RICHARD M. OSGOOD, JR.
Columbia University
Higgins Professor, Departments of Applied Physics and Electrical Engineering
Fu Foundation School of Engineering
500 W. 120th Street, Rm. 1322 Phone: (212) 854-4462
New York, NY 10027 Fax: (212) 932-9421

Professional History

2010-2012: Director, Columbia University Center for Integrated Science and Engineering
2000-2002: Associate Laboratory Director, Brookhaven National Laboratory
1988-present: Higgins Professor of Applied Physics and of Electrical Engineering
1982-1987: Professor, Departments of Applied Physics and of Electrical Engineering, Columbia University
1981-1982: Associate Professor, Department of Electrical Engineering, Columbia University
1995 (3 mos.): Visiting Researcher, IBM T.J. Watson Research Laboratory
1994-1995: Visiting Professor, Department of Electrical Engineering, Mass. Inst. of Tech.
1989: Visiting Researcher, Max Planck Institute of Quantum Optics, Garching, Germany
1990-present: Technical Director, Columbia Radiation Laboratory
1984-1990: Co-Director, Columbia Radiation Laboratory
1986-1990: Director, Columbia Microelectronics Sciences Laboratories
1983-1986: Acting Director, Columbia Microelectronics Sciences Laboratories
1980-1981: Project Leader, Direct-Write Processing Program, Lincoln Laboratory, MIT
1973-1980: Staff Member, Lincoln Laboratory, Massachusetts Institute of Technology
1976 (Aug.): Visiting Scientist, Los Alamos Scientific Laboratory
1966-1969: Research Officer (Capt. U.S. Air Force), U.S.A.F. Avionics Laboratory
1965-1966: Research Officer, U.S.A.F. Materials Laboratory

Education

Ph.D. (Physics), Massachusetts Institute of Technology, 1973
M.S. (Physics), Ohio State University, 1968
B.S., U.S. Military Academy, 1965

Publications

Total number of publications **>471** including journal papers, refereed proceedings and book chapters; Cumulative citation index ISI: **12811**, h=57, Scholar: **12938**, h=64 (with **38** papers with more than 100 citations); **18** US patents issued and pending, **2** Major Software Licenses

Special Grants, Awards, and Appointments

American Physical Society Traveling Lectureship, 1992
R.W. Wood Prize from the American Optical Society, 1991
Awarded Japanese Honorary Lectureship for OITDA (Optical Device Association)1991
IEEE LEOS Traveling Lecturer 1986-1987
John Simon Guggenheim Fellowship, 1989
Fellow, American Physical Society (APS)
Fellow, Institute of Electrical and Electronic Engineers (IEEE)
Fellow, Optical Society of America (OSA)
Councilor, Materials Research Society, (1983 - 1987)
Hertz Foundation Predoctoral Fellow at M.I.T., (1970 - 1973)

Samuel Burka Award (with Dr. W. Eppers), best technical paper, Air Force Avionics Lab., 1968
Associate Editor, *IEEE Journal of Quantum Electronics*, (1981 - 1988)
Co-Editor, *Materials Science and Engineering* series (Springer-Verlag)
Co-Editor, *Applied Physics*, (1983-1995)
Scientific Advisory Board (Vice Chairman) - Brookhaven National Laboratory (1998-2000)
Chair, Brookhaven National Laboratory Search Committee – Associate Lab, Director of BES.
Visiting Board, ARO Physics Division Program Review, 2003
Visiting Board - Chemical Science and Technology, Los Alamos National Lab (1986 - present)
Visiting Board - Chemical Sciences, Pacific Northwest Labs (1997)
Advisory Board, MIT Spectroscopy Lab (1983 - 1990)
Consultant, MIT Lincoln Laboratory, Solid-State Electronics Division (1993-1994)
Member, DOE Basic Energy Sciences Advisory Committee (1989-1991)
Member, DOE Energy Research Advisory Panel on Advanced Isotope Separation, 1980
Member Materials Research Council (DARPA) (1984-1990)
Member of Steering Committee, Defense Sciences Research Council, DARPA (1991-1998)
Ad Hoc Member U.S.A.F. Scientific Advisory Board (Electronics) (1997)
Organizing Comm., 1997 OSA Topical Meeting, Chem. and Phys. of Small-Scale Structures
Organizing Committee, 1996-99 Physical Electronics Conferences
Selection Committee, R.W. Wood Prize, Optical Society of America (1995)
Committee of Visitors: DOE BES Chemistry (2003); DOE BES Facilities (2004); DOE EFRCs(2013);
Chair: DOE BES Facilities (2006); SubChair, Board of Visitors BES Facilities (2009) (Nanocenters)
Review panel PNNL, Environmental Molecular Science Lab (2008, 2010)
Subsection Leader for DOE Workshop on Future Light Sources (2008-2009)
DOE BESAC Review Panel on Further Light Sources and Science (2013)
DoE Review Panel, PNNL – Chemical Physics, Northwestern Catalysis Center

Research Areas: Surface physics and physical chemistry; Advanced devices and fabrication techniques; Optical physics and engineering; Materials processing.

Courses Taught and Developed:

Developed several new graduate courses, including Surface Science and Analysis; Physics of Micro-Fabrication; Photonic Integrated Circuits

PhD Graduate Students and Post-Graduates advised and sponsored:
Postdoctoral or Research Scientists: Mayank Bahl, Ravi Bhat, Peter Brewer, Nick Camillone III, Julian Chen, Jack Chu, Thomas Fink, Jeffery Fitts, Heinz Gilgen, Gad Haase, Hidong Kwak, Miguel Levy, Ping-He Lu, Joseph Moryl, Gabor Nagy, James O'Neill, Kyung Park, Dragan Podlesnik, Grace Reksten, Robert Scarmozzino, Mike Schmidt, David Slater, Abneesh Srivastava, Michael Steel, Nenad Stojilovic, George Totir, Charles Wang, Quin-Yun Yang, Mehmet Yilmaz, C.F. Yu, X.C. Zhang, N. Zaki

*PhD Graduate Students **(60):*** Kaveh Adib, Rokan Ahmad, Mayank Bahl, Theodore Cacouris, Lina Cao, Julian Chen, Alex Chen, Lee Chen, Oliver Chen, Jeffrey Driscoll, Djordje Djukic, Louay Eldada, Richard Espinola, Michael Freiler, Junichiro Fujita, Ophir Gaathon, Richard Grote, Osman Ghandour, Ming Han, William Holber, Sung Young Hong, Hai Hu, John Huang, Hsu-Cheng Huang, Igor Ilic, Andy Hsieh, Tomoyuki Izuhara, Khalid Khan, Kevin Knox, Robert Krchnavek, Peter Lasky, David Levy, Zhisheng Li,Vladimir Liberman, Thomas Licata, Xiaoping Liu, Zhong Lu, Yi Luo, Avishi Ofan, Betrand Quinoiu, Dragan Podlesnik, Hongling Rao, Tony Radojevic, Tarek Ramadan, Ryan Roth, Mark Ruberto, Esaul Sanchez, Wolfgang Schwartz, Ping-Shine Shaw, Ming-Chang Shih, Xiao Shen, Joseph Shor, Serban Smadici, Brian Souhan,Victor Treyz, Franklyn Tong, Alan Willner, Nader Zaki, Nong-Fan Zhu, Zuoming Zhu

Major Masters Projects (US, 2 papers):

Scott Halle, Doug Gaines, A.J. Nahata, Vladimir Bulovic, Roberto Paiella, Y-S Le, Eddie Chou, Stan Wang, Grace Le, Sarah Hood, Yue Liu

International Student Education
European Masters Students Supervised: Sebastian Duetsch (ETH, Switzerland), Guiem Cerda-Pons (Universitat Politècnica de Catalunya, Barcelona), Guiseppe Camarda (Universita' degli Studi di Palermo, Palermo), Fabio Pizzuto (Universita' degli Studi di Palermo, Palermo), Guiseppe Scelsi (Universita' degli Studi di Palermo, Palermo), Victor Guyonnet (Cherbourg), Nicola Barrocu, (University of Cagliari, Italy), Alex Wertmueller (ETH, Switzerland), Yuya Shoji (University of Tokyo, Japan), Chinese cooperative students: Zhaofeng, Hao (Institute of Physics, Nankai University), Yang Lou (Research Institute of Industrial Catalysis, East China University of Science & Technology, Shanghai), David Nobis (Lehrstuhl fur Festkorperphysik Universitat Erlangen-Nurnberg, Germany)

International Visitors
Takao Someya, University of Tokyo; Manolis Antonoyiannakis, European Science Organization; Amador Muriel, Marko Kralj and Ida Delac, Institute of Physics, Croatia; Yang Lou, East China University of Science And Technology, China.

Directorship or Local Director of Major Group Sponsored-Research Awards and Programs
BNL/ Columbia DOE Program on Nanoscale Physics – 2003 - Present

Small Group Program (DTRA) – Radiation Effects in Advanced Semiconducting Materials (2011 – 2016)
MURI (NRL/DARPA) – Interfacial Chemical Processing for Electronics; 1985-1990
MURI (AFOSR/DARPA) - Advanced Optical Isolation, - 1991 - 1996
MURI (AFOSR) - New Materials Approaches for Future Graphene-Based Devices – 2009 - 2014
AFOSR Optics Center Research; 1987-1998
DARPA OptoCenter; 1989-2000
NSF XYZ on a Chip (Biochips); 2000-2003
IBM Center – Interfacial Materials Processing; 1984-1987

Current Collaborations: Institutions

Brookhaven National Laboratory; University of Maryland at Baltimore Campus; IBM Watson Research Lab; University of Bonn, Germany; Elettra Synchrotron, Trieste Italy, University of Albany, Institute of Physics, Zagreb; University of Albany; INTEC, University of Ghent, University of Erlangen.

Major University Committees or Responsibilities

Tenure Review Advisory Committee (TRAC), Committee on Technology and Science, Clean-Room Committee, DoD Point of Contact for Ellen Smith, University Relations, BNL Basic Energy Sciences Point of Contract, Planning and Execution Director for Microelectronics Sciences Floors (9 & 10) of Schapiro Building Construction, Directed Renovation of Full 13th Floor of Mudd Building, Columbia Representative Science & Technology Committee for Brookhaven National Laboratory, Director – CISE (June 2010- February 2012)

Recent Reviewing:

NSF, DOE, ARO, AFOSR, Swiss Science Foundation, J.Vac. Sci. Technology, Applied Physics Letters, Chem. Physics Letters, Nanoletters, Nature and Nature Photonics, Surface Science, Phys. Rev., Optical Materials, ACS Nano, J. Phys Chem,, Phys. Rev. Letters, J. Lightwave Tech.; J. Phys. Chem., J. Appl. Physics., Brookhaven CFN Proposals, Nature Photonics, Optical Materials

Service in Recent External Tenure Cases:

Harvard, MIT, U. Md, U. Florida, Pittsburgh, Purdue, UMBC, Tufts, U. C. Davis, Stanford, Stony Brook, Albany, UCL, Brookhaven National Laboratory

External Thesis Committees:

ETH Lausanne, University of Sidney

External Student Awards:
Jeff Driscoll, Sung-Young Hong, Ted Cacoris, Ophir Gaathon, Ryan Roth, Kaveh Adib

Major Addresses:

CLEO/IQEC.– "Laser Microchemistry" ***(Plenary)*** R.M. Osgood, Jr. June 22-25, 1982
The Rank Prize Funds Symposium Workshop; Photolytic Deposition of Metals, Semiconductors and Dielectrics. "UV Laser Surface Processing." ***(Invited, Keynote)*** R. M. Osgood, Jr. 1984
CLEO/IQEC. "Laser Processing for Microelectronics" ***(Plenary)*** R.M. Osgood, Jr. April 27-30, 1987
OSA Frontiers in Optics/Laser Science tutorial presentation ***(Tutorial Presentation)***. Richard Osgood, Jr, "Engineering Nonlinearities in Optical Nanosystems." September 16-20, 2007
PIERS Progress In Electromagnetics Research Symposium ***(Plenary)***. R. Osgood, "An Overview of Optical Isolation on Integrated Platforms." August 12-15, 2013
OSA's Annual Meeting, Frontiers in Optics 2013. **(*Tutorial Presentation*)**. R. Osgood, "Mid-IR nonlinear integrated silicon photonics." October 6-10, 2013

Major Technology Advances:

- Laser Chemical Processing – Revise, Inc., used in many industries
- Integrated Optics Software Package – R Soft
- Crystal Ion Slicing – used by variety of startups for thin-film $LiNbO_3$

Invited Talks Last Seven Years:

1. META Conference ***(Invited)*** R.M. Osgood, Jr, X. Meng, H-C Huang, Jerry Dadap, N. Bierket, S.-Y. Hong, and N.C. Panoiu, "Nonlinearities in 2D and 2D-3D Heteromaterials"), August 2015,City College, New York City, NY (10027

2. Photonics North ***(Invited)*** Xiang (Alex) Meng, Nicolae Panoiu, Richard Grote, Jerry Dadap, NIck Camillone, Richard Osgood "Cluster-Computer Simulation of Emerging Plasmonic Applications", June 9-11(2015) New York City, NY (10027).

3. SPIE NanoScience + Engineering 2015 ***(Invited)***. R. Osgood., N. Panoiu, "Optical pulse engineering and processing using nonlinearities of tapered and photonic crystal waveguides made of silicon." 9 - 13 August 2015; San Diego, CA

4. SPIE Photonics West ***(Invited).*** R. Osgood "Devices and System Measurements of Mode- and Wavelength-Division-Multiplexing in the Si Wire Platform." San Francisco, CA, 7-12 February , 2015

5. AVS 61st International Symposium & Exhibition ***(Invited)***. R. Osgood "Layer-Dependent Electronic and Physical Structure of 2D van der Waals Crystals." Baltimore, MD, November 9 - 14, 2014

6. Columbia University, Research Conference 2013-2014; Department of Applied Physics and Applied Mathematics ***(Invited)***. R. Osgood "Covering a Broad Band Width: Research in the Osgood Lab." November 11, 2014

7. Physics Colloquium ***(Invited)*** R. Osgood , "Layer-Dependent Electronic and Physical Structure of 2D materials." Michigan Technological University, September 18 (2014)

8. RPU Symposium 2014 **(Lecture for undergraduates)** R. Osgood, "Light-Driven Charge-Transfer Dynamics in Oxides: Materials, Devices", Columbia University, New York.

9. Colloquia at Yeshiva University ***(Invited)*** R. Osgood, "What dimensionality does to crystals: The new 2D crystals." R. Osgood; April 8, 2014; New York, NY

10. LPS Conference on Advanced Photonic Integration and Nonlinear Optics 2014 ***(Invited)***. R. Osgood, "Nonlinear optics of Si-wires in the Mid IR", June 20, 2014; College Park, MD

11. 2014 IEEE Summer Topical Meeting on Nonlinear-Optical Signal Processing (NOSP) ***(Invited)***. R. Osgood, "Mid-IR Nonlinear Integrated Photonics; Physics and Devices." R.M. Osgood, Jr. ; 14-16 July, 2014; Montreal, Canada

12. PCSI-41: 41st Conference on the Physics and Chemistry of Surfaces and Interfaces ***(Invited)***. R. Osgood, "Structural and Electronic Characterization of MoS2 Using LEEM, LEED, and Angle-Resolved Photoemission Spectroscopy/Microscopy." January 12-16, 2014; La Fonda Hotel; Santa Fe, New Mexico, USA

13. Columbia University, Graduate Student Seminar Series; Department of Physics ***(Invited)***. R. Osgood "2D Metal-Dichalcogenide Crystals: How does atomic thickness effect electronic properties?" December 6, 2013

14. Columbia University, Research Conference 2013-2014; Department of Applied Physics and Applied Mathematics ***(Invited)***. R. Osgood "Under Stress." November 15, 2013

15. OSA 2013 Frontiers in Optics/Laser Science XXIX (FiO/LS) meeting ***(Invited)***. R. Osgood, Jr., "Mid-IR Nonlinear Integrated Silicon Photonics." Orlando, FL; October 6-10, 2013

16. OSA's Annual Meeting, Frontiers in Optics 2013. **(*Invited Tutorial Presentation*)**. R. Osgood, "Mid-IR nonlinear integrated silicon photonics." October 6-10, 2013

17. Nanotechnology and sustainability: New Research in Italy and the United States workshop. **(*Invited*)**. R. Osgood, "Flatland: Electrons Moving at Surfaces." Columbia University, Italian Academy in New York City; October 2-3, 2013

18. CLEO 2013 ***(Invited)***. J. Dadap, S.-Y. Hong., N. Petrone, P.-C. Yeh, J. Hone, R. Osgood, "Optical Third-Harmonic Microscopy of Graphene." June 9-14, 2013

19. PIERS Progress In Electromagnetics Research Symposium ***(Plenary)***. R. Osgood, "An Overview of Optical Isolation on Integrated Platforms." August 12-15, 2013

20. Graduate Student Seminar series at Columbia University Department of Physics ***(Invited)***. R. Osgood "The Electronic Structure of Low-Dimensional Nanocrystals: Femtosecond and High-Resolution ARPES and Low-Temperature STM." February 1, 2013

21. Research Conference at Columbia University ***(Invited)***. R.M. Osgood," Interfacial Physics of Condensed Matter Systems; Ultrafast and Ultrasmall Probe." October 26, 2012

22. Columbia University Optics Seminar ***(Invited)***. R. Osgood Jr., “Squeezing Light in Wires: The Fascinating Optical Physics of Silicon Nanowires.” April 23, 2012

23. University College London, London ***(Invited)***. R. Osgood Jr., “High-Gain Nonlinear Silicon Photonics at IR Wavelengths.” April 19, 2012

24. SPIE Photonics Europe 2012 Symposium, Brussels ***(Invited)***. R. Osgood Jr., “High-gain nonlinear silicon photonics.” 16-19 April 2012

25. Rutgers University ***(Invited)***. R. Osgood Jr., "Smoothing it out! Graphene's 2D Morphology and Electronic Structure." March 28, 2012

26. APS March meeting 2012 ***(Invited)***. R. Osgood Jr., “Probing Nanointerfaces of Nanoparticle-Based Solar Energy Conversion: Molecular Dynamics on the Angstrom Scale.” February 27 - March 2 2012

27. Colloquium, University of Erlangen ***(Invited)***. R.M. Osgood, Jr. “Microphotoemission of Exfoliated Graphene: Pulling 2D Electronic Structure Out of the Fog”, February 7, 2012

28. Rutgers University ***(Invited)***. R. Osgood Jr., “Smoothing it out! Graphene's 2D Morphology and Electronic Structure”, February 2, 2012

29. Colloquium Columbia University ***(Invited)***, Richard Osgood, Phil Kim, Peter Johnson, and Andy Millis, Probing Electronic Structure & Dynamics in Low-Dimensional Nanoscale Condensed-Matter Systems, November, 2011

30. Graphene Day at Columbia ***(Invited)***. R. Osgood Jr., “Nonlinear Properties of Graphene.” November 17, 2011

31. ONR/AFOSR MURI review in Monterey ***(Invited)***. R. Osgood Jr., “Nonlinear Optical properties of Graphene.” December 5-8, 2011

32. J. I Dadap, M. Kralj, M. Petrovic, K. Knox, R., Bhandari, Po-Chun Yeh, N. Zaki, R. M. Osgood, Jr., D., Niesner, T. Fauster,"Observation of Image States in Graphene on Ir(111) by Two-Photon Photoemission." ***(Invited)*** Cornell University, MURI meeting May 13, 2011

33. European Conference on Lasers and Electro-Optics and the XIIth European Quantum Electronics Conference 2011 ***(Invited)***. N.C. Panoiu, C.C. Biris, F. Ye, L. Cao, and R,M. Osgood, Jr., “Nonlinear Optics in Subwavelength Plasmonic Nanostructures.” May, 2011

34. SPIE Photonics West ***(Invited)***. R.M. Osgood, Jr., “On-Chip Silicon Nonlinear Optical Circuits: Letting Light Make Decisions.” January 27, 2011

35. MRS Fall Meeting 2010 ***(Invited)***. R.M. Osgood, Jr., “Optical Isolation on Integrated Platforms – A Perspective.” December 1, 2010

36. The 23rd Annual Meeting of the IEEE Photonics Society ***(Invited)***. W.M.J. Green, X. Liu, R.M. Osgood, Jr., and Y.A. Vlasov, "High-Gain Si-Chip Optical Parametric Mixing Beyond Two-Photon Absorption." November, 2010

37. Columbia University Physics Graduate Student Seminar ***(Invited)***. R.M. Osgood, Jr., "Physics on Nanosurfaces" November 5, 2010

38. Columbia University APAM symposium ***(Invited)***. R.M. Osgood, Jr., "Physics on Nanosurfaces." October, 2010

39. Cornell University ***(Invited)***. R.M. Osgood, Jr., K.R. Knox, A. Locatelli, and A. Morgante, "Smoothing it out! Measurements of Graphene's 2D Morphology and Electronic Structure." October 4, 2010

40. Tufts University ***(Invited)***. R.M. Osgood, Jr., "Crossing Over to the Other Side: Light-Driven Charge-Transfer Dynamics, Materials, and Devices." September 14, 2010

41. 2010 IEEE Photonics Society Summer Topical Meetings ***(Invited)***. W.M.J. Green, X. Liu, R.M. Osgood, Jr., and Y.A. Vlasov, "Mid-Infrared Nonlinear Optics in Silicon Photonic Wire Waveguides." July 19, 2010

42. 2010 IEEE Photonics Society Summer Topical Meetings ***(Invited)***. J.I. Dadap and R.M. Osgood, Jr., "Nonlinear Optics in Si Wires." July 19, 2010

43. PIERS 2010 ***(Invited)***. N.C. Panoiu, L. Cao, C.C. Biris, F. Ye, R.M. Roth, and R.M. Osgood, Jr., "Computational Modeling of Linear and Nonlinear Optical Properties of Plasmonic Nanostructures" July 6, 2010

44. 15th Optoelectronics and Communications Conference: OECC2010 ***(Invited, declined)***. R.M. Osgood, Jr., "Four Wave Mixing in Silicon Nanowires in the Mid Infrared." July 5-9, 2010

45. PIERS 2010. Nicolae C. Panoiu, Lina Cao, Claudiu C. Biris, Fangwei Ye, Ryan M. Roth, Richard M. Osgood, Jr. ***(Invited)***,"Computational Modeling of Linear and Nonlinear Optical Properties of Plasmonic Nanostructures" July, 2010

46. University of Texas ***(Invited.)*** R. M. Osgood "Skating on a Very Small Surface: Motion of Electrons on 1 and 2D NanoSurfaces", April 29th, 2010

47. University College, London –Department of Electrical Engineering ***(Invited)***. R.M. Osgood, "Making Si Go Nonlinear ", April 13, 2010

48. SPIE Europe ***(Invited)***. R.M. Osgood, "Advances in Nonlinear Optical Propagation in Integrated Silicon Wires", April 12, 2010

49. Spring MRS Spring Meeting 2010 ***(Invited)***. R.M. Osgood, Jr., K.R. Knox (deferred to by R. Osgood), A. Locatelli, D. Cvetko, T.O. Mentes, M.A. Niño, S. Wang, M.B. Yilmaz, P. Kim,

and A. Morgante, “Measuring Corrugation in Exfoliated Graphene with Microspot Diffraction and Low Energy Electron Microscopy.” April 7, 2010

50. Laboratory for Physical Sciences Seminar ***(Invited)***. R.M. Osgood, “Fiber on a Chip: Advances in Nonlinear Optics in Integrated Silicon Wires” March 24, 2010.

51. Boston University Seminar ***(Invited)***. R.M. Osgood, “Lifting-Off Single-Crystal Layers: Oxide Membranes & Graphene Monolayers”, 26 February, 2010

52. SPIE Photonics West ***(Invited)***. R.M. Osgood, O. Gaathon, A. Ofan, “Advanced $LiNbO_3$ Devices and Materials Technology for Optical Circuit Applications.” January 28, 2010

53. Columbia University Applied Physics and Applied Mathematics Seminar ***(Invited)***. R.M. Osgood, “Laser and Synchrotron Studies of Surface Physics.” November 15, 2009.

54. Columbia University Physics-Student Seminar ***(Invited)***. R.M. Osgood, Jr., “Low-Dimensional Surface Physics.” November, 2009

55. AFOSR Nanophotonic, Silicon Photonics, and Nanomembrane Program Review ***(Invited)***. R.M. Osgood, Jr., “Nonlinear Si Photonics: Devices, Applications, and Physics.” November 5, 2009

56. 6th IEEE International Conference on Group IV Photonics ***(Postdeadline)***. X. Liu, R.M. Osgood, Jr., Y.A. Vlasov, W.M.J. Green, “Broadband mid-infrared parametric amplification, net off-chip gain, and cascaded four-wave mixing in silicon photonic wires.” September 11, 2009

57. 25th Anniversary of the Center for High Technology Materials, UNM ***(Invited, Keynote)***. R.M. Osgood, Jr., “Searching for New Science and Finding New Applications: Serendipity Unleashed.” August 14, 2009

58. 83rd ACS Colloid & Surface Science Symposium ***(Invited)***. R.M. Osgood, Jr., “TiO_2 Nanocrystals for Surface Reaction Dynamics Studies.” June 16, 2009

59. MRS Spring Meeting ***(Invited)***. R.M. Osgood, Jr., L. Cao, N.C. Panoiu,W. Fan, S. Zhang, K.J. Malloy, S.R.J. Brueck, “Nonlinear Plasmonics.” April 2009

60. University of Physics, Zagreb ***(Invited)***. R.M. Osgood, Jr., “Spectromicroscopy of Single & Multilayer Graphene Sheets.” January 15, 2009

61. 2009 IEEE/LEOS Winter Topical Meeting ***(Invited)***. R.M. Osgood, Jr., S. Brueck, N. Panoiu, J. Dadap, Y. Vlasov, “Nanoscale Nonlinear Optics.” Innsbruck, Austria January, 2009

62. Italian Academy for Advanced Studies in America ***(Invited)***. A. Morgante, K.R. Knox, R.M. Osgood, Jr., “Emergent Nanoscience.” December, 2008

63. Workshop on Tunable and Active Silicon Photonics ***(Invited)***. R.M Osgood, Jr., "Advances in Nonlinear Optics in Integrated Silicon Wires." Hamburg, Germany, September 30, 2008

64. 5th International Conference on Group IV Photonics Sorrento, Italy ***(Invited)***. R.M. Osgood Jr., "Nonlinear Optics in Si Wires on an SOI Platform.", 17-19 Sept 2008

65. URSI General Assembly ***(Invited)***. R. M. Osgood, Jr., "Nonlinear Optics in Si Wires on an SOI Platform." August 14, 2008

66. OFC Conference ***(Invited)***. R.M. Osgood, Jr., "Ultrafast nonlinear propagation in Si-wires using SOI." February 25, 2008

67. SPIE Photonics West ***(Invited)***. R.M. Osgood, X. Chen, I. Hsieh, J.I. Dadap, N.C. Panoiu, W.M.J. Green, Y.G.A. Vlasov, "Fiber on a Chip: Nonlinear Optics for Data Communication via Silicon Photonic Wires." January 23, 2008

68. SPIE Photonics West ***(Invited)***. R.M. Osgood, I. Hsieh, J.I. Dadap, N.C. Panoiu, "Integrated Optical Isolation: Advances and Perspective." January 22, 2008

69. OSA Frontiers in Optics/Laser Science tutorial presentation ***(Invited)***. Richard Osgood, Jr, "Engineering Nonlinearities in Optical Nanosystems." September 16-20, 2007

70. AGED STAR Meeting on Photonic Integration ***(Invited)***. R. M. Osgood, "Advanced, Negative-Index Metamaterials." July 25-26, 2007

71. DARPA Ultra-Low Loss Waveguide Workshop ***(Invited)***. R. M. Osgood, "Ultralow Loss, High Confinement Waveguides: Si and LiNbO3." June 4, 2007

72. DARPA/MTO Components from Metamaterials Workshop. Richard Osgood, "Exact Ab Initio Design of Metamaterials." ***(Invited)*** May 2-3, 2007

73. Brookhaven National Laboratory ***(Invited)***. R. M. Osgood Jr., "Nanoplasmonics." April 26, 2007

74. Boston University Seminar ***(Invited)***. R. M. Osgood, "Making Photonics Systems Small: Scaling Si for Lightwave Control." April 23, 2007

75. University of Maryland, Baltimore County ***(Invited)***. R. M. Osgood, "Nonlinear Guided Optics in Si Wires." April 20, 2007

76. IEEE/LEOS 2007 ***(Invited)***. R. M. Osgood, Jr., "Si-wire Photonics – Fiber on a Chip!" February 7-10, 2007

77. SPIE Symposium on Integrated Optoelectronic Devices 2007 ***(Invited)***. R. M. Osgood, Jr., "Interaction of Metal-Oxide Functionality on Optical Chips." January 22-24, 2007

78. Columbia University, APAM ***(Invited)***. R. M. Osgood, Jr., "New Optics: Physics, Materials, and Wild Ideas." October 13, 2006

79. MIT EECS/RLE Seminar Series ***(Invited)***. R. M. Osgood, Jr., "Nonlinear Optics in Si-Wires." October 4, 2006

80. Columbia University, APAM ***(Invited)***. N.-C. Panoiu. "Linear and Nonlinear Optical Properties of Sub-wavelength Nanostructured Materials – Theory and Device Applications." April 7, 2006

81. Columbia University, APAM ***(Invited)***. R. M. Roth. "Ion Beam Analysis of Ion-Implanted Optical Oxides." April 7, 2006

82. OSA Frontier in Optics 2006 ***(Invited)***. R. M. Osgood, Jr., N.-C. Panoiu, R. Chatterjee, K. Liu, C.-W. Wong, S. Brueck, S. Zhang, and W. Fan, "Advanced Optical Negative Index Materials." October 12, 2006

83. OSA FiO Best of the Topicals ***(Invited)***. R. Roth, N.-C. Panoiu, and R. M. Osgood, Jr., "Polorization-Sensitive Extraordinary Transmission through Periodic Arrays of Crossed Nano-Slits Mediated by Local Surface Plasmons." October 12, 2006

84. OSA Frontier in Optics 2006. N.-C. Panoiu, X.-G. Chen, and R. M. Osgood, Jr., "XPM-Induced Modulation Instability in SOI Photonic Nanowires." October 8-12 2006

85. OSA Frontier in Optics 2006 ***(Poster session)***. M.B. Yilmaz, K. Knox, N. Zaki, S. Wang, J. I. Dadap, R. M. Osgood, Jr., T. Valla, P. Johnson, "Occupied and Unoccupied States of Clean Stepped Cu(775) Surfaces." October 8-12 2006

86. IEEE/LEOS 2006 ***(Invited)***. R. M. Osgood, Jr., "Ultrafast Pulse Propagation on Si Chips." October 29-November 2, 2006

87. IEEE International Symposium on Antennas and Propagation. S. R. J. Brueck, W. Fan, S. Zhang, K. J. Malloy, N.-C. Panoiu and R. M. Osgood, Jr.,***(Invited)*** "Metamaterials and Plasmonics: Linear and Nonlinear Optical Properties." July 9-14, 2006

88. CLEO/QELS 2006 ***(Post-deadline Talk)***. K. Liu, R. Chatterjee, N. - C. Panoiu, Z. Dios, M. B. Yu, M. T. Doan, L. Kaufman, R. M. Osgood, Jr., C. W. Wong, "Near-field observation of negative refraction superlensing at the near-infrared." May 21-26, 2006

89. CLEO/QELS 2006 ***(Invited)***. R.M. Osgood, X.-G. Chen, I.-W. Hsieh, J. Dadap, N.-C. Panoiu, F. E. Dulkeith, S. McNab, and Y. Vlasov, "Fiber On a Chip: Nonlinear Optics in Silicon Photonic Wires." May 21-26, 2006

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