, Ex. 1002 at ¶¶ 111-116.) But in Dr. Shanfield’s Second Declaration, he states that “wherein a tip of each of the plurality of superabrasive particles aligns along a designated profile with a tip variation of from about 5 microns to about 100 microns” may be interpreted “in at least two different ways.” (Ex. 2002 at ¶ 108.) Dr. Shanfield further asserts (1) that he “reviewed additional intrinsic evidence (including patents and applications in the same patent family and their prosecution histories) and have not seen any guidance that would have informed a POSITA to apply one interpretation over the other,” and (2) that he is “also unaware of any relevant extrinsic evidence that would have informed a POSITA to apply one interpretation

over the other.” (Ex. 2002 at ¶ 114.) Given Dr. Shanfield’s admitted inability to understand tip alignment or variation along a designated profile, Dr. Shanfield’s testimony accompanying the Petition that such language teaches the claim language of the ’270 patent is untrustworthy and lacks the particularity required by *Adaptics* and *SAS*.

Similarly, Dr. Shanfield’s First Declaration indicates that the Chou-Sung ’479 combination teaches “second highest protruding tip,” as recited in the claim language (Pet. at 32-34, Ex. 1002 at ¶¶ 114-116), but Dr. Shanfield’s Second Declaration asserts that “[a] POSITA would not have understood the scope of the claimed invention with reasonable certainty because it would have been unclear what the ‘highest protruding tip’ means as compared with ‘the second highest protruding tip’ . . . when determining the ‘difference in protrusion distance.’” (Ex. 2002 at ¶ 81.) Dr. Shanfield’s admitted inability to understand the claim language of the ’270 patent makes his testimony accompanying the Petition that such language is taught by the combination of Chou and Sung ’479 untrustworthy and lacking the particularity required by *Adaptics* and *SAS*.

The Petition lacks the required particularity as well because it does not disclose how the statement in Sung ’479 that “a tip of each of the plurality of superabrasive particles aligns along a designated profile with a tip variation of from

about 5 microns to about 100 microns” is interpreted in view of Dr. Shanfield’s conflicting testimony, or how “highest” versus “second highest” in the challenged claims is interpreted in view of Dr. Shanfield’s conflicting testimony. Nor do Petitioners explain how the arguments in the Petition might differ depending on which interpretations are adopted.

e. Dependent Claims 3-8

Claims 3-8 depend from claim 1. A dependent claim contains all of the limitations of the claim or claims from which it depends. Therefore, claims 3-8 distinguish over Chou in view of Sung ’479 for at least all of the reasons discussed above with regard to claim 1. PO reserves the right to present additional arguments for patentability of claims 3-8 should *inter partes* review be instituted.

2. Ground 2: Chou in view of Sung ’479 and SungECS Does Not Render Obvious Claims 6 and 7

a. Claim 6

Claim 6 depends from claim 5, which depends from claim 1. A dependent claim contains all of the limitations of the claim or claims from which it depends. Therefore, claim 6 distinguishes over Chou in view of Sung ’479 for at least all of the reasons discussed above with regard to claim 1 in Section VII.A.1. SungECS is relied on by Petitioner to allegedly show that a CMP pad dresser has “tens of thousands of diamond particles.” (Pet. at 50-52.) Petitioner’s conclusory statements

that it would have been obvious that protruding tips of “tens of thousands of diamond particles,” as allegedly shown in SungECS, would fall within a designated profile does not remedy the deficiencies of Chou and Sung ’479 with respect to claim 1 discussed above in Section VII.A.1. (Pet. at 50-52.) PO reserves the right to present additional arguments for patentability of claim 7 should *inter partes* review be instituted.

b. Claim 7

Claim 7 depends from claim 6, which depends from claim 5, which depends from claim 1. A dependent claim contains all of the limitations of the claim or claims from which it depends. Therefore, claim 7 distinguishes over Chou in view of Sung ’479 for at least all of the reasons discussed above with regard to claim 1 in Section VII.A.1. SungECS is relied on by Petitioner to allegedly show that a CMP pad dresser has “tens of thousands of diamond particles.” (Pet. at 50-52.) Petitioner’s conclusory statements that it would have been obvious that protruding tips of “tens of thousands of diamond particles,” as allegedly shown in SungECS, would fall within a designated profile does not remedy the deficiencies of Chou and Sung ’479 with respect to claim 1 discussed above in Section VII.A.1. (Pet. at 50-52.) PO reserves the right to present additional arguments for patentability of claim 7 should *inter partes* review be instituted.

3. Ground 3: Chou in view of Sung '479 and Goers Does Not Render Obvious Claim 2

a. Claim 2

Claim 2 depends from claim 1. A dependent claim contains all of the limitations of the claim or claims from which it depends. Therefore, claim 2 distinguishes over Chou in view of Sung '479 for at least all of the reasons discussed above with regard to claim 1 in Section VII.A.1. Goers is relied on by Petitioners to allegedly show that CMP pad dressers were known to have central, particle-free areas. (Pet. at 53-54.) Petitioner's conclusory statements that it would have been obvious to combine Goers with Chou and Sung '479 to create a CMP pad dresser with a central, particle-free zone does not remedy the deficiencies of Chou and Sung '479 with respect to claim 1 discussed above in Section VII.A.1. PO reserves the right to present additional arguments for patentability of claim 2 should *inter partes* review be instituted.

VIII. CONCLUSION

For at least the foregoing reasons, Petitioners have failed to meet its burden to show that they have a reasonable likelihood of success with respect to at least one claim. Therefore, the Petition should be denied.

Case IPR2024-00533
Patent No. 8,974,270
Patent Owner Corrected Preliminary Response

Dated: July 25, 2024

Respectfully submitted,

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Case IPR2024-00533
Patent No. 8,974,270
Patent Owner Corrected Preliminary Response

CERTIFICATE OF COMPLIANCE WITH TYPE-VOLUME LIMITS

This Patent Owner Preliminary Response consists of 8,223 words, excluding cover page, table of contents, table of authorities, certificate of service, this certificate, or table of exhibits. The POPR complies with the type-volume limitation of 14,000 words as mandated in 37 C.F.R. §42.24. In preparing this certificate, counsel has relied on the word count of the word-processing system used to prepare the paper (Microsoft Word).

Dated: July 25, 2024

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Case IPR2024-00533
Patent No. 8,974,270
Patent Owner Corrected Preliminary Response

CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. § 42.6(e), the undersigned certifies that on July 25, 2024 the foregoing document is being served via electronic mail upon the following counsel of record for Petitioner:

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