

Case IPR2024-00534  
U.S. Patent No. 9,138,862

Petitioner's Reply

**UNITED STATES PATENT AND TRADEMARK OFFICE**

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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Samsung Electronics Co., Ltd.,  
Samsung Electronics America, Inc.,  
Samsung Semiconductor, Inc., and  
Samsung Austin Semiconductor, LLC.,  
Petitioner

v.

Chien-Min Sung,  
Patent Owner

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Case IPR2024-00534  
U.S. Patent No. 9,138,862

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**PETITIONER SAMSUNG'S  
REPLY IN SUPPORT OF ITS PETITION**

Mail Stop Patent Board  
Patent Trial and Appeal Board  
U.S. Patent and Trademark Office  
P.O. Box 1450  
Alexandria, VA 22313-1450

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All emphases are added unless otherwise noted.

**TABLE OF EXHIBITS**

| <b>Petitioner Exhibit No.</b> | <b>DESCRIPTION</b>                                                                                                                                                                                                                |
|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1001                          | U.S. Patent No. 9,138,862 (“’862 Patent”)                                                                                                                                                                                         |
| 1002                          | Declaration of Dr. Stanley Shanfield                                                                                                                                                                                              |
| 1003                          | File History of the ’862 Patent                                                                                                                                                                                                   |
| 1004                          | U.S. Patent Application Publication No. 2007/0060026 (“Sung’026”)                                                                                                                                                                 |
| 1005                          | “The Organic Diamond Disk (ODD) for dressing of Polishing Pads of Chemical Mechanical Planarization,” International Conference on Planarization / CMP Technology, 25-27 October 2007 (“SungICPT”)                                 |
| 1006                          | U.S. Patent Application Publication No. 2008/0087644 (“Nishioka”)                                                                                                                                                                 |
| 1007                          | International Patent Application Publication No. WO 2008/049019 (“Lin”)                                                                                                                                                           |
| 1008                          | U.S. Patent Application Publication No. 2009/0001581 (“Kim”)                                                                                                                                                                      |
| 1009                          | U.S. Patent Application Publication No. 2009/0117692 (“Koyama”)                                                                                                                                                                   |
| 1010                          | U.S. Patent No. 5,036,015                                                                                                                                                                                                         |
| 1011                          | Ishizuka et al. “PCD Dressers for Chemical Mechanical Planarization with Uniform Polishing” Proceedings of International Conference on Leading Edge Manufacturing in 21 <sup>st</sup> Century: LEM21, 2007, Volume 2007.4         |
| 1012                          | U.S. Patent Application Publication No. 2008/0292869 (Sung’869)                                                                                                                                                                   |
| 1013                          | Fenna, Donald. “Hardness Numbers,” <i>A Dictionary of Weights, Measures, and Units</i> , 1st ed., Oxford University Press, 2004.                                                                                                  |
| 1014                          | Tsai et al., “Effect of CMP conditioner diamond shape on pad topography and oxide wafer performances,” <i>Int. J. Adv. Manuf. Technology</i> , 55: 253-262 (2011)                                                                 |
| 1015                          | Pysher et al. “Design, Characteristics and Performance of Diamond Pad Conditioners”, Materials Research Society Symposium Procedures, Vol. 1249, 2010 (“Pysher”)                                                                  |
| 1016                          | <i>Design, Characteristics and Performance of Diamond Pad Conditioners</i> . SpringerLink.<br><a href="https://link.springer.com/article/10.1557/PROC-1249-E02-04">https://link.springer.com/article/10.1557/PROC-1249-E02-04</a> |
| 1017                          | Exhibit 4 of Complaint in <i>Sung v. Samsung Electronics Co., Ltd. et al</i> , 4-23-cv-00752                                                                                                                                      |
| 1018                          | Scheduling Order in <i>Sung v. Samsung Electronics Co., Ltd. et al</i> , 4-                                                                                                                                                       |

| Petitioner Exhibit No. | DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                        | 23-cv-00752                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 1019                   | Electronic Copy of SungICPT obtained from IEEE, the publisher                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 1020                   | Records for <i>Proceedings ICPT 2007</i> available at <a href="https://search.worldcat.org/title/198200505">https://search.worldcat.org/title/198200505</a> from WorldCat; at <a href="https://d-nb.info/985874066">https://d-nb.info/985874066</a> (bibliographic record and MARC21-XML record) from the online catalog of the German National Library; and from OCLC FirstSearch (subscription required for access)                                                                                                                                                                                                                                                                                                                                                 |
| 1021                   | TIB records for <i>Proceedings ICPT 2007</i> , available at <a href="https://search.worldcat.org/title/552588043">https://search.worldcat.org/title/552588043</a> from WorldCat; at <a href="https://opac.tib.eu/DB=1/LNG=EN/CLK?IKT=12&amp;TRM=585918058">https://opac.tib.eu/DB=1/LNG=EN/CLK?IKT=12&amp;TRM=585918058</a> from the classic catalog of TIB; at <a href="https://www.tib.eu/en/search/id/TIBKAT:585918058/Proceedings-ICPT-International-Conference-on-Planarization?cHash=aa6c9dc952dc92d0d78d53ec988dc7a5">https://www.tib.eu/en/search/id/TIBKAT:585918058/Proceedings-ICPT-International-Conference-on-Planarization?cHash=aa6c9dc952dc92d0d78d53ec988dc7a5</a> from the TIB portal; and from OCLC FirstSearch (subscription required for access) |
| 1022                   | Program and Invitation, ICPT International Conference on Planarization/CMP Technology, October 25 – 27, 2007, Hilton Hotel, Dresden, Germany, available at <a href="https://www.yumpu.com/en/document/read/19588721/program-and-invitation-eusar">https://www.yumpu.com/en/document/read/19588721/program-and-invitation-eusar</a>                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 1023                   | ICPT 2007 Conference Registration website, archived by Internet Archive on October 13, 2007, available at <a href="https://web.archive.org/web/20071013155043/http://icpt2007.com/Conferences_en/ICPT+2007/Conference+Registration/">https://web.archive.org/web/20071013155043/http://icpt2007.com/Conferences_en/ICPT+2007/Conference+Registration/</a> from Internet Archive                                                                                                                                                                                                                                                                                                                                                                                       |
| 1024                   | ICPT 2007 Program order form webpage, archive by Internet Archive on November 3, 2007, available at <a href="https://web.archive.org/web/20071103025949/http://icpt2007.com/Conferences_en/ICPT+2007/Conference+Program/Program+Order+Form.htm">https://web.archive.org/web/20071103025949/http://icpt2007.com/Conferences_en/ICPT+2007/Conference+Program/Program+Order+Form.htm</a>                                                                                                                                                                                                                                                                                                                                                                                 |
| 1025                   | Online catalog of the German National Library archived on January 1, 2011 by Internet Archive, available at <a href="https://web.archive.org/web/20110101165839/www.d-nb.de/">https://web.archive.org/web/20110101165839/www.d-nb.de/</a> from Internet Archive                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 1026                   | GetInfo Portal of the German National Library of Science and                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

| Petitioner Exhibit No. | DESCRIPTION                                                                                                                                                                                                                                                                                                |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                        | Technology (TIB), archived on October 22, 2007 by the Internet Archive, available at <a href="https://web.archive.org/web/20071022114354/http://www.tib-hannover.de/en/getinfo-portal/">https://web.archive.org/web/20071022114354/http://www.tib-hannover.de/en/getinfo-portal/</a> from Internet Archive |
| 1027                   | Declaration of Dr. Ingrid Hsieh-Yee                                                                                                                                                                                                                                                                        |
| 1028                   | <i>Chien-Min Sung v. Samsung Electronics Co. Ltd., et al.</i> , Case No. 4:23-cv-00752 (E.D. Tex.), 82 (Order to Stay Pending Motion for Inter-District Transfer)                                                                                                                                          |
| 1029                   | <i>Chien-Min Sung v. Samsung Electronics Co. Ltd., et al.</i> , Case No. 4:23-cv-00752 (E.D. Tex.), 37 (February 14, 2024 Scheduling Order)                                                                                                                                                                |
| 1030                   | <i>Chien-Min Sung v. Texas Instruments Inc.</i> , Case No. EDTX-4-23-cv-00753 (E.D. Tex.), 26 (TI's Motion for Summary Judgment of Invalidity)                                                                                                                                                             |
| 1031                   | <i>Chien-Min Sung v. Texas Instruments Inc.</i> , Case No. EDTX-4-23-cv-00753 (E.D. Tex.), 68 (Order To Stay the Case Pending Resolution of TI's Motion for Summary Judgment).                                                                                                                             |
| 1032                   | <i>Chien-Min Sung v. Samsung Electronics Co. Ltd., et al.</i> , Case No. 4:23-cv-00752 (E.D. Tex.), 56 (Motion to Stay Pending Resolution of Texas Instruments Incorporated's Motion for Summary Judgment )                                                                                                |
| 1033                   | <i>Chien-Min Sung v. Samsung Electronics Co. Ltd., et al.</i> , Case No. 4:23-cv-00752 (E.D. Tex.), 72 (Plaintiff's Sur-reply )                                                                                                                                                                            |
| 1034                   | <i>Chien-Min Sung v. Samsung Electronics Co. Ltd., et al.</i> , Case No. 4:23-cv-00752 (E.D. Tex.), 43 (Notice Of Intent To File A Motion To Stay Pending Inter Partes Review)                                                                                                                             |
| 1035                   | <i>Chien-Min Sung v. Samsung Electronics Co. Ltd., et al.</i> , Case No. 4:23-cv-00752 (E.D. Tex.), 56 (Motion To Stay Pending Resolution of TI MSJ)                                                                                                                                                       |
| 1036                   | <i>Chien-Min Sung v. Samsung Electronics Co. Ltd., et al.</i> , Case No. 4:23-cv-00752 (E.D. Tex.), 62 (Plaintiff's Opposition to MTS Pending Resolution of TI MSJ)                                                                                                                                        |
| 1037                   | <i>Chien-Min Sung v. Samsung Electronics Co. Ltd., et al.</i> , Case No. 4:23-cv-00752 (E.D. Tex.), 67 (Defendant's Reply)                                                                                                                                                                                 |
| 1038                   | <i>Chien-Min Sung v. Samsung Electronics Co. Ltd., et al.</i> , Case No. 4:23-cv-00752 (E.D. Tex.), 72 (Plaintiff's Sur-Reply)                                                                                                                                                                             |
| 1039                   | <i>In re: Chien-Min Sung Subpoena Upon 3M Company</i> , Case No.                                                                                                                                                                                                                                           |

| Petitioner Exhibit No. | DESCRIPTION                                                                                                                                                                               |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                        | 0:2023mc00104 (D. Minnesota), 1 (3M's Nov. 16, 2023 Motion To Quash Subpoena In The District of Minnesota)                                                                                |
| 1040                   | <i>In re: Chien-Min Sung Subpoena Upon 3M Company</i> , Case No. 0:2023mc00104 (D. Minnesota), 15 (Dr. Sung's Nov. 22, 2023 Cross-Motion To Compel And Motion For Sanctions)              |
| 1041                   | <i>In re: Chien-Min Sung v. 3M Company</i> , Case No. 6:23-mc-00002 (N.D. Tex.), 1 (Dr. Sung's Nov. 27, 2023 Motion To Compel In The Northern District of Texas)                          |
| 1042                   | <i>In re: Chien-Min Sung Subpoena Upon 3M Company</i> , Case No. 0:2023mc00104 (D. Minnesota), 38 (Court Entry Showing A Discovery Hearing Before The Court In The District Of Minnesota) |
| 1043                   | Judge Jordan's Time To Order Motion of Summary Judgement Statistics                                                                                                                       |
| 1044                   | Marked up M. Y. Tsai & Y. S. Liao (2009) Dressing Characteristics of Oriented Single Diamond on CMP Polyurethane Pad, <i>Machining Science and Technology</i> , 13:1, 92-105              |
| 1045                   | Marked up Tsai et al., "Effect of CMP conditioner diamond shape on pad topography and oxide wafer performances," <i>Int. J. Adv. Manuf. Technology</i> , 55: 253-262 (2011)               |
| 1046                   | Marked up M. Y. Tsai et al., Novel Diamond Conditioner Dressing Characteristics of CMP Polishing Pad, <i>International Journal of Machine Tools &amp; Manufacture</i> 49 (2009) 722-729   |
| 1047                   | Deposition of Dr. Tsai in IPR2024-00533, Vol I                                                                                                                                            |
| 1048                   | Deposition of Dr. Tsai in IPR2024-00533, Vol II                                                                                                                                           |
| 1049                   | Deposition of Dr. Tsai in IPR2024-00534                                                                                                                                                   |
| 1050                   | Single Diamond Dressing Characteristics of CMP Polyurethane Pad" <i>Key Engineering Materials</i> Vol 329 (2007) pp 151-156                                                               |
| 1051                   | PCD Pad Conditioners for Low Pressure Chemical Mechanical Planarisation of Semiconductors" <i>Int. J. Abrasive Technology</i> , Vol. 1, Nos. 3/4, 2008                                    |
| 1052                   | "Dressing Behaviors of PCD Conditioners on CMP Polishing Pads" <i>Advanced Materials Research</i> Vols 76-78 (2009) pp 201-206                                                            |
| 1053                   | "Mosaic Diamond Pad Conditioners for Improved CMP Performance" <i>ECS Transactions</i> , 27 (1) 575-580 (2010)                                                                            |
| 1054                   | "The Black Pad with Graphite Impregnation for CMP" <i>ECS Transactions</i> , 27 (1) 581-586 (2010)                                                                                        |
| 1055                   | "The CMP by Polishing with GiP Dressed by BODD" <i>Advanced</i>                                                                                                                           |

| <b>Petitioner Exhibit No.</b> | <b>DESCRIPTION</b>                                                                                                                                                                                               |
|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                               | <i>Materials Research</i> Vols 126-128 (2010) pp 1013-1018                                                                                                                                                       |
| 1056                          | “Organic diamond disk versus brazed diamond disk for dressing a chemical–mechanical polishing pad” <i>Diamond &amp; Related Materials</i> 23 (2012) 144–149                                                      |
| 1057                          | “Development of a novel cooling system-assisted minimum quantity lubrication method for improvement of milling performance” <i>Journal of the Chinese Institute of Engineers</i> , 2015, Vol. 38, No. 3, 322–331 |
| 1058                          | U.S. Patent Application Publication No. 2010/0248595 (“Dinh-Ngoc”)                                                                                                                                               |
| 1059                          | U.S. Application No. 11/223,786 (’786 Application)                                                                                                                                                               |

## **I. INTRODUCTION**

Patent Owner argues that Grounds IA and IB fail to meet the preponderance of evidence burden because Sung'026 does not disclose or render obvious limitations [1A]-[1D]. But Patent Owner's own expert, Dr. Tsai, admitted during cross-examination that a POSITA would have readily understood or envisaged Sung'026 to disclose these limitations. Moreover, Patent Owner's arguments directed to Grounds II-VI include mere attorney arguments, which Dr. Tsai admits is wrong and/or has provided no opinions on. Accordingly, Petitioner respectfully submits that all challenged claims are unpatentable.

## **II. CLAIM CONSTRUCTION**

Patent Owner does not dispute that certain claim terms identified by the Petitioner (*i.e.*, “dresser,” “superabrasive,” “particles,” “protrusion,” “peripheral location,” “substantially,” and “about”) have been expressly defined in the '862 Patent, but “contends that no construction is necessary.” *See* POR, 3.

## **III. PERSON OF ORDINARY SKILL IN THE ART (“POSITA”)**

Patent Owner disagrees with the level of ordinary skill in the art articulated by Petitioner in an effort to disqualify Dr. Shanfield as an expert. *See* POR, 3. However, Dr. Tsai could not even articulate the proper level of education of a POSITA and the objective evidence demonstrates that Patent Owner's arguments lack merit.

First, Dr. Tsai could not decide what the proper education level of a POSITA should be prior to submitting his Declaration. When asked about the missing level of education in his '862 Declaration compared to required level set forth in the '270 Declaration, he said he's "not quite sure about this." *See* EX1047, 110:7-11 ("Q. Do you want to add any statement about 'a POSITA would have had at least a master's in the field of material science' to this sentence here? A. I had answered this earlier. I said that I'm not quite sure about this.").

Dr. Tsai's indecisiveness is not merely a clerical error. He testified that the education level he articulated in his '270 Declaration was incorrect. *See* EX1047, 107:18-25 ("Q. So is a bachelor in mechanical engineering sufficient or not sufficient to meet the level of a POSITA? A. Well, personally, to my opinion, such a professional technology, I think it would take at least master degree or Ph.D. degree. Then this person may have a better chance, but still no guarantee of that, but that would be my opinion." ). When asked again to clarify, he remained uncertain. EX1047, 109:2-8 ("Q. And I'm just trying to make sure that the record is clear, so it's just a very simple question. Do you want to change this from 'at least a bachelor's degree in mechanical engineering' to 'at least a master's degree in materials science'? A. I'm not sure, I'm not sure. I'm not sure. I'm not sure." ). Dr. Tsai's inability to consistently articulate even the proper education level of a

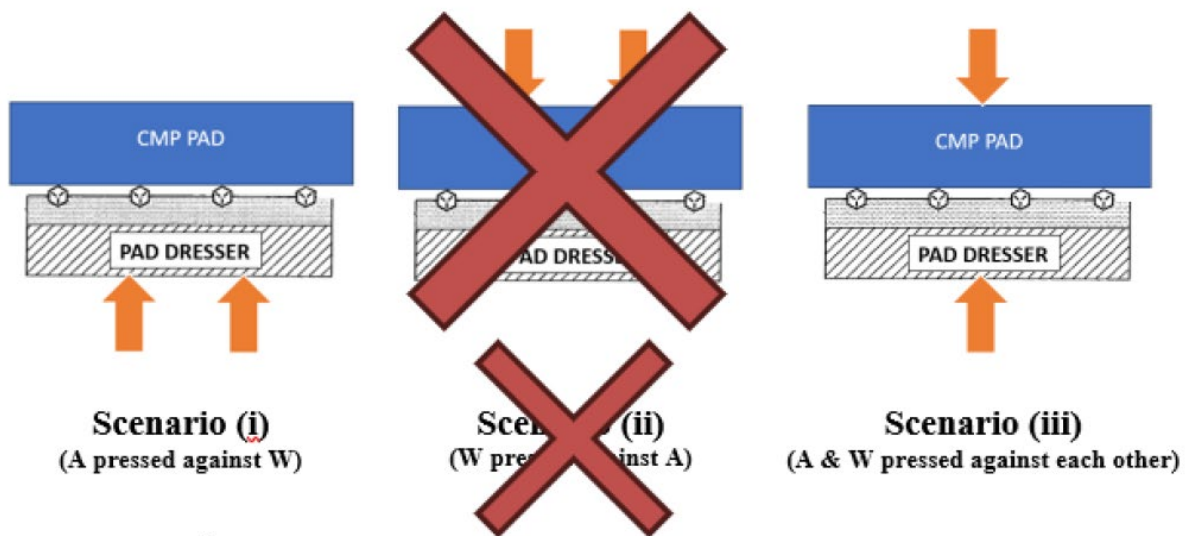
POSITA—and his subsequent changes in testimony—serve as a clear indication that Dr. Tsai's opinion lacks credibility.

Dr. Tsai further contends that “*experience in the field of integrated circuit processing and fabrication techniques*,” (Pet., 23), should be replaced by “*experience in developing CMP technology including experience with the design and development of CMP pad dressers*.” EX2011, ¶29. But Dr. Tsai articulates no objective rationale why the requisite experience must be so limited. EX2011, ¶¶26-30. In fact, the references overcome during prosecution explain how CMP technology is relevant in the field of integrated circuit processing and fabrication, supporting Petitioner's broader definition of POSITA. See EX1003, 892. US2010/0248595 (“Dinh-Ngoc”) explains that “[i]n the fabrication of electronic devices, .... [c]hemical mechanical planarization (CMP) is a common technique used to planarize or polish workpieces such as semiconductor wafers.” EX1058, [0005]. US2008/0292869 (“Sung’869”) explains that “the *computer manufacturing industry* relies heavily on CMP processes for polishing wafers of ceramics, silicon, glass, quartz and metals.” EX1012, [0002]. Accordingly, Petitioner's proposed definition of a POSITA should be adopted.

#### IV. GROUNDS IA/IB: SUNG'026 ANTICIPATES AND/OR RENDERS OBVIOUS CLAIMS 1-6, 9-12, AND 20

##### A. Sung'026 Discloses Limitation [1A]

Patent Owner argues that Sung'026 does not disclose limitation [1A] (“pressing a CMP pad dresser against a CMP pad”) because “contact [disclosed in Sung'026] can occur in several ways.” POR, 17. Specifically, Patent Owner argues that three different scenarios (i)-(iii) shown below are possible, but scenario (ii) does not read on [1A].



POR, 19. But even Patent Owner's own expert, Dr. Tsai, admits that a POSITA would have reasonably understood Sung'026 to teach limitation [1A]. *See Acoustic Technology, Inc. v. Itron Networked Solutions*, 949 F.3d 1366, 1373 (Fed. Cir. 2020) (“[T]he dispositive question is whether a skilled artisan would ‘reasonably

understand or infer' from a prior art reference that every claim limitation is disclosed in that single reference.”).

*First*, Dr. Tsai confirms that Patent Owner's scenario (i) is the “ordinary way” of performing CMP pad dressing—namely to have the CMP pad dresser press down onto a CMP pad that is mounted on a table top. EX1049, 72:11-15 (“Q. Did manufacturers press the CMP pad upward against the CMP dresser? A. The first way is the ordinary way where you have the pad at the bottom, the diamond tips at the top and presses down to the pad.”). See also EX1049, 21:8-22:1 (“Q. So the polyurethane pad was mounted on the table disk, correct? A. Uh-huh. Q. And the table disk -- is it moving up and down or staying stationary and only rotating? A. Generally, the way of using that is this pad, this table disk where the pad is mounted is stationary, sitting there and rotate, where the diamond disk is on top of it and it rotates and also move around, move back and forth.”).

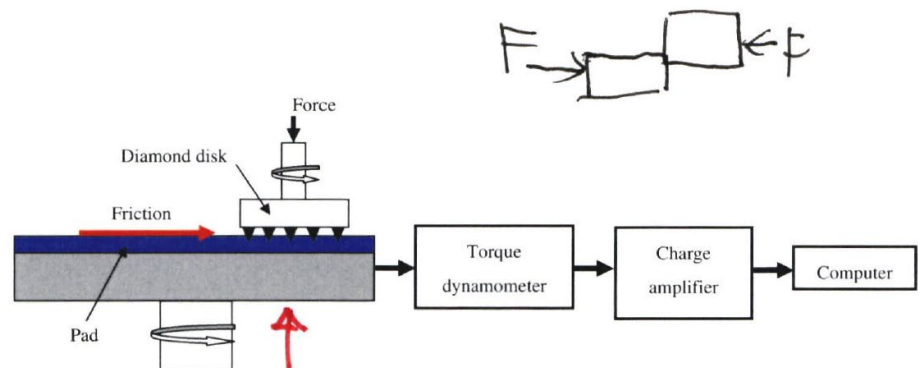


Fig. 4 a Dressing system and b polishing system

EX1045, Figure 4 (showing annotations by Dr. Tsai identifying “Diamond Disk” and “CMP pad” showing how “diamond tips at the top ... presses down to the pad”). Hence, a POSITA reading Sung’026 would have readily understood Sung’026 to be disclosing scenario (i).

**Second**, a POSITA would have reasonably understood Sung’026 to disclose scenario (iii) based on Newton’s Third Law of Motion, which teaches that an “equal and opposite force that is acting against the [downward] force” of the CMP pad dresser should be present. *See* EX1049, 31:19-25 (“Q. And based on Newton’s third law of motion, will there be an equal and opposite force that is acting against the force that’s shown here on Figure 6? A. ***Just like I said, in theory it’s okay***, but in reality, there are many factors to be considered.”).

**Fig. 6** Schematic illustration of friction force measurement setup



EX1045, Figure 6 (red upward arrow added by counsel during cross-examination to illustrate equal and opposite force acting against the downward “Force” shown in the figure). This was clearly articulated in the Petition, which explained that “because abrasion, friction, and pressures are achieved by ***pressing two objects***

*against each other*, Sung'026 teaches pressing a CMP pad dresser against a CMP pad.” Petition, 28. In short, a POSITA would have understood Sung'026 to teach limitation [1A].

**B. Sung'026 Discloses And/Or Renders Obvious Limitations [1B]-[1D]**

**1. A POSITA Would Have “At Once Envisaged” Limitations [1B]-[1D]**

Patent Owner argues that “Petitioners rely on combining several distinct *embodiments* from Sung'026 in arguing that Claim Limitation [1C] is disclosed.” POR, 20. Specifically, Patent Owner argues that three/four<sup>1</sup> different “*aspects*” of Sung'026 are disclosed. *See* POR, 20-22. Patent Owner also argues that Sung'026 does not disclose what cutting depth (recited in limitation [1D]) would “result from use of a dresser having the structural features recited in Claim Limitations [1B] and [1C].” POR, 26-28.

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<sup>1</sup> POR at 20-23 (directed to anticipation) argues *three* different “aspects” whereas POR at 41-44 (directed to obviousness) argues *four* different “aspects” are being disclosed/combined. The additional “fourth” aspect allegedly arises because Patent Owner considers the disclosures in the same paragraph [0073] of Sung'026 constitutes two different “aspects.”

“However, a reference can anticipate a claim even if it ‘d[oes] not expressly spell out’ all the limitations arranged or combined as in the claim, if a person of skill in the art, reading the reference, would ‘at once envisage’ the claimed arrangement or combination.” *Kennametal, Inc. v. Ingersoll Cutting Tool Co.*, 780 F.3d 1376, 1381 (Fed. Cir. 2015) (alteration in original).<sup>2</sup> “[W]hen a reference discloses elements in different locations in the disclosure, the relevant question is whether the reference is sufficiently clear in disclosing the combinability of those elements such that a skilled artisan would ‘at once envisage’ the claimed combination.” *Chamberlain Grp., Inc. v. Techtronic Indus. Co.*, 935 F.3d 1341, 1350 (Fed. Cir. 2019).

Even Patent Owner’s expert, Dr. Tsai, admitted that a POSITA would have been able to “at once envisage” that these allegedly different “aspects” of Sung’026 can be combined as in [1B]-[1D]. EX1049, 50:5-51:23 (“Q. So ’026 intends to make

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<sup>2</sup> Contrary to Patent Owner’s position, (POR at 23), “‘at once envisage’ arguments do not present a new approach but rather further explain why the embodiments on which Petitioner relies in the Petition are combinable such that [Sung’026] discloses all of the elements as arranged in the claim as anticipation requires.” *See Ontel Products Corporation v. Guy A. Shaked Investments, Ltd.*, IPR2020-01728, Paper 37 at 33 (PTAB April 18, 2022).

a diamond disk that has all the protrusions with identical heights and with the same orientation, which combines the three different aspects you described in paragraph 69, is that correct? A. In addition, it also intends to control the depths of penetrating into the pad. For example, if I want to penetrate 10 micron into the pad, then the protrusion height should be at least 10 micron. ... Q. Great. And just to be clear, it's not the '862 patent, it's the Sung'026 that's trying to combine all of these three together, correct? A. Well, that's right, for '026, to achieve that, I personally think that they should achieve those conditions. But I don't know how other people do it. But for me, if I want to achieve a very perfect diamond disk, that is the way I would do.").

Dr. Tsai only learned during his cross-examination that Sung'026 explicitly taught the combinability of these allegedly different "aspects" in paragraph [0105] of Sung'026. EX1049, 48:3-8 ("Q. Were you aware of that statement in paragraph 105 before rendering your opinion in paragraph 69 of your declaration? A. (In English) I don't know. Q. You did not know? A. Yeah, no."); see EX1004, [0105] ("Numerous modifications and alternative arrangements may be devised by those skilled in the art without departing from the spirit and scope of the present invention and the *appended claims are intended to cover such modifications and such arrangements.*"). And the claims of Sung'026 did indeed combine these allegedly different aspects together. For example, in the first column of the Table below,

Patent Owner's characterization of the four "different aspects" is identified.<sup>3</sup> POR, 20-22. The middle column shows the allegedly distinct aspects of Sung'026's specification as characterized by the Patent Owner. POR, 20-22. The arguments directed to limitation [1D] have been further added below as a "fifth aspect." The last column shows Sung'026's claims that incorporate these "aspects." As highlighted in the claim dependencies below, Sung'026 combined these allegedly 'different aspects' together in many of its claims.

| Aspect   | Sung'026 Specification                                                                                                                                                        | Sung'026 Claims                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>3</b> | <b>[0073]</b> For example, in one aspect each of the plurality of superabrasive particles may protrude to a predetermined height above the solidified organic material layer. | <b>1.</b> A method of improving retention of superabrasive particles held in a solidified organic material layer of an abrading tool, a portion of each of said superabrasive particles protruding out of the solidified organic material layer ...<br><br><b>30.</b> A superabrasive tool ... comprising... a plurality of superabrasive particles secured in the solidified organic material layer in an arrangement as recited in <b>claim 1</b> . |

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<sup>3</sup> The "third aspect" identified by Patent Owner appears commensurate with limitation [1B] of the '862 Patent, which recites "the dresser including a monolayer of a plurality of superabrasive particles protruding from a matrix layer."

|   |                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|   |                                                                                                                                                                                                                                                                                 | <p>31. The tool of claim 30, wherein each of the plurality of superabrasive particles protrude to a predetermined height above the solidified organic material layer.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 1 | <p>[0053] It may also be beneficial for the superabrasive particles to protrude from the solidified organic material layer to a predetermined height or series of heights that is/are along a designated profile. ... In one aspect, the designated profile may be a plane.</p> | <p>3. The method of claim 1, wherein a majority of the plurality of superabrasive particles protrudes to a predetermined height above the solidified organic material layer.</p> <p>7. The method of claim 3, wherein the superabrasive particles protrude to a predetermined height that is along a designated profile.</p> <p>8. The method of claim 7, wherein the designated profile is a plane.</p> <p>36. The tool of claim 31, wherein the plurality of superabrasive particles protrude to a predetermined height is along a designated profile.</p> <p>37. The tool of claim 36, wherein the designated profile is a plane.</p> |
| 2 | <p>[0056] In yet another aspect, the plurality of superabrasive particles are arranged such that their tips vary from the designated profile by less than about 1 microns.</p>                                                                                                  | <p>12. The method of claim 7, wherein a majority of the plurality of superabrasive particles are arranged such that their tips vary from the designated profile to less than about 10% of the average size of the superabrasive particles.</p> <p>16. The method of claim 1, wherein the plurality of superabrasive</p>                                                                                                                                                                                                                                                                                                                  |

|   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                         |
|---|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <p>particles are of substantially the same size.</p> <p>41. The tool of <b>claim 31</b>, wherein the plurality of superabrasive particles are arranged such that their tips protrude to about 10% of the average size of the superabrasive particles.</p>                                                                                                               |
| 4 | [0073] In a further aspect the variation from the predetermined height may be from about 10 microns to about 20 microns.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 33. The tool of <b>claim 31</b> , wherein variation from the predetermined height is from about 1 micron to about 20 microns.                                                                                                                                                                                                                                           |
| 5 | <p>[0010] As such, each of the plurality of superabrasive particles may protrude to a predetermined height above the solidified organic material layer. ... In yet another aspect, the predetermined height may produce a cutting depth of from about 10 micron[s] to about 20 microns when used to abrade a work piece."</p> <p>[0052] As such, in one aspect, a majority of the plurality of superabrasive particles may protrude to a predetermine height above the solidified organic material layer. ... In yet another specific aspect, the predetermined height may produce a cutting depth of from about 10 micron[s] to about 20 microns when used to abrade a work piece.</p> | <p>3. The method of <b>claim 1</b>, wherein a majority of the plurality of superabrasive particles protrudes to a predetermined height above the solidified organic material layer.</p> <p>6. The method of <b>claim 3</b>, wherein the predetermined height produces a cutting depth of from about 10 micron to about 20 microns when used to abrade a work piece.</p> |

In other words, Patent Owner's argument that combining certain 'aspects' of Sung'026 constitutes "pure *hindsight bias*" (POR, 42) is unsupported. Because Sung'026 itself combined the allegedly different "aspects," a POSITA would 'at once envisage' the combination, and no hindsight bias exists. *See Ontel Products Corporation v. Guy A. Shaked Investments, Ltd.*, IPR2020-01728, Paper 37, at 32-33.

**2. A POSITA Would Have Had A Reasonable Expectation Of Success To Make The Proposed Modification In Limitation [1C]**

Patent Owner's argument that "Petitioner fails to argue (let alone support) that a POSITA would have had a reasonable expectation of success" in making the modification (POR, 41) is contradicted by the record. For example, Petitioner explained that Sung'026, just like the '862 Patent, discloses a "reverse casting" process to level of the diamond particles and form the claimed CMP pad dresser. Petition, 35 (citing EX1004, [0083] and EX1001, 17:8-15). Moreover, the Petition articulated a reasonable expectation of success relying on Sung'026's teaching "that tip-to-tip variation across all diamond particles can be controlled to be less than 2  $\mu$ m using the reverse casting process." Petition, 35-36.

**3. Patent Owner's Lack Of Enablement Argument Directed to Limitations [1B]-[1D] Conflicts With Patent Owner's Claim Of Priority To Sung'026**

Patent Owner further argues that “Sung’026 does not provide an enabling disclosure.” POR, 31. But Patent Owner’s position is belied by the positions it has taken in the parallel IPR2024-00535, directed to U.S. Patent No. 9,724,802 (“’802 Patent”). The ’802 Patent is a CIP of the instant ’862 Patent. Although the ’802 Patent cannot claim priority to the ’786 Application (which published as Sung’026) because the co-pending application requirement was not met,<sup>4</sup> Patent Owner nevertheless argued that every limitation of the ’802 Patent is fully supported by the disclosures of the ’786 Application (and hence Sung’026) under 35 U.S.C. §112. IPR2024-00535, Paper No. 17 [’802 POR], 7-14, 19-31. And in order to be afforded priority, Sung’026 must provide both a written description of the claims *and* enable the claims. *See* 35 U.S.C. §112 (“The specification shall contain a *written description* of the invention, and of the manner and process of making and using it, in such full, clear, concise, *and exact terms as to enable any person skilled in the art...*); *see also Ariad Pharm., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (*en banc*) (“Since its inception, this court has consistently held that § 112,

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<sup>4</sup> *See* IPR2024-00535, Paper 23 [Petitioner’s Reply], 6-9.

first paragraph, contains a written description requirement separate from enablement, ....”).

As shown below, limitations [1C] and [1D] of the '862 Patent are substantially similar to limitations [1E]/[1F] and [6] of the '802 Patent, respectively.

| '862 Patent                                                                                                                                                                                                                  | '802 Patent                                                                                                                                                                                                                    |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| [1C] 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 <b>10 microns</b> and | [1E] 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 <b>50 microns</b> , and |
| [1C] the difference in protrusion distance between the <b>highest 10 protruding tips</b> of the monolayer of superabrasive particles are within about <b>20 microns or less</b>                                              | [1F] the difference in protrusion distance between the <b>highest 1% of the protruding tips</b> of the monolayer of superabrasive particles are within about <b>80 microns or less</b> .                                       |
| [1D] rotating the dresser against the CMP pad such that asperities are cut into the CMP pad having a maximum <b>cutting depth of about 60 microns</b> .                                                                      | [6] ...rotating the dresser against a CMP pad cuts asperities into the CMP pad having a <b>cutting depth of less than or equal to about 50 microns</b> ..                                                                      |

Below is a comparison showing the allegedly different aspects of Sung'026 relied on in the Petition placed next to the corresponding portions of the '786 Application (which published as Sung'026) that Patent Owner relied on for 35 U.S.C. §112 support for limitations [1E], [1F], and [6] of the '802 Patent. As shown, the Patent Owner relies on nearly identical “aspects” for alleged support under §112.

| Aspect | Sung'026 As Prior Art                                                                                                                                                                                                                                                                                                                                     | '786 Application As Priority Document (EX1059)                                                                                                                                                                                                                                                                                |
|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1      | [0053] It may also be beneficial for the superabrasive particles to <i>protrude from the solidified organic material layer to a predetermined height</i> or series of heights that is/are along a designated profile. ... In one aspect, the designated profile may be a plane.                                                                           | 19:10-12: For example, <i><u>in one aspect</u></i> each of the plurality of superabrasive particles may <i>protrude to a predetermined height above the solidified organic material layer</i> .                                                                                                                               |
| 2      | [0056] In yet another aspect, the plurality of superabrasive particles are arranged such that <i>their tips vary from the designated profile by less than about 1 microns</i> .                                                                                                                                                                           | 13:3-4: <i><u>In another aspect</u></i> , the plurality of superabrasive particles are arranged such that <i>their tips vary from the designated profile by from about 20 microns to about 40 microns</i> .                                                                                                                   |
| 3      | [0073] For example, in one aspect each of the plurality of superabrasive particles may <i>protrude to a predetermined height above the solidified organic material layer</i> .                                                                                                                                                                            | 19:10-12: For example, <i><u>in one aspect</u></i> each of the plurality of superabrasive particles may <i>protrude to a predetermined height above the solidified organic material layer</i> .                                                                                                                               |
| 4      | [0073] In a further aspect the <i>variation from the predetermined height may be from about 10 microns to about 20 microns</i> .                                                                                                                                                                                                                          | 19:15-18: <i><u>In another aspect</u></i> the <i>variation from the predetermined height may be from about 1 micron to about 20 microns</i> .                                                                                                                                                                                 |
| 5      | [0052] As such, in one aspect, a majority of the plurality of superabrasive particles may protrude to a predetermine height above the solidified organic material layer. ... In yet another specific aspect, the predetermined height may <i>produce a cutting depth of from about 10 micron[s] to about 20 microns</i> when used to abrade a work piece. | 11:5-12: Though any predetermined height that would be useful in an abrading tool would be considered to be within the presently claimed scope, ... In yet another specific aspect, the predetermined height may <i>produce a cutting depth of from about 10 micron to about 20 microns</i> when used to abrade a work piece. |

In IPR2024-00535 directed to the '802 Patent, Patent Owner attempts to argue that Petitioner “waived any argument that '802 element [1E] here is not supported by Sung'026.” IPR2024-00535, Paper No. 17 at 20. However, Patent Owner turns the law on its head. While it is true that both a priority document and an anticipatory prior art reference must enable the invention without undue experimentation, “it is possible for a specification to *enable* the practice of the invention as broadly as it is claimed, and still not *describe* that invention” for the purposes of 35 U.S.C. §112 support. *See Vas-Cath Inc*, 935 F.2d at 1561 (Fed. Cir. 1991) (quoting *In re DiLeone*, 436 F.2d 1404, 1405, 168 USPQ 592, 593 (CCPA 1971)) (*emphasis in original*). That is the scenario here.

Moreover, Sung'026 is a printed publication of a patent application, which is presumptively enabling. *See In re Antor Media Corp.*, 689 F.3d 1282, 1288 (Fed. Cir. 2012) (finding “both claimed and unclaimed materials disclosed in a patent are presumptively enabling”); *Sandoz Inc. v. Pharmacyclics LLC*, IPR2019-00865, Paper 29 at 13 (PTAB Sept. 24, 2020). And nothing in Patent Owner's arguments rebuts such a presumption. Indeed, any opinion rendered by Dr. Tsai regarding enablement is highly suspect given that Dr. Tsai was not able to articulate even the minimum requirements regarding the law on enablement. EX1049, 38:19-23 (“Q. U.S. law has a concept called enablement which has certain requirements. Do you know what those requirements are to meet the enablement requirement? A. I don't

know.”). In fact, Dr. Tsai admitted during cross-examination that these purportedly non-enabled features are directed to simple technology that any POSITA would have been able to readily carry out. For example, he admitted that “if I want to penetrate 10 micron into the pad, then the protrusion height should be at least 10 micron.” *See* EX1049, 50:5-51:23. In other words, what Patent Owner contends as not being enabled by Sung’026 are common sense concepts that are clearly disclosed in Sung’026. *See Nat’l Recovery Techs., Inc. v. Magnetic Separation Sys.*, 166 F.3d 1190, 1196 (“[T]he scope of enablement, in turn, is that which is disclosed in the specification plus the scope of what would be known to one of ordinary skill in the art without undue experimentation.”)

### C. Sung’026 Discloses Added Limitations Of Dependent Claims 2-4

Patent Owner argues that the Petition’s calculation of the number of superabrasive particles is “based on the outdated and incorrect view that ‘substantially all of the superabrasive particles are contributing to cutting asperities.’” POR, 35. As support, Patent Owner cites passages from the ’862 Patent and an unrelated paper by Dr. Tsai (EX2002). *See* POR, 35 (citing EX1001, 7:21-23 and EX2002, 3-4). But neither refutes what *Sung’026 teaches*.

The ’862 Patent explains that the reason why “only a small percentage of superabrasive particles in a *typical* CMP pad dressers are positioned so as to penetrate or cut into a CMP pad” is “due to difficulties associated with superabrasive

particle *leveling*.” EX1001, 7:18-23. Similarly, EX2002 explains that “the dressing behaviors of polishing pads are unpredictable” because “the tips of diamond grits are *not at the same height*.” EX2002, 2-3.

Sung’026 recognized this issue as well. *See* EX1004, [0006] (explaining “the particle tip height must be precisely leveled in order to uniformly dress the pad”). And Sung’026 addressed the leveling issue by “disposing superabrasive particles in an organic material layer according to an arrangement such that the superabrasive particles protrude at least partially from the organic material layer,” (EX1004, [0077]), so that “the tips of the superabrasive particles will have the same orientation or attitude and *also be substantially leveled*.” EX1004, [0079]. What results from such substantially leveled tips are about “31,416 diamond particles,” or “[a]t a minimum, more than half (i.e., ‘majority’ which is about 15,708 diamond particles) [that] contribute to cutting asperities into the CMP pad.” Pet., 39-40. This is well above the claimed “at least 100 tips of the plurality of superabrasive particles [that] cut asperities into the CMP pad as the dresser is rotated.” EX1001, claim 2; *see also* claims 3-4 (claiming “at least 50” or “at least 25” tips).

Finally, Dr. Shanfield’s testimony stands unrebutted regarding claims 2-4. Dr. Tsai provided no opinion regarding whether Sung’026 discloses the added limitations of claims 2-4. EX1049, 66:24-67:3 (“Q. Did you provide any opinion

regarding how petitioner applied Sung'026 specifically to the added limitations of Claims 2 to 6, 9 through 12 and 20 of the petition? A. No.”).

**D. Sung'026 Discloses Added Limitations Of Dependent Claims 5-6**

Patent Owner appears to rely largely on the same arguments it made for independent claim 1. And Dr. Shanfield's testimony stands unrebutted regarding claims 5-6 as well. EX1049, 66:24-67:3 (“Q. Did you provide any opinion regarding how petitioner applied Sung'026 specifically to the added limitations of Claims 2 to 6, 9 through 12 and 20 of the petition? A. No.”). Hence, for at least the above reasons, Patent Owner's arguments are incorrect.

**E. Sung'026 Discloses Added Limitations Of Dependent Claim 9**

Patent Owner argues that “Sung'026 *never says that this unnamed region* [from the center of the disk to about 20% of the radius] *is ‘devoid of superabrasive particles.’*” POR, 32-33. But a POSITA would “reasonably understand or infer” that Sung'026 teaches claim 9. Sung'026 provides four different examples of a “centrally located particle.” The first three examples provide particles positioned in an area that extends from the tool's center outward: (1) “up to about 90% of the radius;” (2) up “to about 50% of the radius;” and (3) up “to about 33% of the radius.” EX1004, [0036]. The fourth example teaches “from about 20% to about 90% of the radius.” *Id.* In other words, a POSITA would reasonably understand this fourth

example, relied on in the Petition, to teach that the region from center of the tool to 20% of the radius of the tool is devoid of particles.

Indeed, Dr. Shanfield's testimony stands unrebutted regarding claim 9. Dr. Tsai provided no opinion regarding whether Sung'026 discloses the added limitation of claim 9. EX1049, 66:24-67:3 ("Q. Did you provide any opinion regarding how petitioner applied Sung'026 specifically to the added limitations of Claims 2 to 6, 9 through 12 and 20 of the petition? A. No.").

**F. Sung'026 Discloses Added Limitations Of Dependent Claims 10-12 And 20**

For each of claims 10-12 and 20, Patent Owner resorts to the similar arguments that Petitioner is allegedly "improperly cobbl[ing] together multiple 'aspects' of Sung'026." See POR, 33-34, 36-38. Patent Owner's argument fails for at least the same reasons as discussed in Section IV.B.1.

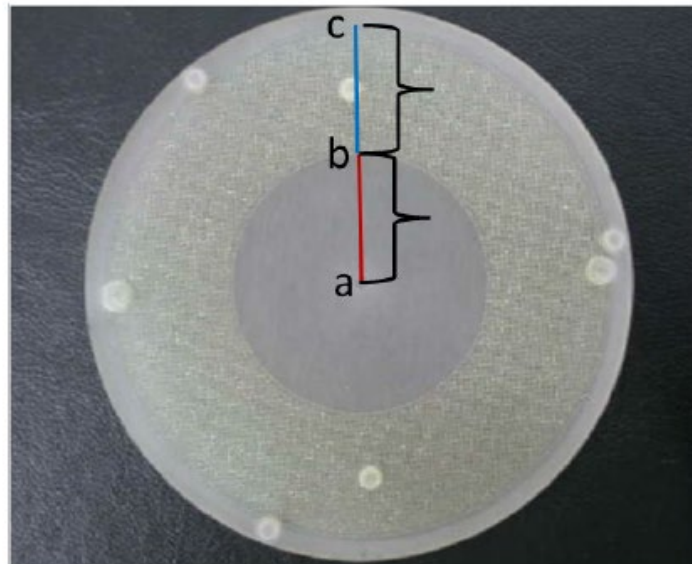
Moreover, Dr. Shanfield's testimony regarding claims 10-12 and 20 stands unrebutted. EX1049, 66:24-67:3 ("Q. Did you provide any opinion regarding how petitioner applied Sung'026 specifically to the added limitations of Claims 2 to 6, 9 through 12 and 20 of the petition? A. No.").

**V. GROUND II: SUNG'026 AND SUNGICPT RENDERS OBVIOUS DEPENDENT CLAIMS 5-10**

Patent Owner argues that "Petitioner assumes from the *lack of information* about the contents of the area within radius  $a$  in SungICPT's Figure 1 that there are

no superabrasive particles there.” POR, 47. But even Dr. Tsai admits that the area within radius  $a$  in SungICPT Figure 1 does not have any superabrasive particles there. EX1049, 55:10-13 (“Q. Are there diamond particles in the central ring, or region, of that ODD disk [in Figure 1 of EX1005]? A. Based on my profession, there’s no diamond at the center part of it.”).

distance from a to b  $\approx$  distance from b to c



EX1005, Figure 1, annotated.

Again, Dr. Tsai does not rebut Dr. Shanfield's testimony regarding claims 5-10 in Ground II. EX1049, 67:11-12 (“Q. Have you seen SungICPT before? A. No.”).

## **VI. GROUNDS III-IV: OBVIOUSNESS WAS ESTABLISHED FOR EACH IDENTIFIED COMBINATION**

PO raises no additional substantive challenges to Grounds III through VI other than merely repeating the arguments raised in its challenge to Grounds IA/IB. Again, Dr. Tsai does not rebut Dr. Shanfield's testimony regarding claims 5-10 and 13-19. EX1049, 67:7-24 ("Q. And do you see that grounds 2 to 6 rely on one additional prior art reference in combination with Sung'026? A. Yes. ... Q. Okay. So you provided no opinion regarding any of the references directed to SungICPT, Nishioka, Lin, Kim or Koyama, correct? A. Correct.")). Accordingly, for the same reason, claims 5-10 and 13-19 are unpatentable.

## **VII. DR. TSAI'S LACK OF CREDIBILITY**

Finally, Dr. Tsai opinions lack credibility given his lack of understanding of the law, lack of requisite diligence, and bias towards Dr. Sung. Specifically, Dr. Tsai admitted:

- *He does not understand the legal principles in his Declaration. See EX1047, 18:14-18 ("Q. So you don't understand the legal understanding sections in your declarations, correct? A. For those, indeed, I don't have much understanding.").*
- *He did not closely review the claims of the '862 Patent to accurately determine the meaning of the claims. See EX1047, 84:21-23 ("Q. Did*

you *specifically* review columns 20 to 21 of the '862 patent [that contains the claims] before rendering your opinion? A. I *generally* reviewed them.”).

- *He did not review the Petition filed in this proceeding to properly formulate an understanding of Petitioner's positions.* See EX1049, 66:1-8 (“Q. I’m going to hand you a copy of the petition that was filed in this proceeding. Have you seen this petition before? A. No. Q. You have never seen the petition prior to submitting your declaration in this proceeding, Dr. Tsai? A. (In English) No.”).
- *He has worked closely with Dr. Sung over many years, having received funding from Dr. Sung, which in turn allowed him to advance his career.* See generally EX1050-1057, EX2003 (showing papers Dr. Tsai published with Dr. Sung as co-authors); EX2002, p. 104 (“The authors would like to thank ... Dr. J. S[u]ng of Kinik Company, Taiwan, for providing the financial support, and the conditioners used in this study.”); see also EX1048, 184:13-185:25; EX1048, 226:21-25 (“Q. And without Kinik’s funding and tools, you could not have published many of your papers, correct? A. Well, then, it would be pretty difficult for me to do so.”); EX1048, 227:9-17 (“Q. And you testified – and this is your own words – ‘In academic field, you need to publish papers in order to be promoted.’

Correct? A. That's correct, generally we need to publish papers in order to be promoted. Q. So these papers did in fact help you get promoted, correct? A. Some papers offered the help, but some not."); EX1047, 60:13-23 ("Q. So by thanking Dr. Sung, you were hoping that Kinik will provide more future financial support? A. That's a typical Chinese way to do so in the hope that the company can give us further support in the future.").

Given these numerous issues, Dr. Tsai's purported opinions in his Declaration should be afforded no weight.

## **VIII. CONCLUSION**

For the reasons stated above and in the Petition, Samsung respectfully requests that the Board cancel the challenged claims.

Dated: March 5, 2025

Respectfully submitted,

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**CERTIFICATION UNDER 37 C.F.R. § 42.24(d)**

I hereby certify that this paper, excluding the portions exempted under 37 C.F.R. § 42.24(c), has 5,283 words as counted by Microsoft Word, the word-processing program used to prepare this paper.

Dated: March 5, 2025

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**CERTIFICATE OF SERVICE**

Pursuant to 37 C.F.R. § 42.6(e), the undersigned certifies that on March 5, 2025, a complete copy of Petitioner's Reply in Support of Its Petition and corresponding exhibits was served on counsel of record for the Patent Owner by filing the documents through P-TACTS and by sending via electronic mail to the following addresses:

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