

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 IPR2025-00005
Patent 9,457,541

**PETITIONER'S REPLY TO
PATENT OWNER'S PRELIMINARY RESPONSE**

LIST OF EXHIBITS

SOLUS-1001	U.S. Patent No. 9,457,541 (“the ’541 Patent”)
SOLUS-1002	U.S. Patent No. 9,457,541 File History
SOLUS-1003	Declaration of Dr. Jack Josefowicz
SOLUS-1004	Barclay, William R. et al., <i>Electroplating</i> —A Treatise on the Electro-Deposition of Metals with a Chapter on Metal-Colouring and Bronzing, London-Edward-Arnold, 1912
SOLUS-1005	Swantson, Howard and Tatge, Eleanor, <i>Standard X-ray Diffraction Powder Patterns</i> , National Bureau of Standards, Circular 539, Vol. 1, June 15, 1953.
SOLUS-1006	Reserved
SOLUS-1007	U.S. Patent Application Publication No. 2009/0061326 (“Hirose”)
SOLUS-1008	Japanese Patent Application Publication No. JP 2003051340 (“Hara”)
SOLUS-1009	Translation of SOLUS-1008
SOLUS-1010	U.S. Patent Application Publication No. 2004/0029006 (“Otsuka”)
SOLUS-1011	U.S. Patent Application Publication No. 2010/0136434 (“Hanafusa”)
SOLUS-1012	U.S. Patent Application Publication No. 2010/0038115 (“Matsuda”) (now US Patent 8,722,199 from Japanese Patent Application Publications No. JP2006-009321 and JP2005-104540)

SOLUS-1013	Ye, Xingpu, et al. 1992 “Role of Overpotential on Texture, Morphology and Ductility of Electrodeposited Copper Foils for Printed Circuit board Applications”, <i>J. Electrochem. Soc.</i> , Vol. 139, No. 6, 1592 (June 1992) (“Ye”)
SOLUS-1014	Chiang, S.K. DiFranco, D.F. and Pucci, D.G. (1995), “High Strength, Low Profile Copper Foil for High Performance PCBs,” <i>Circuit World</i> Vol. 21 No. 3, pp. 56-59. (“Chiang”)
SOLUS-1015	Reserved
SOLUS-1016	Chinese Patent Publication CN1710737A (“Zhang”), published December 21, 2005
SOLUS-1017	Translation of SOLUS-1016
SOLUS-1018	Kim, Jongsoo and Kim, Heesan, <i>Corrosion Science and Technology</i> , Vol. 6, No. 4, pp. 154-158 (2007). (“Kim”)
SOLUS-1019	U.S. Patent No. 4,695,348 (“Battey”)
SOLUS-1020	U.S. Patent No. 6,451,441 (“Nishimoto”)
SOLUS-1021	U.S. Patent Application Publication No. 2004/0149583 (“Kumagai”)
SOLUS-1022	U.S. Patent Application Publication No. 2009/0047539 (“Dobashi”)
SOLUS-1023	U.S. Patent Application Publication No. 2006/0191798 (“Sano”)
SOLUS-1024	Reserved
SOLUS-1025	Frederick A. Lowenheim, <i>Modern Electroplating</i> , John Wiley & Sons, 1974 (“Lowenheim”)
SOLUS-1026	Reserved

SOLUS-1027	Japanese Patent Pub. No. JP 2007/217787 (“Matsuda-787”)
SOLUS-1028	Translation of SOLUS-1027
SOLUS-1029	<i>Surface roughness – Definitions and designation</i> , Japanese Industrial Standard (JIS) B 0601-1994 (“JIS Standard 1994”)
SOLUS-1030	<i>Geometrical Product Specifications (GPS) – Surface texture: Profile method – Terms, definitions and surface texture parameters</i> (“JIS Standard 2001”)
SOLUS-1031	<i>Operating Instructions MarSurf M 300 + RD 18</i> , Mahr GmbH, 2008 (“MarSurf M300 instruction manual”)
SOLUS-1032	<i>Surface Roughness Measurement-Parameters</i> , Olympus, https://www.olympus-ims.com/en/metrology/surface-roughness-measurement-portal/parameters/ (“Olympus”)
SOLUS-1033-1035	Reserved
SOLUS-1036	Declaration of June Ann Munford
SOLUS-1037	<i>SK nexilis Co., Ltd. v. Solus Advanced Materials Co., Ltd. et al.</i> , Case 2-23-cv-00539 (EDTX), First Amended Complaint
SOLUS-1038	<i>SK nexilis Co., Ltd. v. Solus Advanced Materials Co., Ltd. et al.</i> , Case 2-23-cv-00539 (EDTX), Proposed Docket Control Order
SOLUS-1039	<i>SK nexilis Co., Ltd. v. Solus Advanced Materials Co., Ltd. et al.</i> , Case 2-23-cv-00539 (EDTX), Opposed Motion of Defendant to Transfer Venue
SOLUS-1040	Board Email of March 17, 2025 authorizing Petitioner’s Reply
SOLUS-1041	Federal Court Management Statistics (Dec. 31, 2024)

SOLUS-1042

Stipulation Letter

On March 17, 2025, the Board authorized a 5-page reply addressing issues of discretionary denial addressed in the Preliminary Response (“POPR”). Ex. 1040. Consistent with *Fintiv* and *Sotera*, discretionary denial is not warranted.

Fintiv Factor 1 is neutral: As Patent Owner (“PO”) acknowledges, this factor is at best neutral as the motion to stay remains pending. Moreover, in EDTX, motions for stays are routinely granted where all asserted claims are under PTAB review. *See, e.g., AGIS Software Dev. LLC v. Google LLC*, No. 2:19-cv-361, 2021 WL 465424, at *3 (E.D. Tex. Feb. 9, 2021).

Fintiv Factor 2 is neutral: In view of EDTX’s growing backlog of cases and Petitioner’s offered *Sotera* stipulation, *infra*, the potential for conflict between the district court case and the instant IPR proceeding is minimal. *See* Ex. 1041 (showing median time-to-trial having increased further from 21.9 to 23.0 months).

Fintiv Factor 3 favors institution: As PO acknowledges, there will have been no court-issued substantive orders related to the ’541 Patent by the institution deadline, and fact discovery will also remain open. Moreover, the instant Petition was filed within four months of PO’s amended complaint of May 15, 2024, in which PO for the first time asserted the ’541 Patent, thereby impacting Petitioner’s

preparation efforts and timeline. *See* Ex. 1037 (amended complaint).

Fintiv Factor 4 favors institution: Petitioner hereby stipulates that, should the Petition be granted, Petitioner will not pursue in District Court litigation the specific grounds asserted in this IPR proceeding, or on any other ground that was raised or could have been reasonably raised in an IPR (*i.e.*, any ground that could be raised under §§ 102 or 103 on the basis of prior art patents or printed publications). *See Sotera Wireless, Inc. v. Masimo Corporation*, IPR2020-01019, Paper 12 (PTAB Dec. 1, 2020); Ex. 1042 (stipulation letter).

Fintiv Factor 5 is neutral: As noted, the parties in the litigation are the same.

Fintiv Factor 6 favors institution: The strength of the cited art, and Dr. Josefowicz's explanation of their applicability, belies PO's position that the Petition fails to provide a compelling case of invalidity. POPR, 17. Among other things, in stark contrast to PO's assertion in its *Fintiv* analysis that "Petitioner fails to demonstrate a reasonable expectation of success in combining the three or more references in each of Grounds 1-3," *id.*, 18, the Petition includes separate sections dedicated to explaining the proposed combination for each ground, including discussions of the reasonable expectations of success, all bolstered by expert

corroboration. *See, e.g.*, Petition, 14-17, 37-38, 55-57; SOLUS-1003, ¶¶ 60-64, 120-124, 177-181. While PO attempts to rebut Petitioner's positions based on attorney arguments, its assertions lack evidentiary support and are insufficient to counter the Petition's corroborated rationales that underpin each of the advanced combinations. At the very least, Petition's presentation of three independent grounds, bolstered by expert testimony and other evidentiary support, weighs in favor of institution and the benefit of a full record and briefing by the parties.

§325(d) – Advanced Bionics Test Favors Institution: There is no dispute that Kim, Ye, Hara, and Otsuka—on which Grounds 1 and 2 are based—were *not* presented to the Office during prosecution.

Regarding Hirose, which was cited in Ground 3 along with other never-before-considered art as part of a combination that was not before the Office during prosecution, the Petition provided a detailed explanation of why reconsideration was warranted. *See* Petition, 70-73. Moreover, far from being “substantially the same as the rejection over[come] during examination of the ’541 patent,” POPR, 22, Ground 3 relies on a combination that involves, among other things, Hirose's calculated TC ratios (that correspond to the claimed ratios based on the provided calculations), Hara's weight deviation disclosures, and Otsuka's tensile strength disclosures, thus raising distinct factual and legal issues that were

never (and could not have been) addressed during prosecution. *See, e.g.*, Petition, 52-57. Relatedly, Hara, which as noted above was never before the Office, further bolsters the teachings of Hirose in the combinations as set forth by providing express disclosures regarding the prevention of wrinkle formation. *See, e.g.*, Petition, 27, 45, 65; SOLUS-1003, ¶¶ 89-91, 146-147, 202-203. By extension, the other invalidity grounds presented in the Petition—namely Grounds 1 and 2—are also substantively distinct from those considered by the Examiner during prosecution in terms of the actual references as well as the rationales relied upon.

Ultimately, the grounds presented in the Petition are substantively distinct from those considered by the Examiner during prosecution and demand different factual determinations that were neither addressed nor answered during prosecution.

Dated: March 24, 2025

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CERTIFICATE OF SERVICE

Pursuant to 37 CFR § 42.6(e), the undersigned certifies that on March 24, 2025, a complete and entire copy of this Petitioner's Reply to Patent Owner's Preliminary Response was provided by email, to the Patent Owner, by serving the correspondence address of record as follows:

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