NEAL LAFFERTY

62 Dartmouth St, Apt 3, Rochester, NY 14607

telephone: 585.305.5248 electronic mail: nxl7930@rit.edu web address: http://www.rit.edu/lithography

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Education

MICROSYSTEMS ENGINEERING - PH.D.
Rochester Institute of Technology
2004-Present
Research Area: Optical Lithography

MATERIALS SCIENCE - TOWARDS M.S.
Rochester Institute of Technology, Transferred to Microsystems Engineering Ph.D. Program
2002-2004

MICROELECTRONIC ENGINEERING - B.S.
Rochester Institute of Technology
1997-2002

Qualifications

EXPERTISE
· Extensive experience in semiconductor optical lithography, including semiconductor manufacturing equipment, such as CD-SEMs, lithography scanners, and wafer tracks
· Proficient using lithography simulation software, such as PROLITH, Panoramic, and Calibre Workbench
· Experience in using scripting MATLAB, COMSOL Multiphysics, and Octave/GNUplot
· Skilled in mask data preparation and TCL/TK scripting

ACADEMIC PREPARATION
· Optics, including specialization in Micro, Modern, and Photonics
· Electromagnetic Fields, Laser Electronics, and Near Field Optics
· Linear Image Math, with additional focus in Optical Image Formation
· Complete background in Microlithography, including photoresist chemistry, optics for lithography, resolution enhancement techniques, partial coherent imaging, and aberration theory
· Lithographic applications in Microsensors, Semiconductor Devices, and Integrated Circuits
· Microelectronics related coursework, such as Thin Film Processes and Vacuum Science, Polymer Science, Solid State Physics, and Materials Science

ACHIEVEMENTS
· Optical Society of America, Rochester Section, House Committee Co-Chair
· SPIE 2007 Best Student Paper Award for Microlithography, Optical Microlithography XX
· Eagle Scout, Boy Scouts of America, 1997

SELECTED PUBLICATIONS
Lafferty N., Zhou J., Smith B. W., “Mask Enhancement Using an Evanescent Wave Effect.” Optical Microlithography XX: Proceedings of SPIE Volume 6520. Ed. D. G. Flagello, SPIE Press, 2007.

Smith B. W., Fan Y., Zhou J., Lafferty N., Estroff A., “Evanescent Wave Imaging in Optical Lithography.” Optical Microlithography XIX: Proceedings of SPIE Volume 6154. Ed. D. G. Flagello, SPIE Press, 2006.

Lafferty N., Vandenberghe G., Smith B. W., Lassiter M., Martin P., “Gray Assist Bar OPC.” Optical Microlithography XVII: Proceedings of SPIE Volume 5377. Ed. B. W. Smith, SPIE Press, 2004.

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Fan Y., Lafferty N., Bourov A., Zavyalova L., Smith B. W., "Air bubble-induced light-scattering effect on image quality in 193nm immersion lithography." Applied Optics 44 (2005): 3904-3911.

Lafferty N., Karzhavin Y., Jowett P., Urenda T., Fiol B., "Improving Equipment Productivity through On-Product Etch-Process Monitoring." MICRO 20 (2002).

Smith B. W., Fan Y., Zhou J., Bourov A., Zavyalova L., Lafferty N., Cropanese F., Estroff A., "Hyper NA Water Immersion Lithography at 193nm and 248nm." Journal of Vacuum Science and Technology B 22 (2004): 3439-3443.

Lafferty N., Gould C. J., Littau M., Raymond C., "Gauge Control for sub-170nm DRAM Product Features." Metrology, Inspection, and Process Control for Microlithography XV: Proceedings of SPIE Volume 4344. Ed. N. T. Sullivan, SPIE Press 2001.

Experience

MENTOR GRAPHICS CORP./IMEC, Leuven, Belgium

01/04 - 11/04

OPC Engineer and IMEC Assignee

· Used Calibre Workbench to test advanced model accuracy
· Participated in a variety of IMEC work groups including optical extensions at 193nm and mask effects at high NA

INFINEON TECHNOLOGY, Richmond, VA

06/01 – 11/01

Advanced Process Control Intern

· Worked with SEMY, APC Trend, and Datalog to obtain a working, robust inline qualification method
· Implemented method and enabled fault detection in demo tool
· Coordinated a team of software engineers creating an application to reduce downtime and increase productivity

INFINEON TECHNOLOGY, Richmond, VA

06/00 – 11/00

Lithography Process Intern

· Worked with process, manufacturing, and equipment engineers to help facilitate the addition of a scatterometer to the metrology group
· Conducted tests to qualify the tool and compare to state of the art
· First successful use of a scatterometer in a production environment

US NAVAL RESEARCH LABORATORY, Washington, D. C.

06/99 – 11/99

Process Engineering Intern

· Assisted research staff fabricating lithium niobate (LiNBO3) optical modulators
· Carried out various key process steps: lithography, etch, electroplating, micromachining, and device dicing
· Assisted in e-beam and sputter PVD processes
· Security Clearance 06/99

References Available Upon Request