

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 IPR2024-01460
Patent 10,480,090

PETITIONER'S REQUEST FOR REHEARING

I. INTRODUCTION

Petitioner respectfully requests rehearing pursuant to 37 C.F.R. § 42.71(d) for claims 1–11 of U.S. Patent No. 10,480,090 (the “’090 Patent”). In its Decision on Institution (“DI” or “Decision”), the Board found with respect to *Fintiv* factor 6 that “the Petition presents, at best, a close call on the merits” and subsequently that “[w]eighing these various [*Fintiv*] factors, and in particular the close case on the merits, we determine that the evidence of record favors exercising our discretion under 35 U.S.C. § 314(a) to deny institution of an *inter partes* review.” DI, 31-32. However, for reasons detailed below, the merits of the grounds raised in the Petition are ***particularly strong on the preliminary record*** and, thus, a holistic balancing of the *Fintiv* factors weighs against discretionary denial.

First, for Ground 3 based on Dobashi, Patent Owner’s unsupported attorney argument misled the Board to conclude that “the actual working examples disclosed in Dobashi could not have R_{pc} values within the claimed range because no set of peaks or valleys in these example foils could exceed $\pm 5\ \mu\text{m}$ (as required by independent claim 1), as their PV and R_{Z_{JIS}} values are less than $1\ \mu\text{m}$.” DI, 31.¹ That is incorrect. While Patent Owner, through unsupported attorney argument, conveniently points to PV and R_{Z_{JIS}} values from Dobashi’s Table 2 that happen to

¹ Petitioner assumes “ $\pm 5\ \mu\text{m}$ ” is a typo and that the Board meant to say “ $\pm 0.5\ \mu\text{m}$.”

correspond to the “more preferably” smaller PV and RZ_{JIS} values of “0.05 μm to 0.8 μm” and “0.1 μm to 0.5 μm,” respectively, this amounts to cherry picking in contravention of Dobashi’s full disclosure. SOLUS-1007, [0056], [0065]; POPR, 57. Indeed, Dobashi discloses that its broadly contemplated PV and RZ_{JIS} values are “preferably 0.05 μm to **1.5 μm**” and “preferably 0.1 μm to **1.0 μm**,” both of which lead to R_{pc} values well within the claimed range as explained in the Petition. SOLUS-1007, [0056], [0065]²; *see also* Petition, 65, 68-69; SOLUS-1003, ¶¶195, 203-207. The Decision’s narrow focus on Table 2 and Patent Owner’s attorney argument concerning the same overlook the full disclosure of Dobashi as well as Dr. Randall’s careful analysis regarding Dobashi, which is the only evidence of record on this point.

Second, for Grounds 2A-2B based on Sano-Griesi, the Decision acknowledges that Griesi discloses the claimed R_{pc} value but wrongly concludes that “Petitioner does not persuasively explain why such an incidental, unexamined finding would lead one of ordinary skill in the art to import Griesi’s R_{pc} value into the foil of Sano, ***absent a hindsight desire*** to reconstruct the claimed invention.” DI, 29. This misapprehends Petition’s argument, which explained why a POSITA could and would have incorporated Griesi’s R_{pc} teachings into Sano based not on

² All emphasis added unless otherwise noted.

hindsight but rather independent teachings of third party reference disclosures that further corroborate the expert testimony from Dr. Randall. Petition, 49-51. For example, Dr. Randall explained—based on references such as Gadelmawla—that “Rpc was a generally known spacing parameter that could be controlled to obtain better bonding of finishes and a more uniform finish of the electrolytic copper foil surface.” SOLUS-1003, ¶135 (citing SOLUS-1016, 7 (“By controlling spacing parameters [e.g., Rpc] it is possible to obtain better bounding of finishes, more uniform finish of plating.”)); *see* SOLUS-1003, ¶70 (citing SOLUS-1016, 7; SOLUS-1005, Abstract, 8, 11, FIGS. 8, 11; SOLUS-1004, [0073]). The Petition’s reliance on Dr. Randall’s testimony and related corroborating evidence to support the combination is thus entirely proper, as that testimony “takes into account only knowledge which was within the level of ordinary skill in the art at the time the claimed invention was made and does not include knowledge gleaned only from applicant’s disclosure.” *In re McLaughlin*, 443 F.2d 1392, 1395 (CCPA 1971). That is, obviousness arguments that take into account the knowledge of a POSITA are necessarily based on “hindsight reasoning,” but such “hindsight reasoning” is not impermissible. *Id.*

Third, for Grounds 1A-1B based on Shinozaki, the Decision acknowledges that “Petitioner’s result-effective variable analysis” presents a “close[] call,” ***despite misapprehending*** Petitioner’s result-effective variable analysis in finding that the

Board was “not directed to any prior art reference that actually ties Rpc to improved surface adhesion of active material on an electrolytic copper foil.” DI, 26-27. Yet the Petition and Dr. Randall pointed to specific prior art disclosures on this point, for instance Gadelmawla, that the Board appears to have overlooked even though references like Gadelmawla expressly recognized that peak count was a generally known spacing parameter of obtaining better finishes of the electrolytic copper foil surface. *See* SOLUS-1016, 7 (“By controlling spacing parameters [e.g., Rpc] it is possible to obtain better bounding of finishes, more uniform finish of plating.”); Petition, 23, 29-30, 50; SOLUS-1003, ¶¶63, 135, 70 (citing SOLUS-1016, 7; SOLUS-1005, Abstract, 8, 11, FIGS. 8, 11; SOLUS-1004, [0073]).

Ultimately, in view of the above, the Board erred in its assessment of both the merits of this Petition and, correspondingly, its application of the *Fintiv* factors, as highlighted in the table below. Considering the totality of the circumstances—and especially the strength of Petitioner’s showing on three independent and non-overlapping grounds—Petitioner respectfully requests that the Board reconsider its decision and grant *inter partes* review of the challenged claims of the ’090 Patent.

<i>Factor</i>	<i>What the Board Found</i>	<i>What the Board Should Have Found</i>
<i>Factor 1 (Likelihood of Stay)</i>	Neutral	Neutral
<i>Factor 2 (Proximity of trial date to projected FWD date)</i>	Strongly Favors Denial	<u>Neutral</u> ³
<i>Factor 3 (Investment in Parallel Proceeding)</i>	Neutral	Neutral
<i>Factor 4 (Overlap of Issues)</i>	Strongly Favors Institution	Strongly Favors Institution
<i>Factor 5 (Identity of Parties)</i>	Favors Denial	Favors Denial
<i>Factor 6 (Merits and Other Considerations)</i>	Favors Denial	<u>Strongly Favors Institution</u>

To the extent the Board is concerned that this IPR will not be a true alternative to the district court case, for instance because “invalidity assertions based on combinations of art with ‘unpublished systems prior art,’ is less effective and will not necessarily outweigh other *Fintiv* factors that favor discretionary denial,” Petitioner provides an expanded stipulation to address such concerns. DI, 19

³ Petitioner does not acknowledge that the circumstances of this case for Factor 2 strongly favor denial, as the Board determined, where the FWD would follow median time-to-trial by less than 1 month. *See* Petitioner’s Reply to Supplemental Brief (Paper 13), 1.

(quoting *Motorola Solutions, Inc. v. Stellar, LLC*, IPR2024-01205, Paper 19 at 3-4 (PTAB March 28, 2025) (“*Motorola*”). Specifically, in addition to the *Sotera* stipulation of March 3, 2025 (SOLUS-1044), it is hereby further stipulated that, should the Board grant this Petition, Petitioner will not pursue in district court litigation any invalidity assertions based on combinations of prior art patents or printed publications with “unpublished system prior art.” *Motorola*, 3-4. Thus, this updated stipulation moots not only “combinations of the prior art asserted in these proceedings with unpublished system prior art” referenced in the *Motorola* Director Review decision but also combinations of *any* prior art patents or printed publications with such system art. *Id.*, 4.

II. LEGAL STANDARD

“A party dissatisfied with a decision may file a single request for rehearing without prior authorization from the Board” and “must specifically identify all matters the party believes the Board misapprehended or overlooked, and the place where each matter was previously addressed in a motion, an opposition, or a reply.” 37 C.F.R. § 42.71(d). When reconsidering a decision on institution, the Board reviews the decision for an abuse of discretion. 37 C.F.R. § 42.71(c). “An abuse of discretion occurs if the decision (1) is clearly unreasonable, arbitrary, or fanciful; (2) is based on an erroneous conclusion of law; (3) rests on clearly erroneous fact findings; or (4) involves a record that contains no evidence on which the Board could

rationality base its decision.” *Redline Detection, LLC v. Star Envirotech, Inc.*, 811 F.3d 435, 442 (Fed. Cir. 2015).

III. ARGUMENT

A. The Decision Misapprehended or Overlooked Petitioner’s Arguments Regarding Dobashi’s PV and Rz_{JIS} Values

The Decision overlooked evidence and adopted Patent Owner’s unsupported attorney argument that “Dobashi’s actual examples do not meet the claims.” POPR, 57. But as explained in the Petition and accompanying declaration from Dr. Randall, Dobashi makes it clear that its actually-contemplated PV and Rz_{JIS} values are “preferably 0.05 μm to 1.5 μm ” and “preferably 0.1 μm to 1.0 μm ,” both of which lead to R_{pc} values well within the claimed range as explained in the Petition. SOLUS-1007, [0056], [0065]; *see also* Petition, 65, 68-69; SOLUS-1003, ¶¶195, 203-207. Indeed, while Dobashi’s examples in Table 2 reflect smaller PV and Rz_{JIS} values of “0.05 μm to 0.8 μm ” and “0.1 μm to 0.5 μm ,” respectively, which appear to correspond to the “more preferabl[e]” embodiment of Dobashi, this does not discount Dobashi’s explicit teachings regarding less preferable but still fully contemplated PV and Rz_{JIS} values that go up to 1.5 μm and 1.0 μm , respectively. SOLUS-1007, [0056], [0065]; POPR, 57; Petition, 65, 68-69; SOLUS-1003, ¶¶195, 203-207. As thoroughly discussed in the Petition and Dr. Randall’s declaration (*see* Tables 1-3 below), such values of PV and Rz_{JIS} lead to R_{pc} values within the claimed range. *See* Petition, 68-69; SOLUS-1003, ¶¶203-207.

	<u>1st Data Set</u> Rz = 1.0 μ m, PV = 1.3 μ m, Rsm > 0.1 mm, sampling length 0.8mm $\rightarrow$ Rpc $\approx$ 10 / 4mm				
5 Highest Peaks from mean line	0.50	0.65	0.55	0.45	0.35
5 Deepest Valleys from mean line	-0.50	-0.65	-0.55	-0.45	-0.35
As these are highest peaks and deepest valleys, other existing peaks cannot be higher than 0.35 and deeper than -0.35. This indicates that there can't be any more peaks that rise above +0.5 μ m, or descend below -0.5 μ m about the mean line in this sample (with sampling length of 0.8 mm) **So in these data it is definite that there are 2 peaks (Rpc= 2) per sampling length of 0.8 mm, and when sampling length is 4mm, Rpc =10					

	<u>2nd Data Set</u> Rz = 1.0 μ m, PV = 1.2 μ m, Rsm > 0.1 mm, sampling length 0.8mm $\rightarrow$ Rpc $\approx$ 15 / 4mm				
5 Highest Peaks from mean line	0.6	0.4	0.3	0.6	0.6
5 Deepest Valleys from mean line	-0.6	-0.4	-0.3	-0.6	-0.6
As these are highest peaks and deepest valleys, other existing peaks cannot be higher than 0.3 and deeper than -0.3. This indicates that there can't be any more peaks that rise above +0.5 μ m, or descend below -0.5 μ m about the mean line in this sample (with sampling length of 0.8 mm) **So in these data it is definite that there are 3 peaks (Rpc= 3) per sampling length of 0.8 mm, and when sampling length is 4mm, Rpc =15					

	<u>3rd Data Set</u> Rz = 1.0 μ m, PV = 1.1 μ m, Rsm > 0.1 mm, sampling length 0.8mm $\rightarrow$ Rpc $\approx$ 20 / 4mm				
5 Highest Peaks from mean line	0.55	0.55	0.55	0.55	0.3
5 Deepest Valleys from mean line	-0.55	-0.55	-0.55	-0.55	-0.3
As these are highest peaks and deepest valleys, other existing peaks cannot be higher than 0.3 and deeper than -0.3. This indicates that there can't be any more peaks that rise above +0.5 μ m, or descend below -0.5 μ m about the mean line in this sample (with sampling length of 0.8 mm). **So in these data it is definite that there are 4 peaks (Rpc= 4) per sampling length of 0.8 mm, and when sampling length is 4mm, Rpc =20					

SOLUS-1003, Table 1, Table 2, Table 3.

In short, the Decision's narrow focus on Table 2 and Patent Owner's attorney unsupported argument overlooks the full disclosure of Dobashi as well as Dr. Randall's careful analysis regarding the same, which is the only evidence of

record on this point. *See In re Applied Materials, Inc.*, 692 F.3d 1289, 1298 (Fed. Cir. 2012) (“A reference must be considered for everything that it teaches, not simply the described invention or a preferred embodiment.”); *see also* MPEP §2123 (citing *In re Susi*, 440 F.2d 442 (CCPA 1971) (“Disclosed examples and preferred embodiments do not constitute a teaching away from a broader disclosure or nonpreferred embodiments.”)). More, even if only a subset of Dobashi’s disclosed PV and RZ_{JIS} values (*i.e.*, values *not* found in Table 2) are deemed to satisfy the claim, this is sufficient. *See Unwired Planet, LLC v. Google Inc.*, 841 F.3d 995, 1002 (Fed. Cir. 2016) (“[C]ombinations of prior art that sometimes meet the claim elements are sufficient to show obviousness.”); *see also Hewlett-Packard Co. v. Mustek Sys., Inc.*, 340 F.3d 1314, 1326 (Fed. Cir. 2003) (“[A] prior art product that sometimes, but not always, embodies a claimed method nonetheless teaches that aspect of the invention.”).

B. The Decision Misapprehended or Overlooked Petitioner’s Evidence Regarding Griesi and Its Rpc Value

Despite acknowledging that Griesi discloses the Rpc value as claimed, the Decision concluded that “Petitioner does not persuasively explain why such an incidental, unexamined finding would lead one of ordinary skill in the art to import Griesi’s Rpc value into the foil of Sano, *absent a hindsight desire* to reconstruct the claimed invention.” DI, 29.

As explained in the Petition, a POSITA would have recognized that a roughness-related parameter not explicitly mentioned in Sano—namely R_{pc} as per Griesi—was “a potentially useful parameter that can be optimized to further enhance uniformity or generally improve Sano’s copper foil surface.” Petition, 50; SOLUS-1003, ¶134. This is because “R_{pc} was a generally known spacing parameter that could be controlled to obtain better ‘bounding of finishes’ and a ‘more uniform finish’ of the electrolytic copper foil surface.” Petition, 50; SOLUS-1016, 7; SOLUS-1003, ¶135. And as explained in the Petition, a POSITA in possession of Sano would have been motivated to, considering Griesi’s disclosure of R_{pc} values and further in view references like Gadelmawla that recognize controlling parameters like R_{pc} to obtain more uniform surface finishes that can lead to improved surface adhesion, optimize Sano’s R_{pc} value to arrive at the claimed range. *See* Petition, 50-51; SOLUS-1003, ¶¶135-139.

Here, the Petition’s reliance on Dr. Randall’s testimony and related corroborating evidence to support the combination does not amount to impermissible hindsight, as that testimony “takes into account only knowledge which was within the level of ordinary skill in the art at the time the claimed invention was made and does not include knowledge gleaned only from applicant’s disclosure.” *In re McLaughlin*, 1395.

Indeed, none of the theories offered for the combinability of Sano and Griesi

rely on information gleaned from the '090 Patent. Instead, the proposed combination is supported by independent teachings of third party references such as Gadelmawla (SOLUS-1016) and Fabian (SOLUS-1005) that further corroborate the expert testimony from Dr. Randall, which demonstrates the obviousness of the challenged claims with reference to the specific teachings of the applied prior art references, as they would have been understood by a POSITA at the time of the claimed invention. *See, e.g.*, SOLUS-1003, ¶¶63-65, 132-137. The Petition's reliance on Dr. Randall's testimony and related corroborating evidence is entirely proper, as that testimony "takes into account only knowledge which was within the level of ordinary skill in the art at the time the claimed invention was made and does not include knowledge gleaned only from applicant's disclosure." *In re McLaughlin*, 1395.

C. The Decision Misapprehended or Overlooked Petitioner's Arguments Regarding Shinozaki and Its Rpc Value Being a Result-Effective Variable

In finding Grounds 1A-1B based on Shinozaki as presenting a "close[] call," the Decision incorrectly concluded, with respect to the results-effective analysis for Shinozaki, that there was no "prior art reference that actually ties Rpc to improved surface adhesion of active material on an electrolytic copper foil." DI, 26-27. In doing so, the Board appears to have overlooked the evidence provided in the Petition that ties optimization of Rpc to various improvements in surface properties. For example, Dr. Randall explained that "[b]y controlling spacing parameters [e.g., Rpc]

it is possible to obtain better bounding of finishes, more uniform finish of plating.” SOLUS-1003, ¶135 (citing Solus-1016, 7). Dr. Randall further explained that “[1] it was known to use Rpc ‘to obtain better bounding of finishes, more uniform finish of plating,’[2] it was known that peak spacing (that is correlated to Rpc, as described above) is an ‘important factor in the performance of friction surfaces,’ which is relevant to enhancing mechanical grip (adhesion) between the current collector and the active material of secondary batteries, and [3] it was known to use Rpc to enhance uniformity or void reduction of copper foil surface.” SOLUS-1003, ¶70 (citing SOLUS-1016, 7; SOLUS-1005, Abstract, 8, 11, FIGS. 8, 11; SOLUS-1004, [0073]).

Accordingly, the Decision improperly overlooked Petitioner’s proffered evidence and background references, which evidence a desire to optimize Rpc values, which in turn lead to various improvements in surface properties of copper foils.

IV. CONCLUSION

For the foregoing reasons, and those discussed in the Petition, Petitioner respectfully requests the Board reconsider its Decision and institute *inter partes* review of the challenged claims of the ’090 Patent.

Dated: May 22, 2025

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CERTIFICATE OF SERVICE

Pursuant to 37 CFR § 42.6(e), the undersigned certifies that on May 22, 2025, a complete and entire copy of this Petitioner's Request for Rehearing was provided by email, to the Patent Owner, by serving the correspondence address of record as follows:

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