IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
SHERMAN DIVISION

LARGAN PRECISION CO., LTD., *Plaintiff*, v. **ABILITY OPTO-ELECTRONICS TECHNOLOGY CO., LTD., ET AL.,** *Defendants*.	Case No. 4:19-cv-00696-ALM

EXPERT DECLARATION OF DR. RONGGUANG LIANG
REGARDING CLAIM CONSTRUCTION

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I, Rongguang Liang, Ph.D., hereby declare as follows:

1. I have been retained by counsel for Largan Precision Co., Ltd. to prepare this declaration addressing the proper constructions of certain claim terms in U.S. Patent Nos. 7,274,518 ("the '518 Patent"); 8,395,691 ("the '691 Patent"); 8,988,796 ("the '796 Patent"); and 9,146,378 ("the '378 Patent") (collectively, the "Asserted Patents").

I. QUALIFICATIONS AND EXPERIENCE

2. Since 2011, I have been a Professor of Optical Sciences at the University of Arizona, where I teach courses directly relating to lens design. For example, I teach graduate courses that range from introducing students to the principles, design requirements, and practices of optical instruments, to learning practical engineering skills for designing optical systems.

3. I am also the Director of the Imaging and Applied Optics Lab at the University's College of Optical Sciences, where researchers specialize in optical system design, fabrication, and testing. And I am the Director at the University's Precision Freeform Optics Design, Fabrication, and Testing Facility, which contains state of the art instruments for fabrication and testing. These same types of instruments are employed by lens manufacturers.

4. I earned a Doctorate degree in Optical Sciences in 2001 from the University of Arizona. My Ph.D. dissertation topic was "Measurement of Optical Phase and Polarization in the Media and Systems of Optical Data Storage."

5. Before my doctoral studies at the University of Arizona, I earned a Master of Science in Applied Optics in 1998 from the Rose-Hulman Institute of Technology in Terre Haute, Indiana, and a Bachelor of Science in Optical Instrumentation in 1989 from Zhejiang University in Zhejiang, China.

6. After receiving my bachelor's degree in 1989, I began working for Micro-optic Industrial Group (now Motic Inc.) as an Optics Engineer in the company's Research & Development Department, a position I held for seven years. Between 1998 and 2001, after receiving my master's degree, I served as a graduate researcher at the University of Arizona.

7. For over thirty years, throughout my career as an optics engineer, student, and professor, I researched and engineered lenses, lens systems, and other technology in the same fields as the technology at issue in the Asserted Patents. Specifically, from 2001 to 2007, I worked as a Senior Research Scientist, Principal Research Scientist, and Project Leader for the Eastman Kodak Company. Then, from 2007 until I joined the University of Arizona faculty in 2011, I served as Senior Principal Research Scientist and Project Leader for Carestream Health Inc., formerly Eastman Kodak's health group. In both my Kodak and Carestream roles, I worked daily to engineer lenses, invent lens and related optical technologies, and advise and lead research scientists doing the same.

8. I am the author of the book *Optical Design for Biomedical Imaging*, SPIE Press (2011). I am also the editor of *Biomedical Optical Imaging Technologies: Design and Applications*, Springer Press (2012), the chapters of which are written by leading experts in optical engineering and biomedical imaging. I have also co-authored chapters in two books, *Handbook of Optical Engineering*, Marcel Dekker (2016), and *Optical Interferometry*, InTech (2017).

9. I was elected to the Optical Society of America in 2019 and to SPIE (formerly the Society of Photo-Optical Instrumentation Engineers) in 2010. In 2017, I was a member of a team that NASA recognized with its RGH Exceptional Achievement for Engineering Team award, and in 2015, I was a member of a team that received NASA's Group Achievement Award.

10. I have published over 100 peer-reviewed technical articles and publications in the field of optical imaging. Some of my publications relate to the subject matter of the Asserted Patents. Below is a sample list, with a more comprehensive list included in my curriculum vitae, attached as Exhibit A:

- John Tesar, Rongguang Liang, and Masud Mansuripur, "Optical modeling combining geometrical ray tracing and physical-optics software," Opt. Eng. 39, 1845-1849 (2000);
- Zhenyue Chen, Xia Wang, and Rongguang Liang, "RGB-NIR multispectral camera," Opt. Express 22, 4985-4994 (2014);
- Zhenyue Chen, Xia Wang, Shaun Pacheco, and Rongguang Liang, "Impact of CCD camera SNR on polarimetric accuracy," Appl. Opt. 53, 7649-7656 (2014);

- Donglin Ma, Zexin Feng, and Rongguang Liang, "Freeform illumination lens design using composite ray mapping," Appl. Opt. 54, 498-503 (2015);
- Donglin Ma, Zexin Feng, and Rongguang Liang, "Deconvolution method in designing freeform lens array for structured light illumination," Appl. Opt. 54, 1114-1117 (2015);
- Rengmao Wu, Hong Hua, Pablo Benítez, Juan C. Miñano, and Rongguang Liang, "Design of compact and ultra efficient aspherical lenses for extended Lambertian sources in two-dimensional geometry," Opt. Express 24, 5078-5086 (2016);
- Zexin Feng, Brittany D. Froese, Rongguang Liang, Dewen Cheng, and Yongtian Wang, "Simplified freeform optics design for complicated laser beam shaping," Appl. Opt. 56, 9308-9314 (2017);
- Chih-Yu Huang and Rongguang Liang, "Modeling of surface topography on diamond-turned spherical and freeform surfaces," Appl. Opt. 56, 4466-4473 (2017);
- Yujie Luo, Xiao Huang, Jian Bai, and Rongguang Liang, "Compact polarization-based dual-view panoramic lens," Appl. Opt. 56, 6283-6287 (2017);
- Gannon, Caleb, and Rongguang Liang. "Using spherical harmonics to describe large-angle freeform lenses." Applied optics 57, no. 28 (2018): 8143-8147; and
- Xisheng Xiao, Qinghua Yu, Guilin Chen, and Rongguang Liang. "Locating optimal freeform surfaces for off-axis optical systems." Optics Communications (2020): 125757.

11. Additionally, I have served in several editorial positions for journals in the optical technology field. This includes serving as an editor of the journals *Applied Optics* and *Optica*, a guest editor of the journals *Biomedical Optics Express* and *Optical Engineering*, and on the editorial board of *Scientific Reports*. I have also served as conference or session chair for numerous conferences pertaining to optical technology. And I have led or served on a number of committees, including as chair of the OSA Paul F. Forman Engineering Excellence Award committee, on the SPIE Scholarship Committee, and as biophotonics co-team leader for the National Technology Roadmap for Photonics. My curriculum vitae at Exhibit A contains a complete listing of my service on boards and in organizations whose work relates to the technology at issue in this case.

12. I am also a named inventor on 45 U.S. patents, some of which directly relate to the technology at issue in this case, including patents on various cameras and imaging technologies. For example, U.S. Patent No. 6,820,982, titled "Method and Apparatus for Forming an Image on a Curved Diffusive Surface," U.S. Patent No. 7,275,826, titled "Fundus Camera Having Curved

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