EXHIBIT A

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Bruce W. Smith, Ph.D.
Curriculum Vitae

Professional Summary

Dr. Smith has over 25 years of research, academic, industry, and consulting engineering experience in the fields of microelectronics and integrated circuit fabrication. His research involves semiconductor patterning and microlithography (optical, DUV, electron beam, and EUV), materials and processes (dielectrics, metals, silicon, IR, and wide-band gap materials), thin films and deposition (sputtering, PVD, and CVD), LCD processing, UV lasers, photomasks, photoresist materials, etching (plasma, RIE, and wet etch), wafer and substrate processing, HDD processing, and modelling & simulation. He is a chaired professor of Microelectronic Engineering with 20 years of research and teaching experience. His industry experience includes manufacturing as well as R&D and he has worked with companies in the US, Europe, and Asia. Prof. Smith is a skilled technical consultant and expert witness with experience in intellectual property, patent litigation, patent re-examination, trial testimony (bench and jury), report writing, deposition, and International Trade Commission (ITC) cases. He has been elected a Fellow of SPIE and is highly regarded in the engineering field and in academia. Prof. Smith has over 100 publications including technical papers, articles, textbooks, and textbook chapters. He holds over 20 patents and has licensed his technology both nationally and internationally. He has taught microelectronic engineering graduate and undergraduate courses for 20 years and has developed and delivered over 50 industrial courses covering aspects of silicon processing and microlithography.

Prof. Smith has expertise and is able to serve as an expert witness in semiconductor IC fabrication, microlithography, LCD and flat panel processing, materials and processes (dielectrics, metals, silicon, and wide band gap semiconductors), photomask design and fabrication, thin films and deposition (PVD and CVD), optical systems, HDD processes, photoresist materials and processing, plasma and dry etching, UV lasers and laser processing, patterned magnetic media, wafer and substrate cleaning, and metrology.

Expertise

- LCD & Flat Panel Processes
- Microlithography & Patterning
- Microsystems
- Optics & Optical Systems
- Patterned Magnetic Media for Hard Disks
- Photomask Fabrication & Design
- Photoresist Materials & Processes
- Plasma, Dry Etching, RIE, & Wet Etch
- Polarization Components
- Semiconductor IC Fabrication
- Thin films & deposition (PVD/CVD)
- UV Lasers & Laser Processing
- Wafer & Substrate Processing

Bruce W. Smith, Ph.D.
Curriculum Vitae

Education

Year	College or University	Degree
1994	Rochester Institute of Technology	Ph.D., Center for Imaging Science, Excimer laser microlithography for integrated circuit fabrication. Thesis: "Excimer Laser Microlithography at 193NM."
1988	Rochester Institute of Technology	B.S., M.S., Photographic and Imaging Science, Thin film deposition and processing (MS). Thesis: "Optically Transparent IR Films of ZnS-Metal-ZnS."

Professional Experience

From: 1988
To: Present
Organization: Rochester Institute of Technology, College of Engineering (NY)
Summary:

2008 – Present Director, Microsystems Engineering Ph.D. Program

2000 – Present Intel Professor of Research and Technology

2001 – 2004 Associate Dean of Graduate Programs, Kate Gleason College of Engineering

1988 – 2008 Professor of Microelectronic Engineering

Experience: Professor of Microelectronic Engineering (1988-2008) and Director of Microsystems Engineering Program (2008-date) including research and teaching in micro-electronic, micro-optical, and micro-mechanical systems with emphasis on: microlithography and patterning including i-line, deep-UV, and electron beam; thin films including PVD evaporation and sputtering of metals, dielectrics, and semiconductors; CVD including poly-Si, Si-nitride, Si-oxinitride, amorphous carbon, and diamond like carbon; etching including wet chemical, plasma and RIE; and metrology including SEM, spectrophotometry, spectroscopic ellipsometry, AFM, profilometry, microscopy. Named the Intel Professor of Research and Technology in 2000.

Research:

- Metal and II-VI semiconductor thin films for IR applications (1988-89)
- Selenium migration imaging in conductive polymers (1991-1992)
- Excimer (UV) laser technology and applications to semiconductor processing: amorphous silicon, polysilicon, and laser assisted etching (1991-1994)
- Microlithography and nanopatterning for sub wavelength device generations through innovations in UV, deep-UV, VUV, and EUV patterning systems; optical

illumination design; electron beam lithography; phase masking; resolution enhancement; aberration control; polarization; optical proximity correction; new photoresist materials; and processing. Development of fluid based immersion lithography for hyper-NA imaging and research into interactions of large angle of thin film effects in lithography processes (1991-date)

- Thin film materials including refractory metal (W, Mo, Nb, Re, Ta, Mo, Nb, Ru, Hf, Rh, Cr) nitrides and oxides for attenuated masking layers using rf sputtering and CVD methods. Ellipsometric measurement and fitting of material optical properties and effective media approximate (EMA) modelling of composite materials (1995-2001)
- Plasma reactive ion etching (RIE) of refractory metal nitrides and oxides for application as attenuated masking layers (1995-1999)
- Deposition (PVD) and processing of Group IIA fluorides (CaF_2, MgF_2, SrF_2, BaF_2, and LiF) for bulk and thin film applications to UV imaging. Birefringent effects of bulk, thin film, and liquid crystal materials (1994-date)
- Liquid crystal display (LCD) technology including birefringent materials and polarization control; polarizing screens and filters; polarization effects in organic materials; TFT-LCD processing; and thin films including Al, Au, Ag, indium tin oxide (ITO), SiO_2, refractory metals Cr, Mo, Ti, W, and Ta, and "black chrome" CrON (1995-date)
- Magnetic patterned media for nano-bit recording of hard disk drives (HDD) into metallic alloys and oxides, (2006-date)
- Polarization effects on large angle imaging; wire grid polarizers using nanostructured materials (2004-date)
- Effects of birefringence with crystalline optical materials for UV optics (2004-date)
- Photopolymer and photoresist systems including novalacs and phenolics, polyacrylates, polyimides, polysulfones, and polyfluoro ethylenes; exploration into high resolution chemically and non-chemically amplified photoresists for UV and high energy applications (1995-date)
- UV-visible optical properties of organic and inorganic liquids (2002-date)
- Multilayer mirror design and optimization for extreme UV (EUV) using refractory metals combined with Si, Be (1998-1999)
- Lithography and process modelling and simulation (1992-date)
- Negative refractive index materials, plasmonics, and evanescent wave enhancement for super resolution (2004-date)
- Electronic design automation (EDA) for semiconductor process optimization and lithography integration (2004-date)

From: 1998
To: Present
Organization: Lithographic Technology Corp. dba Amphibian Systems
Title: Founder, President & CEO
Summary:
- Manufacturer of specialty equipment for semiconductor, nanophotonic, and patterned hard disk drive applications, specializing in nanopatterning systems and metrology.
- Producer of excimer laser wafer exposure systems based on patented technology and cross licensing with major equipment supply companies. Customer base includes major chip and materials suppliers in the US and Asia.

From: 2001 and 2008
Organization: IMEC Micro and Nanoelectronics Research Center (Leuven, Belgium)
Title: Visiting Professor
Summary:
- Member of research and development team at world-leading independent research center in nanoelectronics and nanotechnology.
- Directed patterning efforts in next-generation semiconductor scaling in sub-90nm and sub-45nm device generations.

From: 1997
To: 1997
Organization: International SEMATECH (Austin, TX)
Title: Visiting Scholar
Summary: Participated in microlithography research and development and next-generation process development at world's largest consortium of semiconductor device manufacturing companies.

From: 1995
To: 1995
Organization: Rutherford Appleton Laboratories (Oxford, U.K).
Title: Visiting Scientist
Summary: Interfaced with the Space Science and Technology Department and an excimer laser integration group (Exitech) to develop an ArF excimer laser system for sub-250nm patterning including innovation in silylation dry etch pattern transfer.

From: 1986
To: 1988
Organization: Digital Equipment Corp. (Hudson, MA)
Title: Development Engineer, Advanced Development Center
Summary: Integrated circuit R&D and manufacturing with responsibilities in optical and electron beam lithography, thin film sputtering, plasma reactive ion etching, wafer and substrate cleaning, advanced process control, laser based inspection, and optical metrology.

From: 1983
To: 1986
Organization: Gould AMI Semiconductor, Santa Clara, Calif., Process Development Group
Title: Manufacturing Engineer
Summary: Photomask and wafer lithography engineering

Litigation Support Experience

Dr. Smith has experience in trial testimony (jury and bench), deposition, hearing testimony, expert reports, patent and portfolio analysis, technical consulting, prior art research, and ITC cases.

Expert Engagement:
Type of Matter: Patent Infringement – ITC case. Polysilicon and amorphous silicon technology; silicon-oxi-nitride anti-reflection coating deposition technology.
Law Firm: Steptoe and Johnson, LLP
Case Name: Qimonda AG v. Seagate Technology
Services Provided: Expert witness for defendant; prior art research; review documentation, references, and prosecution history; draft expert reports; provide deposition testimony.
Disposition: Trial in June, 2009
Date: 2009

Expert Engagement:
Type of Matter: Patent Infringement – ITC case. Wide bandgap (II-VI and III-V) semiconductor materials processing for short-wavelength LEDs and laser diodes.
Law Firm: Steptoe and Johnson, LLP
Case Name: Neumark-Rothschild v. Toshiba Corp.
Services Provided: Expert witness for defense (invalidity and non-infringement); prior art research; review documentation, references, and prosecution history; provide technical consulting and guidance; draft expert reports.
Disposition: Concluded
Date: 2008

Expert Engagement:

Type of Matter:	Patent Infringement
Law Firm:	Fish and Richardson
Case Name:	Renesas Technology v. Samsung Electronics
Services Provided:	Main expert witness for defense (ITC case); testified at trial for invalidity and non-infringement; prior art research; analysis of patents, documentation and references including US and foreign prosecution history; drafted expert reports for invalidity and non-infringement; created demonstratives for trial; provided testimony at deposition.
Disposition:	Settled
Date:	2007 – 2008

Expert Engagement:

Type of Matter:	Patent Infringement
Law Firm:	Ropes and Gray LLP
Case Name:	Akrion Inc., v. Solid State Equipment Corp.
Services Provided:	Expert witness for defense (invalidity); patent analysis; prior art research; review documentation and references including US and foreign prosecution history; provide technical consulting and guidance;, draft expert reports for invalidity.
Disposition:	Settled
Date:	2007 – 2008

Expert Engagement:

Type of Matter:	Patent Infringement
Law Firm:	Wolf, Block, Schorr and Solis-Cohen, LLP; Bernstein Litowitz Berger & Grossmann LLP
Case Name:	Anvik Corp. v. Nikon Corp.
Services Provided:	Main expert consultant and expert witness for plaintiff (validity and infringement); testified at hearings (including Markman); draft reports; created demonstratives for hearings; reviewed documentation and references including US and foreign prosecution history; prior art analysis, provide consulting and reports for re-examination case.
Disposition:	Ongoing
Date:	2006 – Present

Expert Engagement:

Type of Matter:	Patent Infringement
Law Firm:	Vinson and Elkins, LLP
Case Name:	Advanced Micro Devices v. Oki Electronics
Services Provided:	Served as main expert for plaintiff (validity and infringement); provided compelling experimental evidence for plaintiff; patent analysis; reviewed documentation and references including US and foreign prosecution history;

	drafted expert reports for validity and infringement; provided testimony at deposition; prepared demonstratives for trial testimony (case settled prior to trial).
Disposition:	Settled
Date:	2005 – 2006

Expert Engagement:

Type of Matter:	Patent Infringement
Law Firm:	Irell and Manella LLP
Case Name:	Ultratech Stepper, Inc. v. ASM Lithography, Inc.
Services Provided:	Main expert witness for defense; testified at trial (jury trial) for invalidity and non-infringement; drafted expert reports for invalidity and non-infringement; prior art research; provided testimony at deposition; conducted experiments and demonstratives to support case for invalidity.
Disposition:	Jury found plaintiff's patent was invalid on multiple grounds.
Date:	2004 – 2005

Expert Engagement:

Type of Matter:	Litigation
Law Firm:	Ward, Norris, Heller, and Reidy, LLP
Case Name:	IBM Fishkill, NY and Essex, VT, including Union Carbide Corp., Eastman Kodak, J. T. Baker Chemical, KTI, Shipley, Ashland Oil, E. I. DuPont de Nemours and Industri-Chem, suppliers of solvents for the IBM cleanroom operations (multi-state litigation).
Services Provided:	Expert consultant, provided testimony for deposition, drafted reports, carried out technical training for law team
Field:	Multi-state litigation, allegations regarding various chemicals used in the manufacturing of semiconductor devices
Disposition:	Settled
Date:	1997-2003

Expert Engagement:

Type of Matter:	Litigation
Law Firm:	Ward, Norris, Heller, and Reidy, LLP Kasowitz Benson Torres & Friedman, LLP Steptoe & Johnson, LLP
Case Name:	San Jose IBM Workers Litigation v. Shipley Company San Jose IBM Workers Litigation v. American Hoechst Corporation San Jose IBM Workers Litigation v. Ashland Chemical Company, Union Carbide Corporation, Fischer Scientific Company, and Eastman Kodak Company Rubio v. IBM et al

Services Provided:	Expert witness and consultant for defense, drafted reports, provided testimony for deposition.
Field:	Allegations regarding various chemicals used in an manufacturing of semiconductor devices
Disposition:	Concluded
Date:	1997-2003

Non-Litigation Consulting Projects

Consulting Engagement:

Client:	Intel Corporation (Portland, OR; Rio Rancho, NM; Tempe, AZ; Hudson, MA; San Jose, CA; Leixlip, Ireland; and Israel)
Services Provided:	Engineer training and technical consulting in semiconductor fabrication including lithography, thin films, and etching. Develop training courses for Intel's manufacturing fabs for on-site and distance learning.
Date:	1995 – Present

Consulting Engagement:

Client:	NanoArk, Inc. (Rochester, NY)
Services Provided:	Technical consulting in silicon wafer processing technology for archival media storage.
Date:	2007 – Present

Consulting Engagement:

Client:	ASML (Veldhoven, Netherlands / Tempe, AZ)
Services Provided:	Technical consulting for advanced lithography.
Date:	2000 – 2002

Consulting Engagement:

Client:	SEMATECH (Austin, TX)
Services Provided:	Technical consulting for focused ion beam (FIB) mask repair for semiconductor and LCD, laser chemical vapor deposition (CVD) repair of chromium and clear defects, nanomaching; optical aberration metrology; modelling and simulation.
Date:	1997 – 2002

Consulting Engagement:

Client:	Tropel Corp (Rochester, NY)
Services Provided:	Technical consulting for aerial image optical metrology, modelling, and simulation.
Date:	2001 – 2004

Consulting Engagement:

Client:	SELETE (Semiconductor Leading Edge Technology, Inc, Japan)
Services Provided:	Technical consulting with consortium of major Japanese semiconductor companies for aberration metrology of VUV patterning system.
Date:	2000 – 2002

Consulting Engagement:

Client:	MicroUnity, Inc. (Santa Clara, CA)
Services Provided:	Technical consulting in CAD, modelling and simulation for sub-100nm semiconductor device generations.
Date:	1999 – 2000

Professional Affiliations, Achievements & Awards

Honor and Awards

- Senior Member, IEEE, 2009.
- Visiting Professor, IMEC Micro and Nanoelectronics Research Center, 2008.
- Recipient, Trustees Excellence in Scholarship and Teaching Award, Rochester Institute of Technology, 2007
- Fellow, SPIE International Society for Optical Engineering, 2007
- Recipient, Rush Henrietta Outstanding Alumni Award, 2007
- Recipient, Million Dollar Principle Investigator Award, Rochester Institute of Technology, 2005
- Recipient, Patenting Productivity Award, Rochester Institute of Technology, 2005
- Recipient, Intellectual Property Productivity Award, Rochester Institute of Technology, 2002
- Visiting Professor, IMEC Micro and Nanoelectronics Research Center, 2001
- Intel Professor of Research and Technology, Intel Corp., 2000
- Recipient, RIT Creators Award, Rochester Institute of Technology, 1999
- Visiting Scholar, International Sematech, 1997
- Recipient, Texas Instruments, Douglas Harvey Award, 1993
- Recipient, Texas Instruments, Douglas Harvey Award, 1991

Professional Associations:

- Fellow, SPIE International Society for Optical Engineering
- Senior Member, Institute of Electrical and Electronics Engineers

- Member, Optical Society of America
- Member, American Vacuum Society

External Service:

- Conference Chairman, SPIE Optical Microlithography Conference, 2004 – 2005
- Member, SPIE Zernike Award Committee, 2003 – 2008
- Member, SPIE Optical Microlithography, Program Committee, 1997 – 2008
- Member, SPIE/ISMA Singapore Program Committee, 1997 – 1998
- Member, EIPBN Program Committee, 1997 – 2002
- Chairman, OSA Patterning Technical Working Group, 1995 – 1997
- Faculty Advisor, SPIE Student Chapter, 1990 – 1996
- Member, Editorial review of IEEE, JVAC, JM3, SPIE, and Applied Optics journals, 1990 – 2008

Patents & Publications

Patent	Date	Description
7,345,735	03/18/2008	Apparatus for aberration detection and measurement
7,233,887	06/19/2007	Method of photomask correction and its optimization using localized frequency analysis
7,170,588	01/30/2007	Reduction Smith-Talbot interferometer prism for micropatterning
7,136,143	11/14/2006	Method for aberration detection and measurement
7,092,073	08/15/2006	Method of illuminating a photomask using chevron illumination
6,934,010	08/23/2005	Optical proximity correction method utilizing gray bars as sub-resolution assist features
6,881,523	04/19/2005	Optical proximity correction method utilizing ruled ladder bars as sub-resolution assist features
6,846,595	01/25/2005	Method of improving photomask geometry
6,835,505	12/28/2004	Mask for projection photolithography at or below about 160 nm and a method thereof
6,791,667	09/14/2004	Illumination device for projection system and method for fabricating
6,788,388	09/07/2004	Illumination device for projection system and method for fabricating
6,556,361	04/29/2003	Projection imaging system with a non-circular aperture and a method thereof
6,541,750	04/01/2003	Modification of a projection imaging system with a non-circular aperture and a method thereof
6,525,806	02/25/2003	Apparatus and method of image enhancement through spatial filtering
6,480,263	11/12/2002	Apparatus and method for phase shift photomasking
6,466,304	10/15/2002	Illumination device for projection system and method for fabricating

6,395,433	05/28/2002	Photomask for projection lithography at or below about 160 nm and a method thereof
6,388,736	05/14/2002	Imaging method using phase boundary masking with modified illumination
6,368,755	04/09/2002	Masks for use in optical lithography below 180 nm
6,309,780	10/30/2001	Attenuated phase shift mask and a method for making the mask
5,939,227	08/17/1999	Multi-layered attenuated phase shift mask and a method for making the mask

Published Patent Applications

Application No.	Description
20030112421	Apparatus and method of image enhancement through spatial filtering
20070172745	Evanescent wave assist features for microlithography

Publications

Textbooks and Chapters

1. LCD Processing Field Guide, B.W. Smith, SPIE Press: Bellingham, WA (to be published 2009)
2. Microlithography: Science and Technology 2nd ed., K. Suzuiki and B.W. Smith, ed. , Taylor and Francis, CRC Press: New York, 2007
3. "Resist processing," B.W. Smith, Microlithography: Science and Technology 2nd ed., Ch. 9, K. Suzuiki and B.W. Smith, ed. , Taylor and Francis, CRC Press: New York, 2007
4. "Multilayer resist technology," B.W. Smith, Microlithography: Science and Technology 2nd ed., Ch. 10, K. Suzuiki and B.W. Smith, ed. , Taylor and Francis, CRC Press: New York, 2007
5. "Optics for microlithography," B.W. Smith, Microlithography: Science and Technology 2nd ed., Ch. 2, K. Suzuiki and B.W. Smith, ed. , Taylor and Francis, CRC Press: New York, 2007
6. Microlithography: Science and Technology, J. Sheats and B.W. Smith, ed. , Marcel Dekker: New York, 1997

Published Papers

1. "Design and analysis of a compact EUV interferometric lithography system," B.W. Smith, J. Micro/Nanolith. MEMS MOEMS Vol. 8, 021207, 2009.
2. "Enhancement of hyper-NA imaging through selective TM polarization," B.W. Smith, J. Zhou, P. Xie, J. Vac. Soc. B: Microelectronics and Nanometer Structures, Volume 26 (6) 2008.

3. "Photomask image enhancement using grating generated surface waves," N. Lafferty, A. Estroff, A. Bourov. B.W. Smith, J. Vac. Soc. B: Microelectronics and Nanometer Structures, Volume 26 (6) 2008.
4. "Applications of TM polarized illumination," Bruce Smith, Jianming Zhou, and Peng Xie, Proc. SPIE 6924, 2008.
5. "Quantum state control interference lithography and trim double patterning for 32-16 nm nodes," Robert D. Frankel, Bruce W. Smith, and Andrew Estroff , Proc. SPIE 6520, 2007.
6. "Snell or Fresnel: the influence of material index on hyper-NA lithography," Bruce Smith, Jianming Zhou, Proc. SPIE 6520, 2007.
7. "Immersion lithography with numerical apertures above 2.0 using high index optical materials, "Jianming Zhou, Neal V. Lafferty, Bruce W. Smith, and John H. Burnett, Proc. SPIE 6520, 2007.
8. "Mask enhancement using an evanescent wave effect," Neal V. Lafferty, Jianming Zhou, and Bruce W. Smith, Proc. SPIE 6520, 2007.
9. "Evanescent wave imaging in optical lithography," Bruce W Smith, Yongfa Fan, Jianming Zhou, Neal Lafferty, Andrew Estroff, Proc. SPIE Optical Microlithography XIX, 6154, 2006.
10. "Effects of beam pointing instability on two-beam interferometric lithography," Yongfa Fan, Anatoly Bourov, Michael Slocum, Bruce W Smith, Proc. SPIE Optical Microlithography XIX, 6154, 2006.
11. "Resist process window characterization for the 45-nm node using an interferometric immersion microstepper," Anatoly Bourov, Stewart A Robertson, Bruce W Smith, Michael A Slocum, Emil C Piscani, Proc. SPIE Advances in Resist Technology and Processing XXIII, 6153, 2006.
12. "Comparison of immersion lithography from projection and interferometric exposure tools," Stewart A Robertson, Joanne M Leonard, Bruce W Smith, Anatoly Bourov, Proc. Optical Microlithography XIX, 6154, 2006.
13. "Three-dimensional imaging of 30-nm nanospheres using immersion interferometric lithography," Jianming Zhou, Yongfa Fan, Bruce W Smith, Proc. Optical Microlithography XIX, 6154, 2006.
14. "Experimental measurement of photoresist modulation curves," Anatoly Bourov, Stewart A Robertson, Bruce W Smith, Michael Slocum, Emil C Piscani, Proc. Optical Microlithography XIX, 6154, 2006.
15. "Practical approach to full-field wavefront aberration measurement using phase wheel targets," Lena V Zavyalova, Bruce W Smith, Anatoly Bourov, Gary Zhang, Venugopal Vellanki, Patrick Reynolds, Donis G Flagello, Proc. Optical Microlithography XIX, 6154, 2006.
16. "High NA 193nm Immersion Lithography for 32nm Half-Pitch Imaging," J. Zhou, Y. Fan, A. Bourov, B.W. Smith, Appl. Opt., 2006.
17. "25nm Immersion Lithography at a 193nm Wavelength," B. W. Smith, Y. Fan, M. Slocum, L. Zavyalova, , Proc. SPIE Optical Microlithography, vol. 5754, 2005.
18. "Amphibian XIS: An Immersion Lithography Microstepper Platform," B. W. Smith, A. Bourov, Y. Fan, F. Cropanese, Proc. SPIE Optical Microlithography, vol. 5754, 2005.

19. "ILSim - A compact simulation tool for interferometric lithography," Y. Fan, A. Bourov, L. Zavyalova, J. Zhou, A. Estroff, N. Lafferty, B.W. Smith, , Proc. SPIE Optical Microlithography, vol. 5754, 2005.
20. "Air bubble-induced light-scattering effect on image quality in 193 nm immersion lithography," Yongfa Fan, Neal Lafferty, Anatoly Bourov, Lena Zavyalova, Bruce W. Smith , Appl. Opt., Vol. 44 Issue 19 , 3904, 2005.
21. "Photoresist Modulation Curves," A. Bourov, Y. Fan, F. C. Cropanese, B. W. Smith, Proc. SPIE Optical Microlithography, vol. 5754, 2005.
22. "Automated Aberration Extraction using Phase Wheel Targets," L. Zavyalova, A. Bourov, B.W. Smith, Proc. SPIE Optical Microlithography, vol. 5754, 2005.
23. "Synthetic defocus in interferometric lithography," Frank C. Cropanese, Anatoly Bourov, Yongfa Fan, Jianming Zhou, Lena Zavyalova, Bruce W. Smith, SPIE Optical Microlithography, vol. 5754, 2005.
24. "Hyper NA water immersion lithography at 193 nm and 248 nm," Bruce W. Smith, Yongfa Fan, Jianming Zhou, Anatoly Bourov, Lena Zavyalova, Neal Lafferty, Frank Cropanese, and Andrew Estroff, J. Vac. Sci. .Technol. B: Microelectronics and Nanometer Structures 22(6), 3439-3443, 2004.
25. "Amplification of the index of refraction of aqueous immersion fluids by ionic surfactants," Kwangjoo Lee, Joy Kunjappu, Steffen Jockusch, Nicholas J Turro, Tatjana Widerschpan, Jianming Zhou, Bruce W Smith, Paul Zimmerman, Will Conley, SPIE Advances in Resist Technology and Processing XXII, vol. 5373, 2005.
26. "Immersion lithography fluids for high NA 193 nm lithography," Jianming Zhou, Yongfa Fan, Anatoly Bourov, Neal Lafferty, Frank Cropanese, Lena Zavyalova, Andrew Estroff, Bruce W. Smith, SPIE Optical Microlithography, vol. 5754, 2005.
27. "Mask-induced polarization effects at high numerical aperture," A.Estroff, Y.Fan, A.Bourov, and B.W.Smith, J. Microlith. Microfab. Microsyst. Vol. 4, 031107 2005.
28. "Water immersion optical lithography at 193 nm," Bruce W. Smith, Anatoly Bourov, Hoyoung Kang, Frank Cropanese, Yongfa Fan, Neal Lafferty, and Lena Zavyalova, J. Microlith., Microfab., and Microsys., 3(1), pp. 44-51, 2004.
29. "Approaching the numerical aperture of water - immersion lithography at 193nm," B.W. Smith, A. Bourov, Y. Fan, L. Zavyalova, N. Lafferty, F. Cropanese, Proc. SPIE 5377, 2004.
30. "Study of Air Bubble Induced Light Scattering Effect On Image Quality in 193 nm Immersion Lithography," Y.Fan, N. Lafferty, A. Bourov, L. Zavyalova, B.W. Smith, , Proc. SPIE 5377, 2004.
31. "Immersion microlithography at 193nm with a Talbot prism interferometer," A.Bourov, Y. Fan, F. Cropanese, N. Lafferty, L. Zavyalova, H. Kang, B.W. Smith, , Proc. SPIE 5377, 2004.
32. "Benefiting from polarization - effects of high-NA on imaging," B.W. Smith, L. Zavyalova, A. Estroff, Proc. SPIE 5377, 2004.
33. "Mask induced polarization," A. Estroff, Y. Fan, A. Bourov, F. Cropanese, N. Lafferty, L. Zavyalova, B.W. Smith," Proc. SPIE 5377, 2004.

34. "In-situ aberration monitoring using phase wheel targets," L. Zavyalova, B.W. Smith, T. Suganaga, S. Matsuura, T. Itani, J. Cashmore, Proc. Proc. SPIE 5377, 2004.
35. "Gray assist bar OPC," N. Lafferty, G. Vandenberghe, B.W. Smith, M. Lassiter, P. Martin, Proc. SPIE 5377, 2004.
36. "Synthesis of projection lithography for low k1 via interferometry," F. Cropanese, A. Bourov, Y. Fan, A. Estroff, L. Zavyalova, B.W. Smith, Proc. SPIE 5377, 2004.
37. "Forbidden Pitch or Duty-Free: Revealing the Causes of Across-Pitch Imaging Differences," B.W. Smith, SPIE Optical Microlithography XV, Vol. 5040, 2003.
38. "Water Immersion Optical Lithography for the 45nm Node," B. W. Smith, H. Kang, F. Cropanese, Y. Fan, SPIE Optical Microlithography XV, Vol. 5040, 2003.
39. "Optimizing vacuum ultraviolet attenuated PSM materials," B. W. Smith, A. Y. Bourov, and Y. Liu, J. Vac. Sci.Technol. B: Microelectronics and Nanometer Structures, 20(6) 6, 2578-2582. 2002.
40. "OPC and image optimization using localized frequency analysis," B. W. Smith, D. E. Ewbank, SPIE Optical Microlithography XV, Vol. 4691, 2002.
41. "Challenges in High NA, Polarization, and Photoresists," B. W. Smith, J. Cashmore, M. Gower, SPIE Optical Microlithography XV, Vol. 4691, 2002.
42. "OPC and Image Optimization Using Localized Frequency Analysis," B. W. Smith, J. Fung Chen, SPIE Optical Microlithography XV, Vol. 4691, 2002.
43. "Image Enhancement through Square Illumination Shaping," B. W. Smith, G. Vandenbergh, SPIE Optical Microlithography XV, Vol. 4691, 2002.
44. "Mutually Optimizing resolution enhancement techniques," B.W. Smith, J. Microlit., Microfab., Microsys., 1 (2), 7 (2002).
45. "Spatial filtering effects of the attenuated PSM and assist bar OPC," B.W. Smith, SPIE Lithography for Semiconductor Manufacturing II, Vol. 4404, 2001.
46. "Optical lithography at a 126nm wavelength," B.W. Smith, H. Kang, SPIE Optical Microlithography XIV, Vol. 4343, 2001.
47. "Mutually Optimizing resolution enhancement techniques," B.W. Smith, SPIE Optical Microlithography XIV, Vol. 4343, 2001.
48. "A study of obscuration in catadioptric lenses," M. McCallum, B.W. Smith, SPIE Optical Microlithography XIV, Vol. 4343, 2001.
49. "Investigation of the interplay between illumination, mask patterning, and aberrations from the lens perspective," R. Schlief, B.W. Smith, SPIE Optical Microlithography XIV, Vol. 4343, 2001.
50. "Frequency filtering in alternative pupil planes," B.W. Smith, H. Kang, J. Vac. Soc. B 2000.
51. "Aberration of steppers using phase shifting point diffraction interferometry," P. Venkataraman, B.W. Smith, SPIE Optical Microlithography XIII, Vol. 4000, 2000.
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95. "Characterization of Atomic Force Microscopy and Electrical Probing Techniques for IC Metrology," B.W. Smith, R.T. Crow, SPIE Integrated Circuit Metrology, Inspection, and Process Control, 1926, (1993).
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97. "Advanced lithography simulation tools for development and analysis of wide-field high NA projection optical systems," J. E. Connors, T.M. Kos, R.C. Pack, B.W. Smith, SPIE Optical/Laser Microlithography VI, 1927, (1993).
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Conferences and Invited Presentations

1. "Polarization and Hyper NA," B.W. Smith, OSA Frontiers in Optics / Laser Science XXIV, Rochester, NY Oct. 2008.
2. "Nanolithography Challenges for sub-45nm Device Technology," B.W. Smith, Shanghai Microelectronics Technical Forum, Shanghai, China, 2008.
3. "193nm LCAR Resist Systems for Sub-32nm Resolution, LER, and Sensitivity Requirements," B.W. Smith, Sematech Workshop of Next Generation Optical Extensions, Lake George, NY 2008.
4. "Contact sidelobes and inversion," B.W. Smith, IMEC Technical Presentation Series, Leuven, Belgium, 2008.
5. "Novel Approaches in Optical Frequency Extension for 16-22nm Generations," B.W. Smith, R. F. Frankel, Sematech Meeting on Novel Optical Extensions, San Francisco, 2007.
6. "Nanolithography and the Future of the IC," Western NY Meeting of the Optical Society of America, Rochester, NY, November 2006.
7. "Metrology for EUV Projection Optics," Albany Nanotech Workshop on EUV Optics, Albany, NY, June 2006.
8. "Solid Immersion and Evanescent Wave Lithography at Numerical Apertures > 1.60," Sematech Immersion Symposium, Kyoto, Japan, Oct. 2006.
9. "Research Activities in Immersion Interferometric Lithography," Sematech Immersion Symposium, Kyoto, Japan, Oct. 2006.
10. "Interferometric Immersion Nanopatterning," DARPA NanoFab Workshop, Salt Lake City, UT, November 2006.
11. "Immersion Optical Microlithography," OSA Optical Fabrication and Testing, OMA2, Rochester, NY, Oct. 2004.
12. "Optical Lithography at the Limits of Diffraction," Optical Society of America, Rochester Section, October 2003.
13. "Impact of Aberrations of Optical Extension OE Lens Code," Sematech OE Workshop, Burlington, VT, June 2000.
14. "157nm Aberration Parameter Modeling Using Phase Ring Structures," 157nm Technical Data Review, Orlando, FL, December 2001.
15. "Tolerancing of aberrations for resolution enhancement technology: Issues involed in optimizing," Sematech OE Workshop, Austin, TX, January 2000.
16. "Pupil Plane Filtering Near Mask and Image Planes," IEEE Lithography Workshop St. John, USVI, December 2000.
17. "Challenges in Microlithography for Sub-100 nm Device Patterning," 25th Annual EDS/CAS Conference, Rochester, NY, November 2001.

18. "Optical Lithography Challenges for Sub-100nm Imaging," IBM Semiconductor Division, East Fishkill, October 2001.
19. "Optical research for UV and VUV," SRC Review, Madison, WI, June 2000.
20. "Extreme-NA Water Immersion Lithography for 35-65 nm Technology," Third International Symposium on 157nm Lithography, Antwerp, Belgium, September 2002.
21. "Optimizing VUV Attenuated Phase Shift masking Materials," 46th International Conference EIPBN, Anaheim, CA May 2002.
22. "Federal and State Research Funding Opportunities in Engineering," Government Relations Committee Meeting, Rochester Institute of Technology, November, 2001.
23. "OPC and RET with Gray Bars for the100nm Technology Node," IMEC Lithography Review, Leuven, Belgium, June 2001.
24. "Extreme NA Lithography at 0.8 to 1.4," IMEC Lithography Review, Leuven, Belgium, June 2002.
25. "Customizing Illumination and Square Pupil Shapes," IMEC Lithography Review, Leuven, Belgium, June 2001.
26. "Spatial Filtering Effects of the Attenuated PSM and Assist Bar OPC," SPIE Symposium on Microelectronic and MEMS Technology, Edinburgh, Scotland June, 2001
27. "Optical research for UV and VUV," SRC Review, Madison, WI, July 2001.
28. "Optical research for UV and VUV," SRC Review, Austin, TX, July 2002.
29. "Optics in Microlithography," University of Leuven Engineering Talent Night, Leuven, Belgium, November 2001.
30. "193nm - 248nm Immersion Lithography: Water and Beyond," IMEC Lithography Review, Leuven, Belgium, June 2004.
31. "Lithography at 134nm and 6.42eV (193nm Water Immersion Lithography)," Sematech Immersion Workshop, Almaden, CA, December 2003.
32. "High NA and Polarization Considerations with Immersion Lithography," ARCH Interface 2004 Microlithography Symposium, Phoenix, AZ, September 2004.
33. "Hyper-NA Water Immersion Lithography at 193nm and 248nm," EIPBN 2004, San Diego, CA, May 2004.
34. "Water-based 193nm Immersion Lithography," Sematech Immersion Lithography Workshop, Los Angeles, CA, January 2004.
35. "Water Immersion Optical Lithography at 193nm for sub-0.25 k1 Imaging," DARPA Microlithography Program Review, Santa Fe, NM, September 2003.
36. "Water Immersion Lithography at Excimer Laser Wavelengths," DARPA Microlithography Program Review, Las Vegas, NV, January 2004.
37. "Lithographic Challenges for 130nm Devices," IEEE Computer and Electron Device Society Maine Chapter, May, 2000.

38. "Pushing the limits of optical lithography," Optical Fabrication & Testing 2004, OSA Annual Meeting, Rochester, NY, October 2004.
39. "Optical microlithography: will the party ever end?," OSA Rochester New York Section, Rochester, NY, November 2003.
40. "Optical enhancement techniques for 193-nm lithography: modified illumination and attenuated phase-shift masking," ISMA'97, Singapore, June 1997.
41. "Optical extension technology," MaskTools OE Workshops, Taiwan, February, 1999, Semicon West 1999, San Jose 1998.