

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

HANWHA SOLUTIONS CORPORATION,

Petitioner,

v.

MAXEON SOLAR PTE. LTD.,

Patent Owner.

Case No. IPR2024-01203

U.S. Patent No. 8,222,516

**DECLARATION OF GILBERT T. SMOLENSKI REGARDING
EXHIBITS 1072, 1074, 1078-1086**

HANWHA v. MAXEON
IPR2024-01203
HANWHA 1089

I, Gilbert T. Smolenski, declare as follows:

1. I am an attorney at the law firm of Wilmer Cutler Pickering Hale and Dorr LLP in the Washington, DC office, which represents the Petitioner Hanwha Solutions Corporation in this proceeding.

2. I was involved in the preparation of the Petitioner's Reply, and this declaration is based on my personal knowledge from being involved in the preparation of the Petitioner's Reply.

3. **Exhibit 1072** is a copy of a SANDIA Report SAND2000-1046, titled "Fundamental Understanding and Development of Lost-Cost, High-Efficiency Silicon Solar Cells, Annual Progress Report: Sept. 1998-Aug. 1999," and authored by A. Rohatgi, S. Narasimha, J. Moscher, A. Ebong, S. Kamra, T. Krygowski, P. Doshi, A. Ristow, and V. Yelundur. This report was prepared and published by Sandia National Laboratories and is dated May 2000. Further, this report was marked, without objections, as **Exhibit 1072** at the deposition of Dr. Ruby taken in this proceeding. *See* Ex.1075-Ruby-Tr., 109:10-16. Exhibit 1072 is a true and accurate copy of this report that was obtained while preparing the Petitioner's Reply.

4. **Exhibit 1074** is a copy of an article titled, "Simplified processing for 23%-efficient silicon concentrator solar cells," and authored by Douglas Ruby, P. A. Basore, M. E. Buck, J. M. Gee, W. K. Schubert, and H. L. Tardy. This article was published in the *Conference Record of the Twenty Third IEEE Photovoltaic*

Specialists Conference and has a copyright date of 1993. Further, this article was marked, without objections, **Exhibit 1074** at the deposition of Dr. Ruby taken in this proceeding. *See* Ex.1075-Ruby-Tr., 156:9-18. Exhibit 1074 is a true and accurate copy of this report that was obtained while preparing the Petitioner's Reply.

5. **Exhibit 1078** is a copy of an article titled "MIS Solar Cells: A Review," and authored by David L. Pulfrey. This article was published in *IEEE Transactions on Electronic Devices* and has a copyright date of 1978. **Exhibit 1078** is a true and accurate copy of this article that was obtained while preparing Petitioner's Reply.

6. **Exhibit 1079** is a copy of an article titled "Physical Properties of RT-LPCVD and LPCVD Polysilicon Thin Films: Application to Emitter Solar Cell," and authored by M. Lemit, B. Semmache, Q. N. Le, D. Barbier, and A. Laugier. This article was published in the *Proceedings of 1994 IEEE 1st World Conference on Photovoltaic Energy Conversion - WCPEC (A Joint Conference of PVSC, PVSEC and PSEC)* and has a copyright date of 1994. **Exhibit 1079** is a true and accurate copy of this article that was obtained while preparing Petitioner's Reply.

7. **Exhibit 1080** is a copy of an article titled "Record efficiencies above 21% for MIS-contacted diffused junction silicon solar cells," and authored by Axel Metz and Rudolf Hezel. This article was published in the *Conference Record of the Twenty Sixth IEEE Photovoltaic Specialists Conference* and has a copyright date of

1997. **Exhibit 1080** is a true and accurate copy of this article that was obtained while preparing Petitioner's Reply.

8. **Exhibit 1081** is a copy of an article titled "Detailed Analysis of Fine Line Printed and Plated Solar Cell Contacts," and authored by D. Pysch, A. Mette, A. Filipovic, and S. W. Glunz. This article states that it was presented at the 22nd European Photovoltaic Solar Energy Conference and Exhibition, 3 – 7 September 2006, Milan, Italy and is dated September 2006. Schultz-2008¹ (which is an article dated January 22, 2008 that cites to Exhibit 1081) states that this article was published in *Proceedings of the 22nd European Photovoltaic Solar Energy Conference*, Milan, Italy in 2007. **Exhibit 1081** is a true and accurate copy of this article that was obtained while preparing Petitioner's Reply.

¹ Shultz-2008 is an article titled "Thermal oxidation for Crystalline Silicon Solar Cells Exceeding 19% Efficiency Applying Industrially Feasible Process Technology," and authored by Oliver Schultz, Ansgar Mette, Martin Hermle and Stefan W. Glunz. Shultz-2008 was published in *Progress in Photovoltaics*, is dated January 22, 2008, and has a copyright date of 2008. A copy of Shultz-2008 is being served contemporaneous with this declaration and is a true and accurate copy of Shultz-2008 that was obtained while preparing this declaration.

9. **Exhibit 1082** is a copy of an article titled “Surface Passivation of Silicon Solar Cells Using Plasma-Enhanced Chemical-Vapour-Deposited SiN Films and Thin Thermal SiO₂/Plasma SiN Stacks,” and authored By Jan Schmidt, Mark Kerr, and Andrés Cuevas. This article was published in *Semiconductor Science and Technology* and has a copyright date of 2001. **Exhibit 1082** is a true and accurate copy of this article that was obtained while preparing Petitioner’s Reply.

10. **Exhibit 1083** is a copy of “Electron microscopy study of front-side Ag contact in crystalline Si solar cells,” and authored by Z. G. Li, L. Liang, and L. K. Cheng. This article was published in *Journal of Applied Physics* and has a copyright date of 2009. **Exhibit 1083** is a true and accurate copy of this article that was obtained while preparing Petitioner’s Reply.

11. **Exhibit 1084** is a copy of an article titled “Experimental Evidence of Direct Contact Formation for the Current Transport in Silver Thick Film Metallized Silicon Emitters,” and authored by Enrique Cabrera, Sara Olibet, Joachim Glatz-Reichenbach, Radovan Kopecek, Daniel Reinke, and Gunnar Schubert. This article was published in the *Journal of Applied Physics*, and is dated December 5, 2011. **Exhibit 1084** is a true and accurate copy of this article that was obtained while preparing Petitioner’s Reply.

12. **Exhibit 1085** is a copy of a SAND Report, SAND 2001-0833, titled “History of the Crystalline Silicon Photovoltaic Cell Research Program at Sandia

National Laboratories,” and authored by Douglas Ruby and James Gee. This report was prepared and published by Sandia National Laboratories and is dated April 2001. **Exhibit 1085** is a true and accurate copy of this report that was obtained while preparing Petitioner’s Reply.

13. **Exhibit 1086** is a copy of an article, titled “The Effects Of Different Diffusion Sources On Silicon Solar Cell Recombination Properties,” and authored by Douglas S. Ruby and John D. McBrayer. This article was published by Sandia National Laboratories and is dated 1990. **Exhibit 1086** is a true and accurate copy of this article that was obtained while preparing Petitioner’s Reply.

14. In signing this declaration, I recognize that the declaration will be filed as evidence in a contested case before the Patent Trial and Appeal Board of the United States Patent and Trademark Office. I also recognize that I may be subject to cross-examination in the case and that cross-examination will take place within the United States. If cross-examination is required of me, I will appear for cross-examination within the United States during the time allotted for cross-examination.

15. I declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Dated: September 5, 2025

/s/Gilbert T. Smolenski

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