RESUME

Donald C. Dilworth

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Education: MIT, SB in physics, 1961.

Experience:

Mr. Dilworth is president of Optical Systems Design, Inc., and has since 1961 been intensively involved in development and application of computer software for optical design. He has extensive experience in most areas of lens design, particularly in thermal infrared systems, and is the author of the well-known SYNOPSYS™ lens design program, which is widely used by lens designers worldwide.

- He has an active consulting business in lens design, with customers in many countries, and has taught many short courses dealing with lens design and the unique capabilities of SYNOPSYS in the US and abroad. He has presented Colloquium lectures at the University of Arizona, in St. Petersburg Russia, and elsewhere.

- As author of SYNOPSYS, Mr. Dilworth has advanced the state of the art in the areas of artificial intelligence (AI) and with the development of the popular PSD (Pseudo Second Derivative) optimization method.

- He is a senior member of the Optical Society of America and SPIE.

- He was senior principal development engineer at the Honeywell Radiation Center, where he was responsible for conceptual and detailed design, tolerancing, and analysis of numerous IR and visible-light systems, including startrackers, periscope optics, and FLIRs.

- He was director of the optical design department at Baus Optics, Inc., where he developed and implemented techniques for the design of geometric and thin-film optics.

- Prior to joining Baus Optics, Mr. Dilworth was employed by Itek Corporation as Senior Optical Physicist. In this capacity, he was responsible for designing a variety of advanced optical systems, including aerial photographic lenses used on the recently declassified Corona project, aspheric systems, multilayer dielectric coatings, and a submarine periscope.

- At the Massachusetts Institute of Technology, he developed computational techniques for optical and thin-film design, which were applied to the design of the optical navigation equipment for the Apollo project.

Patents:

US Patent number	Name	Issue date
5742421	Split lens video display system	21/04/1998
4116537	Thermal compensation apparatus	26/09/1978
4720183	Extreme wide angle eyepiece with minimal aberrations	18/06/1978
3565511	Telecentric lens system for providing an image with the principal rays…	23/02/1971

Publications:

1. "Fast MTF Calculation in the Presence of Diffraction," *Appl. Opt.,* **11**, 1101 (1972).

2. "Pseudo-second-derivative Matrix and its Application to Automatic Lens Design," *Appl. Opt.*, **17**, 3372 (1978).

3. "Improved convergence with the pseudo-second-derivative (PSD) Optimization Method," *Proc. SPIE*, **399**, 159 (1983).

4. "An Infrared Alignment Telescope," *Proc. SPIE*, **483**, 45 (1984).

5. "Automatic Lens Optimization: Recent Improvements," *Proc. SPIE*, **554**, 191 (1986).

6. "A Multilevel Approach to User-friendly Lens Design," *Proc. SPIE*, **655**, 6 (1986).

7. "Applications of Artificial Intelligence to Computer-aided Lens Design," *Proc. SPIE*, **766**, 91 (1987).

8. "SYNOPSYS: a State-of-the-art Package for Lens Design," *Proc. SPIE,* **766**, 264 (1987).

9. "New Tools for the Lens Designer," *Proc. SPIE*, **7060**, 70600B (2008).

10. "Lens tolerances: Software eliminates the guesswork," *LaserFocusWorld* (April 2007).

11. "Optical design using the SYNOPSYS software package," *3rd International Conference on Optics-Photonics Design & Fabrication (ODF 2002)*, Tokyo (2002).

12. "Expert systems in lens design," *Proc. SPIE*, **1354**, 357 (1990).

13. "Man versus machine: a lens design challenge," D. C. Dilworth and D. Shafer, *Proc. SPIE*, **8841**, 88410G (2013).

14. "A zoom lens from scratch: the case for number crunching," D.C. Dilworth, *Proc. SPIE,* **9947**, *Current Developments in Lens Design and Optical Engineering XVII*, 994702 (27 September 2016).

15. “New Tools for the Design of Free-Form Mirrors”, Paper 10375-1, scheduled for SPIE meeting in San Diego, 6-10 August 2017.

16. Donald C. Dilworth, *SYNOPSYS Supplement to Joseph M. Geary’s “Introduction to Lens Design*,” Willmann-Bell, Richmond (2013).