

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SOLUS ADVANCED MATERIALS CO., LTD.,
Petitioner

v.

SK NEXILIS CO., LTD.,
Patent Owner

Case IPR2024-01463
U.S. Patent No. 11,591,706

**PATENT OWNER PRELIMINARY RESPONSE
UNDER 37 C.F.R. § 42.107(a)**

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PATENT OWNER'S EXHIBIT LIST

Exhibit No.	Description
2001	Defendants' Motion to Stay, <i>SK nexilis Co., Ltd. v. Solus Advanced Materials Co., Ltd. et al.</i> , No. 2:23-cv-00539 (E.D. Tex. Oct. 24, 2024)
2002	Plaintiff's Opposition to Defendants' Motion to Stay, <i>SK nexilis Co., Ltd. v. Solus Advanced Materials Co., Ltd. et al.</i> , No. 2:23-cv-00539 (E.D. Tex. Nov. 7, 2024)
2003	Defendants' Reply in Support of Motion to Stay, <i>SK nexilis Co., Ltd. v. Solus Advanced Materials Co., Ltd. et al.</i> , No. 2:23-cv-00539 (E.D. Tex. Nov. 14, 2024)
2004	Plaintiff's Sur-Reply in Opposition to Defendants' Motion to Stay, <i>SK nexilis Co., Ltd. v. Solus Advanced Materials Co., Ltd. et al.</i> , No. 2:23-cv-00539 (E.D. Tex. Nov. 21, 2024)
2005	Amended Docket Control Order, <i>SK nexilis Co., Ltd. v. Solus Advanced Materials Co., Ltd. et al.</i> , No. 2:23-cv-00539 (E.D. Tex. Jan. 2, 2025)
2006	Federal Court Management Statistics (Sept. 30, 2024)
2007	Complaint, <i>SK nexilis Co., Ltd. v. Solus Advanced Materials Co., Ltd. et al.</i> , No. 2:23-cv-00539 (E.D. Tex. Nov. 21, 2023)
2008	Results charted from DocketNavigator.com, run on January 5, 2025, for Success of Motion to Transfer Venue for Convenience Decided by Judge Rodney Gilstrap
2009	Order Granting Service Waiver, <i>SK nexilis Co., Ltd. v. Solus Advanced Materials Co., Ltd. et al.</i> , No. 2:23-cv-00539 (E.D. Tex. Feb. 23, 2024)
2010	Defendants' P.R. 3-3 Invalidity Contentions, <i>SK nexilis Co., Ltd. v. Solus Advanced Materials Co., Ltd. et al.</i> , No. 2:23-cv-00539 (E.D. Tex. Aug. 23, 2024) (including Apps. A1-A3, A10, A11, A19)

Exhibit No.	Description
2011	Appendix B – Secondary References Chart
2012	Overview of Korean Pat. Appl. Publ. No. KR20170000761A to Kim <i>et al.</i> , accessed January 28, 2025 at: https://worldwide.espacenet.com/patent/search/family/057585269/publication/KR20170000761A?q=pn%3DKR20170000761A
2013	Overview of U.S. Pat. No. 9,209,485 to Cheng <i>et al.</i> , accessed January 27, 2025 at: https://worldwide.espacenet.com/patent/search/family/052390762/publication/US9209485B2?q=pn%3DUS9209485B2
2014	Overview of U.S. Pat. No. 5,834,140 to Wolski <i>et al.</i> , accessed January 28, 2025 at: https://worldwide.espacenet.com/patent/search/family/026446848/publication/US5834140A?q=pn%20%3D%20%225834140%22
2015	Overview of U.S. Pat. No. 9,457,541 to Kim <i>et al.</i> , accessed January 28, 2025 at: https://worldwide.espacenet.com/patent/search/family/045467234/publication/US9457541B2?q=pn%20%3D%20%229457541%22
2016	Overview of U.S. Pat. Appl. Publ. No. 2016/0260981 to Lee <i>et al.</i> , accessed January 28, 2025 at: https://worldwide.espacenet.com/patent/search/family/051997203/publication/US2016260981A1?q=pn%20%3D%20%222016260981%22
2017	Overview of WIPO Publ. No. WO 2014/115681 to Shinozaki <i>et al.</i> , accessed January 28, 2025 at: https://worldwide.espacenet.com/patent/search/family/051227472/publication/WO2014115681A1?q=pn%20%3D%20%222014115681%22
2018	Overview of U.S. Pat. Appl. Publ. No. 2013/0108922 to Shinozaki <i>et al.</i> , accessed January 28, 2025 at: https://worldwide.espacenet.com/patent/search/family/045402087/publication/US2013108922A1?q=pn%20%3D%20%222013108922%22

Exhibit No.	Description
2019	Overview of U.S. Pat. Appl. Publ. No. 2015/0267313 to Chou <i>et al.</i> , accessed January 28, 2025 at: https://worldwide.espacenet.com/patent/search/family/053437025/publication/US2015267313A1?q=pn%20any%20%222015267313%22

I. Introduction

U.S. Patent No. 11,591,706 (“the ’706 patent”) claims innovative, non-obvious improvements to electrolytic copper foil for secondary batteries. Specifically, the claims are directed to electrolytic copper foils having excellent handling characteristics, achieved through controlling of surface texture and surface shape factors. The inventors discovered that, by precisely manipulating material properties of the foil and during the foil production process, certain unexpected and desirable performance characteristics could be achieved.

The claims reflect the precision needed to achieve the desired results. For example, the claims specify that TC of the (220) plane of the claimed foil is from 0.4 to 1.32, wherein the TC of the (220) plane is defined by the following equation.

$$TC(220) = \frac{\frac{I(220)}{I_0(220)}}{\frac{1}{n} \sum \frac{I(hkl)}{I_0(hkl)}}$$

As another example, claim 1 specifies that the difference in peak density (PD) between the claimed first and second surfaces ($|\Delta PD|$) is 96 ea or less. This claimed difference in peak density is wholly absent from Dobashi – one of the primary references relied upon by Petitioner.

SK nexilis Co., Ltd. (“Patent Owner”), the ’706 patent assignee, has long remained a leader in the battery copper foil industry, with significant investment in the research and development of battery copper foil products.

Solus Advanced Materials Co., Ltd.’s (“Solus” or “Petitioner”) Petition for review of claims 1-10 should be denied because it fails to demonstrate a reasonable likelihood that any challenged claim will be found unpatentable. But the Board need not even reach the merits, as the facts and circumstances here warrant denying institution under *Fintiv*.

Under Section 314(a), the *Fintiv* factors strongly support discretionary denial. Notably, the co-pending litigation trial date is nearly six months before the FWD deadline, significant investment in the co-pending litigation has occurred and will continue to occur prior to institution, the Petition was filed ten months after the complaint was filed, and the Petition’s merits are very weak, relying on at least three references for each ground and failing to meet its burden to show a reasonable expectation of success in making the extensive combinations.

Should the Board reach the merits, the Petition has numerous deficiencies in establishing a reasonable expectation of success in combining three or more references. In addition, the Petition fails to establish that one of the primary references—Dobashi—discloses a key claim element.

For Grounds 1A and 2A, Petitioner cobbles together disclosures about surface parameters from three different references. But other than asserting that each reference discloses electroplating copper foils, Petitioner does not offer any credible reason why a POSA would have had a reasonable expectation of success

in making the extensive combination. Petitioner's conclusory assertion is particularly troubling, given the unpredictable nature of the electrolytic copper foil technology at issue. Critically, Petitioner does not address the interplay between numerous related surface characteristics of electrolytic copper foils for lithium secondary batteries and simply assumes that a POSA would have mixed and matched different characteristics to achieve a desired result. In an attempt to cure this problem, Petitioner resorts to impermissible hindsight, relying specifically on the '706 patent disclosure for support. As such, Petitioner has failed to demonstrate that there would have been a reasonable expectation of success achieving the proposed combinations.

Additionally, with respect to Ground 2A, Petitioner fails to demonstrate that Dobashi discloses the peak density limitation ($|\Delta PD|$) of claim 1. Acknowledging that Dobashi does not explicitly disclose the peak density limitation, Petitioner attempts to derive peak density values from RSm values disclosed by Dobashi. But none of the standards cited by Petitioner show that peak density can be derived from Dobashi's RSm. RSm measures the average spacing between peaks within a sampling length and thus, by definition, *cannot* inform how many peaks within a sampling length have a height greater than a set boundary line, a criteria needed to determine peak density according to the applicable ASME standard. Because Dobashi does not disclose peaks that could satisfy the claimed peak density

criteria, Petitioner cannot demonstrate that their combinations used in Ground 2A render obvious the challenged claims.

In sum, the Board should apply its discretion to deny institution under *Fintiv*. Alternatively, the Board must deny institution on the merits, as the Petition is fundamentally deficient—failing to show all claim elements and failing to demonstrate a reasonable expectation of success for combining references.

II. Person of Ordinary Skill In The Art (POSA)

For purposes of this Preliminary Response, Patent Owner applies Petitioner’s level of skill for a person of ordinary skill in the art (POSA). Pet., 5-6.

III. Claim Construction

The Board need not construe any term in order to determine that institution should be denied. Patent Owner reserves the right to contest Petitioner’s implicit or explicit constructions during the proceeding.

IV. Overview of The ’706 Patent

The ’706 patent is directed to “an electrolytic copper foil having excellent handling characteristics in the manufacture of copper foil and in post-processing for manufacturing a secondary battery.” EX1001, Abstract. To achieve these characteristics, the ’706 patent discloses electrolytic copper foils having a controlled surface texture factor and a controlled surface shape factor designed to prevent the occurrence of wrinkles, curls, and tears in the foil during manufacturing. EX1001, 1:65-2:3, 3:40-43. The controlled surface texture factor is

the texture coefficient TC of the (220) plane in an X-ray diffraction pattern of the foil. EX1001, 3:44-4:21. The controlled surface shape factor is the difference between (Rz/Ra) at the first surface of the electrolytic copper foil and (Rz/Ra) at the second surface of the foil, i.e. $|\Delta(Rz/Ra)|$. EX1001, 4:22-26. As explained throughout the '706 patent, and as exemplified in the patent's examples, simultaneously controlling the surface texture factor, the surface shape factor, and the peak density (PD) on surfaces of the foil creates a foil having (i) mechanical properties that resist tearing, wrinkling, and curling, and (ii) high adhesion force with a negative electrode active material (e.g., graphite) of a lithium secondary battery. EX1001, 10:7-11:31, Table 2.

A. Overview of the '706 Patent Claims

Independent claim 1 of the '706 patent recites “[a]n electrolytic copper foil having a first surface and a second surface.” EX1001, 11:44-45. The texture coefficient (TC) of the (220) plane of the claimed foil (i.e., the controlled surface texture factor), is from 0.4 to 1.32. EX1001, 11:46-47. The texture coefficient (TC) of the (220) plane is defined by the following equation.

$$TC(220) = \frac{\frac{I(220)}{I_0(220)}}{\frac{1}{n} \sum \frac{I(hkl)}{I_0(hkl)}}$$

Equation 1 (reproduced from EX1001, 11:50-54).

Further, claim 1 specifies that the difference between the ratio Rz/Ra on the

claimed first and second surfaces ($|\Delta(Rz/Ra)|$) (i.e., the controlled surface shape factor) is less than 2.42. EX1001, 12:1-4. And finally, claim 1 specifies that the difference in peak density (PD) between the claimed first and second surfaces ($|\Delta PD|$) is 96 ea or less. EX1001, 12:5-8.

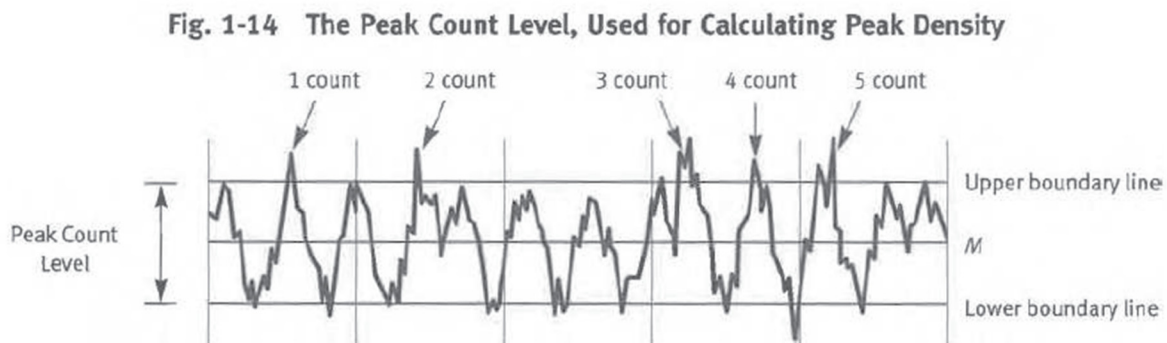
According to the '706 patent, TC is calculated by defining $I(hkl)$ and $I_0(hkl)$ as the X-ray diffraction (XRD) intensity of a given (hkl) plane of a sample and of a standard, respectively, whereas $I(220)$ and $I_0(220)$ are defined as the XRD intensity of the 220 plane of a sample and of a standard, respectively. EX1001, 3:58-4:8. Key crystal planes to be considered in TC calculation are $(hkl) = (111), (200), (220),$ and (311) ; thus, $n = 4$ in Equation 1 above. EX1001, 3:58-4:8.

Rz denotes the ten point-average roughness of the first and second surfaces, and Ra denotes the arithmetical average roughness of the first and second surfaces. EX1001, 4:26-35, 8:27-31. Both Rz and Ra are measured according to JIS B 0601 (2001) standards. EX1001, 4:33-35, 8:27-31.

Finally, as defined in the '706 patent, peak density (PD) is the number of SAE (Society of Automotive Engineers) peaks in a given measurement length, as measured according to ASME B46.1 standards with a peak count level of $\pm 0.5 \mu m$ from the center line of the profile and a measurement length of 4 mm. EX1001, 8:36-43. An SAE peak is defined as “a profile irregularity wherein the profile *intersects consecutively a lower and an upper boundary line.*” EX1017, 21

(emphasis added). The peak count level of $\pm 0.5 \mu\text{m}$ is a criteria for the lower and upper boundary lines of the peak density measurement—meaning that for a peak to be counted as a peak in the density measurement, it must be at least $0.5 \mu\text{m}$ in height from the mean line. EX1017, 21.

Figure 1-14 on page 22 of Exhibit 1017 (the ASME B46.1 standard), reproduced below, shows a sample graphical representation of a PD calculation, with five counted SAE peaks meeting the count level.



EX1017, 22.

The claimed combination of surface characteristics (TC, $|\Delta(Rz/Ra)|$, and $|\Delta PD|$) reduces the possibility of the foil being curled, wrinkled, and/or torn during its manufacture, or in the subsequent manufacture of a secondary battery. EX1001, 1:65-2:3. The criticality of the recited 0.4 to 1.32 TC range is emphasized in the '706 patent's specification. The specification explains that, if the (220) TC is less than 0.40, the foil deforms during manufacturing, and if the (220) TC is greater than 1.32, the foil is excessively brittle. EX1001, 4:9-21. Similarly, the specification explains the criticality of both (i) the recited maximum difference in

Rz/Ra of 2.42 and (ii) the maximum $|\Delta PD|$ value of 96. The specification teaches that when either or both of these differences are too large, undesirable curls form in the foil. EX1001, 4:36-41.

The data reported in Table 2 of the '706 patent substantiates the criticality of the claimed surface characteristic values (TC, $|\Delta(Rz/Ra)|$, and $|\Delta PD|$). Each of Examples 1-4 exhibited small curl values (less than 10 mm), no wrinkles, no tearing, and an adhesion force of at least 26 N/m. In contrast, Comparative Examples 1-5—all of which had at least one surface characteristic outside the claimed value ranges—exhibited large curl values (above 10 mm), wrinkles, tearing, and/or an adhesion force below 16 N/m.

B. Prosecution History of the '706 Patent

The first Office Action on the merits issued during prosecution, EX1002, 431, indicated that all claimed subject material was patentable over the prior art. The first Office Action included only a nonstatutory obviousness-type double patenting rejection over commonly-owned U.S. Patent No. 10,547,081. EX1002, 433-437. After resolving issues with terminal disclaimers filed on March 25, 2022 and July 5, 2022, this nonstatutory obviousness-type double patenting rejection was overcome with the terminal disclaimer filed on August 5, 2022. EX1002, 148-160.

No substantive claim amendments were made during prosecution of the '706

patent to address a prior art rejection. In the Notice of Allowance, mailed December 22, 2022, the Examiner referenced the remarks regarding allowability made in the first Office Action, which stated that the claimed subject matter was found patentable over the closest prior art. EX1002, 26, 437.

V. The Board should use its discretion under § 314(a) to deny the Petition in view of the parallel litigation.

The facts here fit squarely within the type of cases the Board uses its discretion to deny petitions under § 314(a). In *Apple Inc. v. Fintiv, Inc.*, the Board articulated six nonexclusive factors for determining whether to institute an AIA post-grant proceeding where there is parallel district-court litigation. *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 (P.T.A.B. Mar. 20, 2020) (“*Fintiv*”). On June 21, 2022, Director Vidal issued a Memorandum re: Interim Procedure for Discretionary Denials in AIA Post-Grant Proceedings with Parallel District Court Litigation (“*Fintiv* Memo”) clarifying the procedure that the Board should follow when evaluating the six *Fintiv* factors. Here, the Board should exercise its discretion to deny the Petition because (1) *Fintiv* factors two through five support discretionary denial; and (2) the Petition does not provide a compelling, meritorious challenge (*Fintiv* factor six).

Fintiv factor one: An opposed motion to stay has been filed in the parallel litigation. EX2001-EX2004. But this motion is still pending, and the Board should not speculate whether the court would grant a stay in the event this proceeding

were instituted. Factor one, therefore, is neutral. *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 15 at 12 (P.T.A.B. May 13, 2020) (informative) (“*Fintiv IIP*”) (holding the Board should “decline to infer ... how the District Court would rule should a stay be requested by the parties.”); *see also Fusion Orthopedics, LLC v. Extremity Medical, LLC*, IPR2023-00894, Paper 15 at 28-29 (P.T.A.B. Nov. 17, 2023) (“[W]e decline to speculate whether the pending motion to stay might be successful.”).

Fintiv factor two: Factor two weighs heavily in favor of discretionary denial. The projected statutory deadline for issuing a Final Written Decision (FWD) in this IPR is April 29, 2026. Jury selection in the parallel litigation is scheduled to begin November 3, 2025, nearly six months before the projected FWD deadline. EX2005, 1. The *Fintiv* Memo also authorizes panels to “consider the median time from filing to disposition of the civil trial for the district in which the parallel litigation resides” as reported on the uscourts.gov website. *Fintiv* Memo, 3 n.4. The median time-to-trial for civil actions in the Eastern District of Texas is 21.9 months. EX2006, 35. The complaint in the parallel litigation was filed November 21, 2023. EX2007. Applying the median time-to-trial, the estimated trial date would be in mid-September 2025, which is even earlier than the scheduled trial date.

Petitioner further asserts that a pending motion to transfer “will help ensure

that the FWD outpaces any trial date.” Pet., 74-75. But, like a motion for stay, a judge determines whether to grant a motion to transfer “based on the facts of each specific case as presented in the briefs by the parties.” *See Fintiv II* at 12. The Board should not speculate on how the court will rule on the pending motion to transfer. *See id.*; *Samsung Display Co., Ltd. v. Pictiva Displays Int’l Ltd.*, IPR2024-00855, Paper 12 at 8-9 (P.T.A.B. Nov. 19, 2024)¹ (declining to speculate how the district court might rule on pending motions). Even if the Board was inclined to speculate, according to Docket Navigator statistics, since 2018 Judge Gilstrap rarely grants such transfer motions:

¹ Acting Director Brent recently issued a *sua sponte* Director Review decision modifying this decision. *Samsung Display Co., Ltd. v. Pictiva Displays Int’l Ltd.*, IPR2024-00855, Paper 13 (Acting Director Brent Jan. 10, 2025). That decision addresses a specific issue related to factor 6, not relevant here, and affirms the panel’s exercise of discretion to deny institution.

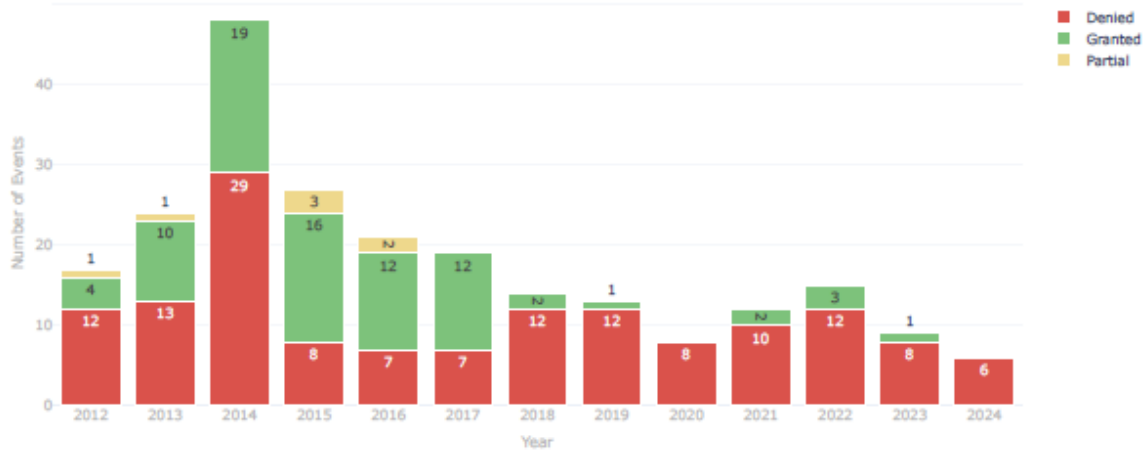
JUDGE PROFILE

Rodney Gilstrap



 Motion Success

Motion to Transfer Venue for Convenience (28 USC § 1404(a))



This chart shows the Results of the selected Type of Document decided by the selected Judge. Results are grouped into one of three broad categories: Granted, Denied, and Partial. [Learn more here.](#)

EX2008.

Under the current facts, trial in EDTX is scheduled to begin nearly six months before the FWD deadline, and thus factor two weighs heavily in favor of denying institution. *See AT&T Services Inc. v. ASUS Tech. Licensing Inc.*, IPR2024-00992, Paper 14 at 10-11 (P.T.A.B. Dec. 16, 2024) (denying institution; finding “the second factor weighs substantially in favor of discretionary denial” where trial was scheduled “four to five months prior” to FWD deadline); *Ericsson Inc. v. Active Wireless Techs. LLC*, IPR2024-00886, Paper 8 at 8-9 (P.T.A.B. Nov. 12, 2024) (denying institution; finding factor 2 weighs in favor of denial with trial date approximately 4 months prior to FWD deadline).

Fintiv factor three: Factor three weighs in favor of denying institution.

Here, the Board “consider[s] the amount and type of work already completed in the parallel litigation by the court and the parties *at the time of the institution decision.*” *Fintiv*, 9 (emphasis added). The deadline for issuing a Decision on Institution (DI) in this IPR is April 29, 2025. The parties have already exchanged invalidity and infringement contentions and are engaged in fact discovery, with each party already producing over 5,000 documents, and corporate depositions are ongoing. By the April 29, 2025 DI deadline, the parties will have completed claim construction briefing, the Claim Construction Hearing will be imminent (on May 14, 2025), and the parties will be nearing the end of fact discovery. EX2005, 4-5; EX1024, 3-5.

Petitioner contends “the EDTX litigation is still in its early stages and the parties and court have yet to expend significant resources on invalidity,” Pet., 75, but Petitioner considers the state of the parallel litigation at the time the Petition was filed, not at the time of the DI, and does not even consider the then-current proposed case schedule, which Petitioner filed as Exhibit 1024.² Nor was Petitioner

² The current schedule, issued January 2, 2025, and filed as Exhibit 2005, includes only minor differences from the June 12, 2024 proposed schedule Petitioner submitted with the Petition (EX1024). Petitioner should not be granted additional

diligent in filing the Petition. *See* Pet., 78-79. The Petition was filed September 20, 2024, which was ten months after the complaint was filed, and seven months after the February 23, 2024 order noting Petitioner’s waiver of foreign service. EX2009. Petitioner’s only argument of diligence is that it filed the Petition “months ahead of the one-year time bar.” Pet., 75. But this alone is insufficient. *See Ericsson Inc.*, IPR2024-00886, Paper 8 at 9-10 (denying institution; determining that merely “filing the Petition ‘in advance of the statutory deadline’” alone does not weigh in favor of institution, noting “Petitioner [did] not explain how it was diligent or even identify the time period during which it contends it was diligent.”).

Because the parties and the court will have expended significant resources by the April 29, 2025 DI deadline and because Petitioner was not diligent in filing the Petition, factor three weighs in favor of denying institution.

Fintiv factor four: Factor four weighs in favor of denying institution.

“*Fintiv* factor four looks at the overlap between the issues raised in the IPR petition and in the parallel proceeding in order to evaluate ‘concerns of inefficiency and the possibility of conflicting decisions.’” *Fintiv* Memo, 7; *Fintiv*, 12. Here, there is significant overlap between the invalidity issues: the Petition challenges the validity of the claims of the ’706 patent based on various combinations of

briefing to address any alleged updates to the schedule since filing the Petition.

Kim '761, Cheng, Wolski, Kim '541, Lee, Shinozaki '681, Dobashi, Shinozaki '922, and Chou, Pet., 1-2; in the parallel litigation, Petitioner challenges the validity of claims 1-6 using most of these references³ in addition to others, EX2010, 21-23, 73-87, Apps. A1-A3, A10, A11, A19.

Petitioner's stipulation—to “not [] seek resolution in the district court of the same grounds presented in [the] Petition”—does not allay the concerns undergirding factor four. Pet., 71. In fact, Petitioner's stipulation is essentially meaningless. All of Petitioner's asserted references has at least one counterpart or related patent/publication that is not included in the stipulation.

Kim '761 was also published as US Patent No. 10,480,090. EX2012. Cheng was also published as US 2015/0030873 and JP 2015/021186. EX2013. Wolski was also published as WIPO publication WO 97/11210. EX2014. Kim '541 was also published as US Patent No. 8,349,518. EX2015. Lee was also published as WIPO publication 2015/069075 and US Patent No. 10,686,191. EX2016. Shinozaki '681 was also published as JP 57/06045 and KR 2015-0107735. EX2017. Dobashi was also published as US 2009/047539 and as WIPO

³ Wolski is cited in the discussion, EX2010, 74, 80, 81; EX2011, 4, 109-110, 113-114, 117, 119. Petitioner relies on Lee and/or Shinozaki '681 only for dependent claims 7-10, which are not currently challenged in the invalidity contentions.

publication WO 2007/105635. EX1014, (65), (87). Shinozaki '922 was also published as WIPO publication WO 2012/002380. EX2018. Chou was also published as US Patent No. 9,562,298 and KR 2015-0110270. EX2019. But even if Petitioner stipulated not to use these related references, that still does not prevent Petitioner from using other references that have cumulative teachings.

Accordingly, because there is significant overlap in validity issues and Petitioner's stipulation does nothing to reduce this overlap, factor four weighs in favor of denying institution.

Fintiv factor five: Factor five weighs in favor of denying institution because, as Petitioner acknowledges, "parties in the parallel litigation are the same." Pet., 75; *Fintiv II*, 15 ("Because the petitioner and the defendant in the parallel proceeding are the same party, this factor weighs in favor of discretionary denial."); *see also Ericsson Inc.*, IPR2024-00886, Paper 8 at 13-14 (factor five weighs in favor of denial where the district court is likely to precede the FWD).

Fintiv factor six: The *Fintiv* Memo explains that "[c]ompelling, meritorious challenges are those in which the evidence, if unrebutted in trial, would plainly lead to a conclusion that one or more claims are unpatentable by a preponderance of the evidence." *Fintiv* Memo, 4. Petitioner provides nothing more than a bare statement that "the Petition presents a compelling case of invalidity." Pet., 75. But Petitioner fails to demonstrate: (1) a reasonable expectation of success in

combining the three-reference combinations in Grounds 1A and 2A and (2) fails to show how the Ground 2A combination discloses the PD limitation of the claims.

Finally, Petitioner's expert largely repeats the Petition verbatim without providing additional analysis or corroborating evidence. *Id.*; *Xerox Corp. v. Bytemark, Inc.*, IPR2022-00624, Paper 9 at 15 (P.T.A.B. Aug. 24, 2022). Therefore, factor six favors denying institution. *Fintiv*, 15.

* * *

At bottom, the scheduled trial date is nearly six months before the projected FWD, the parties will have invested significant resources in the district court, Petitioner's narrow stipulation does nothing to alleviate concerns of inefficiency or the possibility of conflicting decisions, and the merits are not compelling. The Board should exercise its discretion to deny the Petition in view of the parallel litigation.

VI. Petitioner fails to establish a reasonable likelihood of prevailing on any challenged claim.

Petitioner fails to articulate a sufficient motivation to combine the references for any Ground and/or a reasonable expectation of success in combining the cited references to arrive at what is claimed. Rather, Petitioner relies on the '706 patent to support arguments related to a reasonable expectation of success, when in fact Petitioner's own references and analysis demonstrate there would *not* have been a reasonable expectation of success.

Further, for Ground 2A, Petitioner’s cited primary reference—Dobashi—does not disclose, explicitly or inherently, peak density values that could be used to satisfy the claimed maximum $|\Delta PD|$ value. Petitioner relies on a flawed theory of inherency in an attempt to establish that Dobashi discloses copper foils having peak density values *calculated by Petitioner*.

In an IPR, “the burden of proving a proposition of unpatentability” is borne by (and remains at all times with) the petitioner. 35 U.S.C. §§ 314(a), 316(e); *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1375 (Fed. Cir. 2016). To satisfy its burden, a petitioner must “articulate specific reasoning, based on evidence of record, to support the legal conclusion of obviousness”—“mere conclusory statements” will not suffice. *Magnum Oil*, 829 F.3d at 1380. Indeed, “[i]t is of the utmost importance that petitioners in the IPR proceedings adhere to the requirement that the initial petition identify ‘with particularity’ the ‘evidence that supports the grounds for the challenge to each claim.’” *Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1369 (Fed. Cir. 2016) (quoting 35 U.S.C. § 312(a)(3)); *see also Parus Holdings, Inc. v. Google LLC*, 70 F.4th 1365, 1371 (Fed. Cir. 2023) (a party’s burden “cannot be met simply by throwing mountains of evidence at the Board without explanation or identification of the relevant portions of that evidence”).

Additionally, “[a]n obviousness determination requires finding that [a

Skilled Artisan] would have been motivated to combine or modify the teachings in the prior art and would have had a reasonable expectation of success in doing so.”

Regents of the Univ. of Cal. v. Broad Inst., Inc., 903 F.3d 1286, 1291 (Fed. Cir.

2018); *Intelligent Bio-Sys.*, 821 F.3d at 1367-68; *see also, e.g., NJOY, LLC v.*

JUUL Labs, Inc., IPR2024-00536, Paper 17 (P.T.A.B. Aug. 12, 2024) (denying

institution where petitioner did not show a reasonable expectation of success in

combining the asserted references); *Honeywell Int’l Inc. v. DSM IP Assets, B.V.*,

IPR2024-00493, Paper 7 (P.T.A.B. Aug. 21, 2024) (same). Indeed, as *KSR* stated,

“there must be some articulated reasoning with some rational underpinning to

support the legal conclusion of obviousness.” *KSR Int’l Co. v. Teleflex Inc.*, 550

U.S. 398, 418 (2007) (citation omitted).

Petitioner falls short of carrying its burden here for multiple reasons.

A. For all Grounds, Petitioner fails to show a reasonable expectation of success in combining at least three references to arrive at what is claimed.

Petitioner asserts three-reference combinations for Grounds 1A and 2A and attempts to combine surface parameters disclosed in three different references. In making the extensive combinations, however, Petitioner does not substantiate a reasonable expectation that the surface parameters cherry-picked from three different references could be predictably combined to arrive at what is claimed.

The Board properly denies institution where the petitioner does not show a

reasonable expectation of success in combining asserted references. *See, e.g.,* *NJOY*, IPR2024-00536, Paper 17; *Honeywell*, IPR2024-00493, Paper 7; *see also* *Eli Lilly & Co. v. Teva Pharms. Int’l GmbH*, 8 F.4th 1331, 1344 (Fed. Cir. 2021) (A finding that a patent challenger in an *inter partes* review demonstrated a motivation to combine references does not necessarily imply that the challenger also met its burden of showing a reasonable expectation of success in achieving a claimed method of treatment.). Importantly, the literature need not demonstrate an expectation of *failure* in the claimed features in order for the patent to withstand Petitioner’s challenge—it is enough that the prior art supports no expectations one way or the other. *See Honeywell Int’l Inc. v. Mexichem Amanco Holding S.A.*, 865 F.3d 1348, 1355 (Fed. Cir. 2017) (reversing a PTAB obviousness finding for improperly requiring the patentee to show an expectation of failure, instead of properly finding no expectation of success—and thus nonobviousness—where the prior art gave no expectations one way or the other).

Petitioner’s failure to show a reasonable expectation of success warrants denial of institution.

1. Petitioner provides only a cursory analysis regarding a reasonable expectation of success.

For each of Grounds 1A and 2A, Petitioner asserts combinations of three references. For Ground 1A, Petitioner cherry-picks different properties from Kim ’761, Cheng, and Wolski to argue that a combination of these properties would

have been obvious. Pet., 19-25; EX1003, ¶¶79-84. In particular, Petitioner relies on Kim '761 (the primary reference) as disclosing a copper foil with a $|\Delta PD|$ of 96 ea or less. Pet., 23-24; EX1003, ¶¶82-84. Petitioner recognizes that Kim '761 does not disclose foils with (1) a TC (220) from 0.4 to 1.32 as claimed, or (2) $|\Delta(Rz/Ra)|$ less than 2.42 as claimed and relies on Cheng and Wolski for these limitations, respectively. Pet. 20-22; EX1003, ¶¶80-81.

Similarly in Ground 2A, Petitioner relies on a combination of three different references—Dobashi, Shinozaki '922, and Chou—to argue a foil as recited in claim 1 would have been obvious. Pet., 60-64; EX1003, ¶¶190-198. Again, Petitioner cherry-picks foil properties from each reference. Petitioner relies on Dobashi (the primary reference) as disclosing a copper foil comprising RSm values, which Petitioner alleges would be used to approximate a PD value. Pet., 62-64; EX1003, ¶¶193-198. Petitioner recognizes that Dobashi does not disclose foils with (1) a TC (220) from 0.4 to 1.32 as claimed, or (2) $|\Delta(Rz/Ra)|$ less than 2.42 as claimed and relies on Chou and Shinozaki '922 for these limitations, respectively. Pet. 61; EX1003, ¶¶191-92.

Further, for Ground 2A, Petitioner acknowledges that Dobashi does not disclose PD values for *both* surfaces of the foil and therefore acknowledges that Dobashi does not disclose a PD difference, $|\Delta PD|$, between the first and second surface of 96 ea or less. Pet., 63; EX1003, ¶195. Instead, Petitioner argues this

would have been obvious in view of Shinozaki '922. Pet., 63-64; EX1003, ¶¶195-197.

For both Grounds 1A and 2A, Petitioner's arguments assume that the different surface parameters selected from each reference in the three-reference combinations are all interchangeable. But Petitioner provides inadequate support for this assumption. Instead, Petitioner asserts that there would have been a reasonable expectation of success because each reference discloses similar process parameters for making an electrolytic copper foil. *See, e.g.*, Pet., 14 ("Cheng describes process parameters such as electrolytic solution composition, temperature, and electrolysis current associated with manufacture of the disclosed foils."), 17 ("Wolski provides detailed description regarding parameters such as electrolytic solution composition, temperature, and electrolysis current associated with manufacture of the disclosed foils."). In essence, Petitioner argues that because each reference discloses electroplating copper foils, there would have been a reasonable expectation of success in combining them.

Obviousness, however, requires "a reason that would have prompted a person of ordinary skill in the relevant field *to combine the elements in the way the claimed new invention does.*" *KSR*, 550 U.S. at 418 (emphasis added). It is Petitioner's 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.*, 821 F.3d at 1367–1368 (citations omitted).

Here, Petitioner merely asserts a reasonable expectation of success, without the requisite analysis. Indeed, Petitioner makes no comparison of the surface characteristics disclosed by each reference in the three-reference combinations, nor does Petitioner explain why the surface characteristics from one reference would be compatible with the surface characteristics from another reference. For example, Petitioner surmises that because Cheng and Kim ’761 describe “deposition at similar temperatures,” “similar plating currents,” and “solutions composed primarily of similar amounts of copper ions and sulfuric acid,” it would have been obvious to try modifying Kim ’761 in view of Cheng. Pet., 15. Similarly, Petitioner surmises that because Kim ’761, Cheng, and Wolski describe similar “electrodeposition temperature, current density, and primary solution components (copper ions, sulfuric acid) and proportions,” it would have been obvious to try modifying Kim ’761. Pet., 17-18.⁴ However, that there is allegedly

⁴ Petitioner’s rationale for establishing a reasonable expectation of success for combining Dobashi, Shinozaki ’922, and Chou in Ground 2A “is substantially similar to that provided in Section IV.D [for Ground 1A].” Pet., 57.

some overlap in the process conditions alone does not support that surface characteristics of foils from the three different references could be predictably combined with a reasonable expectation of successes.

The simple fact the references disclose electroplating copper foils does not establish that there would have been a reasonable expectation of success in combining surface characteristics from three different references to arrive at what is claimed. Silence and assumptions are insufficient for a *prima facie* case of obviousness. *See Orexo AB, v. Actavis Elizabeth LLC*, 903 F.3d 1265, 1273 (Fed. Cir. 2018) (finding that “silence is not a teaching or suggestion,” especially where the beneficial results could not be predicted); *Perricone v. Medicis Pharm. Corp.*, 432 F.3d 1368, 1379 (Fed. Cir. 2005) (finding that silence on a particular use for a known compound did not disclose that use for inherent anticipation or obviousness purposes).

Making matters worse, ***Petitioner relies on the '706 patent*** for support that different parameters could have been independently tuned to obtain the claimed ranges. Pet., 18-19. Petitioner argues that “the '706 Patent teaches that the three claimed ranges can be achieved by optimizing three independent process parameters separately.” Pet., 18-19. But this is impermissible hindsight, and the Board has repeatedly rejected an analysis based on nothing but such hindsight. *See, e.g., Kingston Tech. Co., Inc. v. North Star Innovations, Inc.*, IPR2018-01784,

Paper 32, 55 (P.T.A.B. Feb. 26, 2020) (rejecting petitioner's obviousness arguments for "rest[ing] on hindsight" and "us[ing] the challenged patent as a roadmap to reconstruct the claimed invention."); *Intel Corp. v. VLSI Tech. LLC*, IPR2018-01033, Paper 32, 88-89 (P.T.A.B. Feb. 6, 2020) (similar). Once the reliance on the teachings of the '706 patent is set aside, the Petition is left with nothing but conclusory assertions of a reasonable expectation of success by its expert.

2. Petitioner's own analysis suggests there would not have been a reasonable expectation of success.

Petitioner's own analysis undermines that a POSA would have had a reasonable expectation of success in achieving the cherry-picked foil properties from different references. Dr. Randall acknowledges that manipulating or adjusting surface parameters of a copper foil depends on manipulating or adjusting a myriad of different electroplating parameters and conditions. For example, in paragraphs 69-70 of Exhibit 1003, Dr. Randall notes that Cheng discloses varying at least the following parameters and conditions: (i) electrolytic solution composition, (ii) temperature, (ii) electrolysis current, (iv) acid-denatured polyvinyl alcohol concentration, (v) copper ion amount, and (vi) sulfuric acid amount. Similarly, in paragraph 75 of Exhibit 1003, Dr. Randall notes that Wolski discloses varying at least the following parameters and conditions: (i) electrolytic solution composition, (ii) temperature, (iii) electrolysis current, (iv) MPS concentration, (v) a "low

molecular weight glue” concentration, (vi) chlorine ion amount, (vii) copper ion amount, and (viii) sulfuric acid amount.

Dr. Randall does not explain how a POSA would have adjusted any of these conditions to arrive at a foil with the claimed surface characteristics TC, $|\Delta(Rz/Ra)|$, and $|\Delta PD|$. Petitioner and Dr. Randall’s silence compels denial of the Petition. *See Juniper Networks, Inc. v Correct Transmission, LLC*, IPR2021-00682, Paper 26, 24 (P.T.A.B October 3, 2022) (“Petitioner does not explain sufficiently *why* such contentions (and any underlying cited evidence), even if undisputed, show that the skilled artisan would have had a reasonable expectation of success . . .”).

At best, Petitioner’s arguments amount to the proposition that a POSA would have varied the myriad of different process parameters and conditions until a copper foil as claimed resulted. This falls short of establishing a reasonable expectation of success. “[T]o have a reasonable expectation of success, one must be motivated to do more than merely to vary all parameters or try each of numerous possible choices until one possibly arrived at a successful result, where the prior art gave either no indication of which parameters were critical or no direction as to which of many possible choices is likely to be successful.”

Medichem, S.A. v. Rolabo, S.L., 437 F.3d 1157, 1165 (Fed. Cir. 2006) (cleaned up).

In fact, the cited references underscore the unpredictability and difficulty in

controlling surface characteristics during electroplating. The references exemplify that various independent process parameters and conditions can have significant, and potentially unexpected, effects on different surface properties. For example, Cheng (cited in Ground 1A for the texture coefficient) explains that the “present invention found that the addition of acid-denatured polyvinyl alcohol . . . to the copper sulfate electrolyte leads to unexpected results.” EX1007, 4:4-9. Similarly, Chou (cited in Ground 2A for the texture coefficient) explains that “the addition of thiourea at a concentration of from 0.1 to 2.5 ppm to the copper sulfate electrolyte is found to bring an unexpected effect.” EX1016, ¶33. Petitioner does not offer any evidence or rationale to establish *why* these references disclosing a myriad of different, significant process conditions would have directed a POSA to a copper foil having the claimed surface characteristics TC, $|\Delta(Rz/Ra)|$, and $|\Delta PD|$ with a reasonable expectation of success.

* * *

For at least these reasons, Petitioner has not demonstrated a reasonable likelihood of prevailing to show that the Kim '761, Cheng, and Wolski combination presented in Ground 1A or the Dobashi, Chou, and Shinozaki '922 combination presented in Ground 2A renders the claim obvious, and Petitioner's Grounds 1A and 2A should fail.

B. For Ground 2A, Petitioner fails to demonstrate that Dobashi discloses the peak density limitation.

Petitioner's reliance on Dobashi for the peak density limitation is unavailing. Pet., 59-60, 62-64. Petitioner incorrectly argues that Dobashi's RSm directly correlates to peak density and, based on that false premise, goes on to calculate the alleged peak density values from Dobashi's RSm values. Because of these missteps, Petitioner's obviousness grounds based on Dobashi cannot succeed.

1. Petitioner's "straightforward" calculations do not consider differences in how RSm and peak density are calculated.

Petitioner incorrectly argues that Dobashi's RSm values directly correlate to peak density values. Petitioner relies on Dobashi's disclosed RSm values measured according to JIS B 0601 (2001) and argues that a POSA would have "performed straightforward calculations to convert Dobashi's matte side (deposit side) RSm into a matte side PD." Pet., 62; *see also* EX1003, ¶193. In particular, Petitioner argues that a POSA would have divided the sampling length (4 mm in this case) by Dobashi's RSm values to arrive at a peak density that could be used to satisfy the claimed range for BC. EX1003, ¶185.

However, dividing the claimed sampling length (4 mm) by Dobashi's RSm values does not result in a peak density value as claimed. The ASME standard does not support Petitioner's assertion that RSm and peak density are in a simple inverse relationship. In ASME B46.1 (2009), peak density is defined as the number of

SAE peaks per unit length where an SAE peak is “a profile irregularity wherein the profile intersects consecutively a lower and an upper *boundary line*.” EX1017, 21 (emphasis added). The upper and lower boundary lines (i.e., the peak count level) are set to $\pm 0.5 \mu\text{m}$ in the '706 patent. EX1001, 8:36-43. Figure 1-14 of the standard, shown below, shows a sample graphical representation of profile irregularities that consecutively intersect a peak count level, with five counted SAE peaks.

The concept of counting only the SAE peaks that cross lower and upper boundary lines, on the other hand, is wholly missing in RSm. Figure 1-13 of the ASME B46.1 (2009) standard, also shown below, illustrates that RSm measures the average of profile widths Sm_i without regard to any boundary lines. Petitioner relies on the fact that RSm requires height discrimination to measure average spacing between “profile irregularities,” the default value of which is 10% of R_z , and argues that this height discrimination directly parallels to upper and lower boundary lines for measuring a peak density. Pet., 60; EX1003, ¶¶186-187. But height discrimination is used to determine whether an irregularity that barely crosses the mean line can be considered a peak or a valley and is thus a different concept than counting SAE peaks that cross the lower and upper “boundary lines.” Indeed, if “height discrimination” and “lower and upper boundary lines” were the same, the standard would refer to them as such.

Fig. 1-13 The Mean Spacing of Profile Irregularities, RS_m

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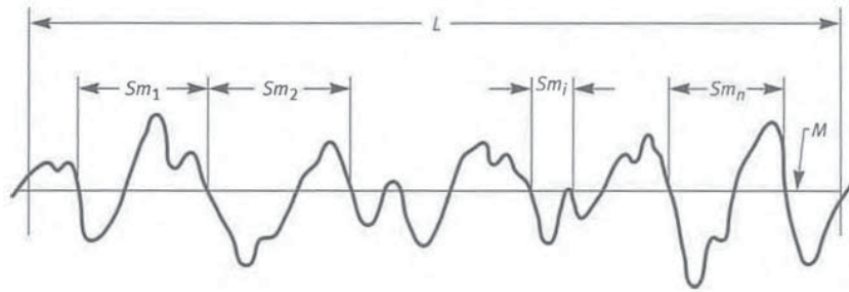
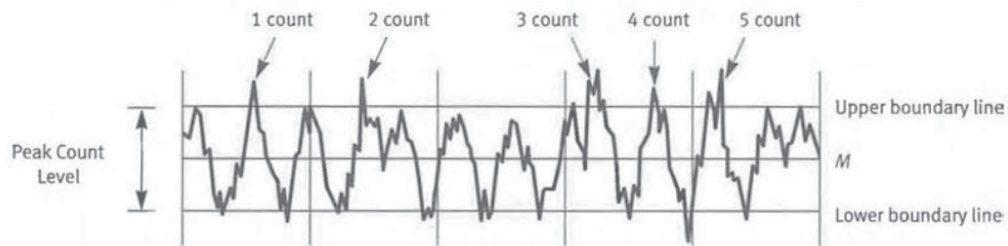


Fig. 1-14 The Peak Count Level, Used for Calculating Peak Density

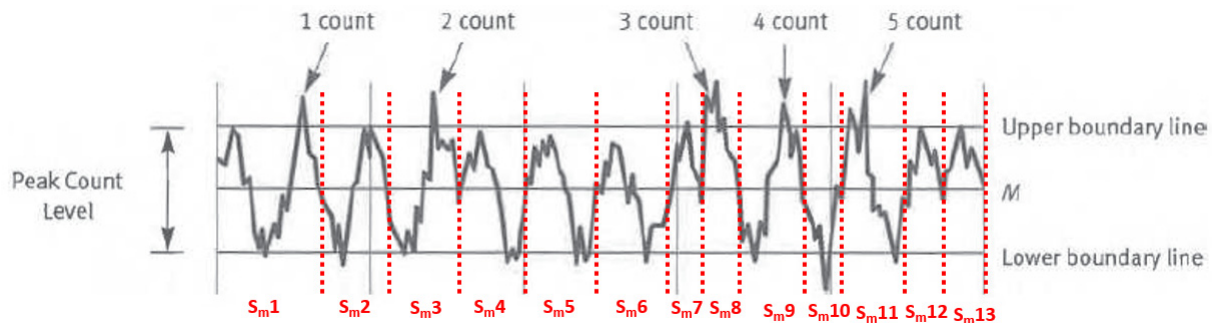


EX1017, FIGs. 1-13, 1-14.

Petitioner incorrectly assumes that RS_m , calculated using default “discrimination lines” would give an indication of the number of SAE peaks where the surface profile consecutively intersects lower and upper boundary lines. But RS_m does not require consecutive intersections of a lower and upper boundary line. Therefore, the criteria for counting profile irregularities for peak density and RS_m are not the same, and the same number of profile irregularities would not be counted for both measurements. For example, a first profile irregularity consecutively intersecting lower and upper boundary lines and meeting the default discrimination criteria for RS_m would be considered in *both* RS_m and peak density. But a second profile irregularity that only meets the default discrimination

criteria for RSm would be considered for *only* RSm.

An annotated version of Exhibit 1017's Figure 1-14 below illustrates the significance of criteria lines in a peak density measurement and how an RSm peak does not directly correlate to a peak density count.



EX1017, FIG. 1-14 (annotated).

The dashed red lines show S_m spacing lengths used to calculate the mean spacing of profile irregularities (RSm). In the annotated figure, the peak count for the peak density measurement is five, while there are 13 profile irregularities (S_m1 through S_m13). There is no way that one could derive peak density from RSm, the mean width of the profile irregularities, using only the “straightforward” calculations proposed by Petitioner. This is because the peak count for peak density would change depending on where the lower and upper boundary lines are set, and RSm does not give that information. Thus, references that merely disclose RSm and not peak density, such as Dobashi, cannot disclose or render obvious a peak density value.

A simple, intuitive figure further illustrates Petitioner's illogical

assumptions. Two exemplary surfaces shown below⁵ with specified unit-less peak heights (2, 4, 6, or 8 as marked in the figure) have the *same* sample length, *same* Ra, *same* Rz, and *same* Rsm/Sm. Yet, depending on where the criteria line is set, the two samples would have *different* peak density (PD) values along the length shown.

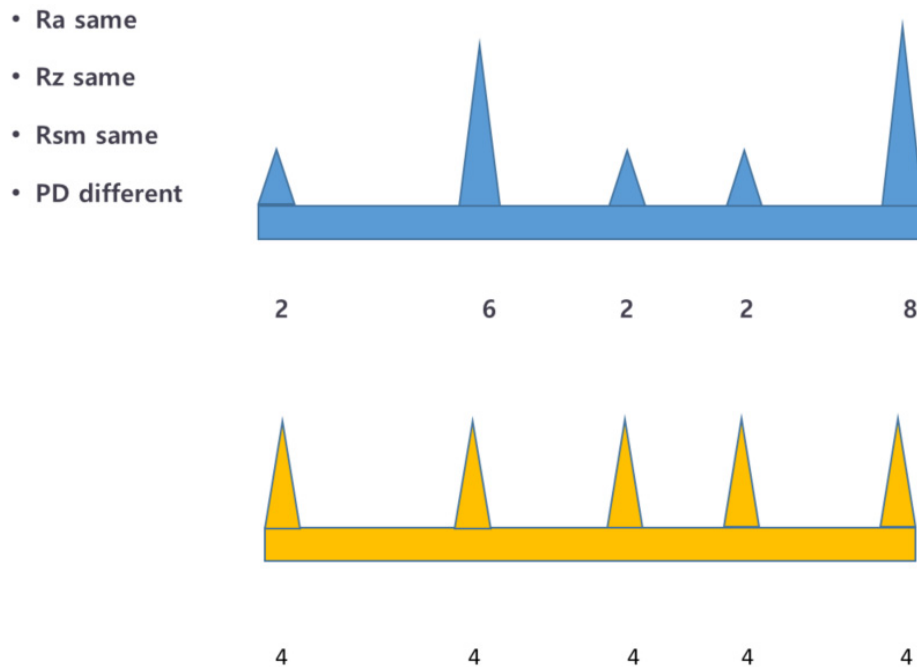


FIG. A.

Because the criteria for evaluating profile irregularities is different for peak density and RSm, RSm values cannot be directly correlated to peak density values by dividing by a sampling length, as assumed by Petitioner. This is fatal to

⁵ For purposes of illustration, the figures show only the peaks and not the valleys.

Petitioner's arguments for establishing obviousness of claim 1.

2. Dobashi does not disclose a surface with peak heights large enough to count towards the claimed peak density limitation.

Petitioner's reliance on Dobashi also fails because Petitioner overlooks a critical aspect of the claimed peak density limitation ($|\Delta PD|$) in its analysis—that Dobashi's example surfaces do not include any peaks that meet the $\pm 0.5 \mu\text{m}$ peak count value specified by the '706 patent. *See* EX1005, FIGs. 5-6. Petitioner incorrectly assumes that Dobashi would have peaks with a height greater than $0.5 \mu\text{m}$ in concluding that Dobashi discloses peak density values that could satisfy the claimed $|\Delta PD|$ limitation. This is fatal to Petitioner's arguments for establishing obviousness of claim 1 in Ground 2A.

“[I]nherency may supply a missing claim limitation in an obviousness analysis.” *Par Pharm., Inc. v. TWi Pharms. Inc.*, 773 F.3d 1186, 1194–95 (Fed Cir. 2014). However, establishing inherency requires strict evidentiary proof because inherency “may not be established by probabilities or possibilities.” *Id.* at 1195. “The mere fact that a certain thing may result from a given set of circumstances is not sufficient.” *Id.* (emphasis added).

As discussed above, the peak count level of $\pm 0.5 \mu\text{m}$ is a criteria for determining a peak density measurement according to ASME B46.1 (2009) standard. EX1001, 8:36-43. The peak count level of $\pm 0.5 \mu\text{m}$ is an explicit criteria for the peak density measurement—meaning that for a peak to be counted as a

peak in the density measurement, it must be at least 0.5 μm in height from the mean line. Petitioner acknowledges that this $\pm 0.5 \mu\text{m}$ criteria is a distinct requirement for the '706 patent. Pet., 60 (“the '706 Patent uses discrimination lines of $\pm 0.5 \mu\text{m}$ ”); *see also* EX1003, ¶186.

Therefore, to establish that Dobashi discloses a copper foil having a $|\Delta\text{PD}|$ as claimed, Dobashi’s foil must have peaks with a height of at least 0.5 μm above the mean line. Petitioner fails to establish this.

Acknowledging that Dobashi does not disclose using any boundary line (let alone boundary lines of $\pm 0.5 \mu\text{m}$), Petitioner adds discrimination criteria, i.e., 10% of the PV values, to Dobashi’s Table 2 and treats them as the boundary lines for the peak density measurement.⁶ Pet., 60, 63; EX1003, ¶¶186-187.

⁶ Petitioner equates Dobashi’s PV to Rz, “maximum height of profile.”

TABLE 2										
Deposit side of electro-deposited copper foil										
Subject	Copper foil thickness (μm)	Three-dimensional surface structure analysis			Stylus-type roughness meter		Gloss Gs (60°)			
		Wmax (μm)	PV (μm)	Wmax/PV (-)	Rzjis (μm)	RSm (mm)	TD	MD	Deposit side PD	Default discrimination criteria (μm)
Example 1	15	0.37	0.39	0.949	0.32	0.19	659	665	21.1	0.039
Example 2	12	0.45	0.48	0.938	0.31	0.16	664	671	25.0	0.048
Example 3	70	0.065	0.079	0.823	0.17	0.39	691	686	10.3	0.008
Example 4	15	0.27	0.30	0.904	0.29	0.18	790	790	22.2	0.030
Example 5	15	0.36	0.39	0.943	0.31	0.16	775	773	25.0	0.039
Example 6	12	0.42	0.44	0.959	0.47	0.22	654	687	18.2	0.044
Example 7	12	0.58	0.66	0.869	0.71	0.14	608	640	28.6	0.066
Comparative Example	12	0.82	1.87	0.439	1.00	0.07	324	383		

Modified Dobashi Table 2

Pet., 63.

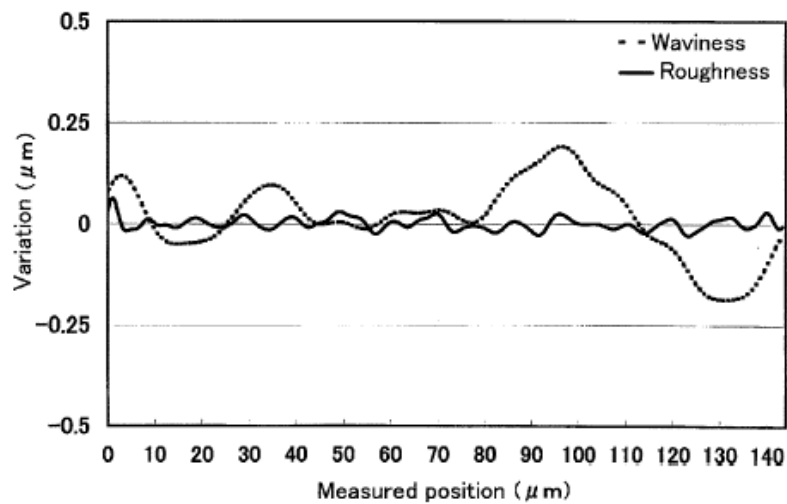
Notably, the default discrimination criteria added by Petitioner are significantly less than the claimed 0.5 μm upper and lower boundary lines for measuring peak density. Even the largest value—0.066 μm —is almost a factor of 10 less than 0.5 μm . The small values of discrimination criteria corroborate the different purpose for which they are used: discarding negligible irregularities that are too small to be considered a peak or a valley in the determination of RSm.

Indeed, if the claimed peak count level ($\pm 0.5 \mu\text{m}$) is used for the boundary lines, peak density in Dobashi's Examples would likely be zero, far from the two-digit values calculated by Petitioner. For example, because PV (peak-to-valley height) in Dobashi's Example 1 is 0.39 μm , none of the peaks in Example 1 would have a height greater than 0.5 μm from the mean line, resulting in peak density of

zero, not 21.1 as Petitioner asserts.

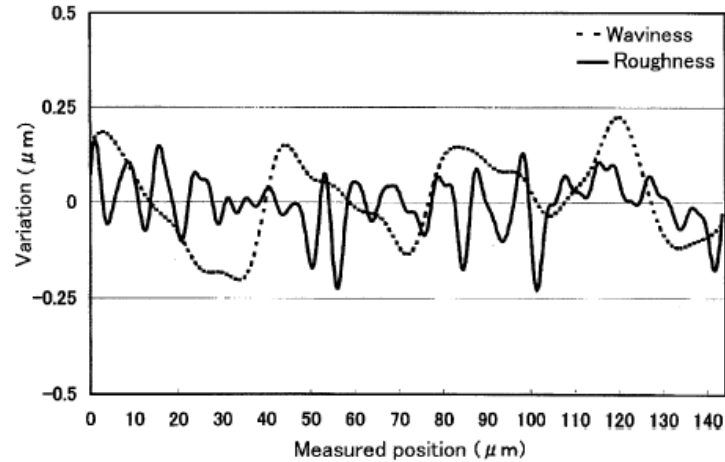
Dobashi's Figures 5 and 6 (reproduced below) are also illustrative. The figures show no peaks with a height of at least $0.5\ \mu\text{m}$ above the mean line (and therefore no SAE peaks that cross upper and lower boundary lines of at least $0.5\ \mu\text{m}$).

Fig 5



EX1014, FIG. 5.

Fig 6



EX1014, FIG. 6.

In sum, Petitioner's fabricated peak density values fall flat in view of Dobashi's own disclosures. Without establishing that Dobashi's surfaces having the cited RSm values would have peaks with a height of at least 0.5 μm above the mean line, Petitioner cannot rely on Dobashi as inherently disclosing the missing peak density limitation ($|\Delta\text{PD}|$) as claimed. Because of this, Petitioner cannot rely on a theory of inherency for the claimed $|\Delta\text{PD}|$, and Petitioner fails to establish that it is reasonably likely to prevail in proving obviousness of the challenged claims based on such a theory.

* * *

For at least this reason, Petitioner has not demonstrated a reasonable likelihood of prevailing to show that the Dobashi, Chou, and Shinozaki '922 combination presented in Ground 2A renders claim 1 obvious, and Petitioner's

Ground 2A should fail.

VII. Conclusion

The Petition fails to show a reasonable likelihood that any of the challenged claims are unpatentable as obvious in view of the cited art and, therefore, the Board should deny institution.

Respectfully submitted,

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CERTIFICATE OF WORD COUNT (37 C.F.R. § 42.24(d))

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