

## Curriculum Vitae

**Bruce E. Koel**

Professor of Chemical and Biological Engineering  
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Birthdate: June 30, 1955

Birthplace: Norton, Kansas

**Education:** Ph.D., Chemistry, *The University of Texas at Austin*, 1981  
M.S., Chemistry, *Emporia State University*, 1978  
B.S., Highest Honors, Chemistry, *Emporia State University*, 1976

**Research Activities:** Surface processes and probes. Plasma-materials interactions— liquid metals, nanomaterials synthesis, plasma-enhanced catalysis; Photoelectrocatalysis— CO<sub>2</sub> reduction; Electrochemistry— oxygen evolution, solid electrolyte interphase; Heterogeneous catalysis— bimetallic Au catalysis, hydrodeoxygenation; Environmental remediation— sequestration by iron nanoparticles; Electron and ion spectroscopy; Scanning probe microscopy.

### Professional Positions:

LTX- $\beta$  Collaborator, Princeton Plasma Physics Laboratory (PPPL), 2018—  
Associated Faculty, Princeton Environmental Institute (PEI), *Princeton U.*, 2018—  
Associated Faculty, Andlinger Ctr. for Energy and the Environ. (ACEE), *Princeton U.*, 2015—  
Professor of Chemical and Biological Engineering, *Princeton University*, 2011—  
Associated Faculty, Princeton Inst. Sci. and Tech. of Materials (PRISM), *Princeton U.*, 2011—  
Associated Faculty in Mechanical and Aerospace Engineering, *Princeton University*, 2011—  
NSTX Collaborator, Princeton Plasma Physics Laboratory (PPPL), 2011—  
Associated Faculty in Chemistry, *Princeton University*, 2011—  
Adjunct Professor of Chemistry, *Lehigh University*, 2011  
Interim Vice President, Assoc. Provost for Research & Grad. Studies, *Lehigh Univ.*, 2008-2010  
Interim Vice Provost for Research, *Lehigh University*, 2007-2008  
Professor of Chemistry, *Lehigh University*, 2005-2010  
Member, Center for Advanced Materials and Nanotech. (CAMN), *Lehigh Univ.*, 2005-2010  
Visiting Research Collaborator, Dept. of Chemical Engineering, *Princeton University*, 2004-05  
Chairman, Department of Chemistry, *University of Southern California*, 1998-2001  
Visiting Scholar, Department of Chemistry, *Cambridge University*, Jan. - June 1996  
Professor (Adjunct) of Materials Science, *University of Southern California*, 1995-2005  
Founding Member, Laboratory for Molecular Robotics, *Univ. of Southern California*, 1994-2005  
Professor of Chemistry, *University of Southern California*, 1993-2005  
Associate Professor of Chemistry, *University of Southern California*, 1990-1993  
Associate Professor of Chemistry, *University of Colorado, Boulder*, 1989  
Fellow, Coop. Inst. for Research in Environmental Sciences (CIRES), *U. Colorado*, 1983-1989  
Assistant Professor of Chemistry, *University of Colorado, Boulder*, 1983-1989

Miller Postdoctoral Fellow, *University of California, Berkeley*, 1981-1983

**Selected Honors, Awards and Fellowships:**

Eastman Lectureship, Dept. of Chemical Engineering, *University of South Carolina*, Fall 2016  
Honorary Professorship, 111 Program, *Tongji University*, Shanghai, P. R. China, 2013-2017  
EaStCHEM Intern'l Visiting Fellowship lecturer, *U. of Edinburgh & St. Andrews*, Scotland 2008  
George A. Olah Award in Hydrocarbon or Petroleum Chemistry, Amer. Chem. Soc. (ACS) 2007  
Fellow of the American Association for the Advancement of Science (AAAS), 2004  
Professeur Invite', *University de Paris-Sud*, Orsay, France, 2001  
AIST Guest Researcher Awards, *Osaka Nat'l Res. Inst.*, Osaka, Japan, 1999 and 2000  
Keynote Address, Brazilian Vacuum Society Annual Conf., Sao Jose dos Campos, Brazil, 2000  
Fellow of the American Vacuum Society (AVS), 1999  
Distinguished Alumnus of *Emporia State University*, 1998  
Fellow of the American Physical Society (APS), 1996  
Who's Who (Marquis; Strathmore; et al.), 1996—  
Union Carbide Innovation Research Awards, 1990 and 1991  
Alfred P. Sloan Research Fellowship, 1990  
Exxon Education Foundation Award, 1987  
Junior Faculty Development Award, *University of Colorado, Boulder*, 1985  
Dreyfus Foundation Grant for New Faculty, 1983  
Miller Institute Postdoctoral Fellowship, *University of California, Berkeley*, 1981  
ACS Division of Colloid and Surface Chemistry Proctor and Gamble Fellowship, 1980  
National Science Foundation Traineeship; University Fellowship, *Univ. Texas, Austin*, 1978

**Membership in Professional Societies:** American Association for the Advancement of Science (AAAS), The American Ceramic Society (ACerS), American Chemical Society (ACS), American Institute of Chemical Engineers (AIChE), American Physical Society (APS), American Vacuum Society (AVS), Catalysis Society of Metropolitan New York, The Electrochemical Society (ECS), Materials Research Society (MRS), SPIE.

**Editorial Services to Scholarly Publications:**

Guest Member, Editorial Committee, *Annual Review of Physical Chemistry*, Vol. 61(2010), 2008  
Member, Editorial Advisory Board of *Langmuir*, 1993-2001  
Co-Editor, Proceedings of the Symposium on Bimetallic Surface Chemistry and Catalysis, *Langmuir*, **4**(5), 1073-1222 (1988)

*Referee for:* ACS Applied Materials & Interfaces, ACS Nano, Applied Surface Science, Catalysis Letters, Catalysis Today, Chemistry of Materials, J. Catalysis, J. Chemical Physics, J. Electron Spectroscopy and Related Phenomena, J. Physical Chemistry, J. American Chemical Society, J. Vacuum Science and Technology, Langmuir, Physical Chemistry Chemical Physics, Physical Review, Physical Review Letters, Proceed. National Academy of Sciences, Science, and Surface Science

**Selected Professional Activities:**

Member, DOE On-Site Review Panel, Office of Basic Energy Sciences, Energy Innovation Hub "Fuels from Sunlight", Pasadena, CA, 2018  
Chair, AVS Surface Science Division, 2017-2018

Chair, AVS 64 Surface Science Division Program Committee for the AVS 64th International Symposium and Exhibition, Tampa, FL, 2016-2017  
Member, ACS National Awards Selection Committees, 2017, 2016, 2015, 2014, 2008, 2007  
Member, DOE BES On-Site Review Panel, SUNCAT Center for Interface Science and Catalysis - FWP Program, BES Catalysis Program at SLAC National Accelerator Laboratory, 2016  
Member, Advisory Committee, 4<sup>th</sup> International Workshop on Nanotechnology, Renewable Energy & Sustainability, Xi'an, China, 2016  
Member, DOE On-Site Review Panel, Laboratory Director's Review, Chemical Science Division, Lawrence Berkeley National Laboratory (LBNL), 2015  
Member, DOE Panel Review, Office of Basic Energy Sciences, Energy Innovation Hub Renewal "Fuels from Sunlight", 2015  
Member, Program Committee, AVS International Symposium and Exhib., 2014-2019  
Member, AVS Surface Science Division Executive Committee, 2014-2019  
Member, DOE On-Site Review Panel, Catalysis Science Program, Lawrence Berkeley National Laboratory (LBNL), 2014  
Organizer, Spring Symposium of The Catalysis Society of Metropolitan New York, 2013  
Member, Science Advisory Committee (SAC) of the Center for Functional Nanomaterials (CFN) at Brookhaven National Laboratory (BNL), 2012-2016  
Member, Governing Board, Council for Chemical Research (CCR), 2011-2013  
Member, Advisory Committee, QEXAFS/XRD beamline, NSLS-II, 2010  
University Leader, CCR Research Collaboration Action Network (RC-AN), 2009-10  
Affiliated Faculty of the Catalysis Center for Energy Innovation (CCEI), University of Delaware, an Energy Frontier Research Center funded by the U.S. DOE, Office of Science, 2009-13  
Member, 2009 Physical Electronics Conference Meeting Local Program Committee, 2009  
Member, DOE Materials Science Merit Review Panel, National Energy Technology Laboratory (NETL), 2009  
Member, Tech. Advisory Committee, PA NanoMaterials Commercialization Center, 2008-10  
Member, CCR Research Collaboration Action Network (RC-AN), 2007-10  
Member, International Advisory Board, Chemical and Energy Sciences, NSLS-II, 2007-10  
Member, Board of Directors, Ben Franklin Technology Partners of Northeastern PA, 2007-10  
Member, Lehigh Nanotechnology Network (LNN) Executive Board, 2007-10  
Member, NSF SBIR/STTR Program Industrial Innovation & Partnerships Panel, 2007  
Member, General Committee of the Physical Electronics Conference, 2007-10  
Member, NSF Analytical and Surface Chemistry Panel, 2007  
Instructor, Scanning Probe Microscopy: From Fundamentals to Advanced Applications Course, Lehigh Microscopy School, 2006-10  
Member, CCR 2006 Annual Meeting Planning Committee, 2005  
ARO Chemistry Position Workshop, Chemical Sciences Div., North Carolina St. Univ., 2004  
Member, DOE Materials Chemistry Review Team, Lawrence Berkeley Nat'l Laboratory, 2003  
Chair, AVS Surface Science Division, 2000 and 2001  
Member, Program Committee, AVS 47th Int'l Symposium & NANO-6, Boston, MA, 2000  
2000 SET (Science, Engineering, and Technology) Congressional Visits Day, Washington, DC  
AVS Strategic Planning Workshop, Chicago, IL, 2000  
Member, Long Range Planning Committee, AVS Surface Science Division, 1998-2000  
Reviewer, 2000 Western Assoc. of Grad. Schools (WAGS) Distinguished Masters Thesis Award  
Chair, California Catalysis Society Annual Meeting, 1999  
Congressional Visits Day, CCR, Washington, DC, 1999

Chair, AVS Surface Science Division Program Committee, 1999  
Member, CCR Government Relations Committee, 1998-2005  
Chair, Leading Edge Symposium, 31<sup>st</sup> Annual Symp. of the Southern Calif. AVS, Orange, 1998  
Member, AVS Award Committees, 1997, 1994  
Member, Executive Committee & Program Committee, AVS Surface Science Division, 1997-99  
Member, Gordon Research Conference Council, 1997  
Chair, Chemical Reactions at Surfaces Gordon Research Conference, 1997  
Chair, Stauffer Symposium on Surface Chemistry, 1995  
Vice-Chair, Chemical Reactions at Surfaces Gordon Research Conference, 1995  
Member, Review Panel for DOE Distinguished Postdoctoral Research Program, 1993  
Member, Canvassing Committee for the Arthur W. Adamson Award for Distinguished Service in the Advancement of Surface Chemistry, ACS, 1992-95  
Co-chair, 8<sup>th</sup> DOE-BES Heterogen. Catalysis & Surface Chem. Mtg., LA, 1992  
Chair, P&G Fellowship Committee, Division of Colloid and Surface Chemistry, ACS, 1992  
Member, P&G Fellowship Committee, Div. of Colloid and Surface Chemistry, ACS, 1991-93  
Chair, Organizing Committee, Chemical Reactions at Surfaces Gordon Conference, 1991-93  
Faculty Participant, USC Center for Research on Environmental Sciences, Policy and Engineering (CRESPE), 1991-1996  
Member, Procter & Gamble Fellowship Comm., Div. Colloid & Surf. Chem., ACS, 1991-1993  
Chair, Organizing Comm., Chemical Reactions at Surfaces Gordon Research Conf., 1991-1993  
Co-chair, Continuing Symposium on Molecular Processes at Solid Surfaces, Div. Colloid & Surf. Chem., ACS, 1989-1993  
Co-Chair, Symposium on "Bimetallic and Alloy Surface Chemistry and Catalysis," Div. Colloid & Surf. Chem., 1987 National ACS Meeting, New Orleans, 1987  
Member, Program Committee, Div. Colloid & Surf. Chem., ACS, 1986-1988  
Co-Chair, Symposium on "Surface Science of Coal Liquefaction Catalysts," Div. of Fuel Chemistry, 1986 National ACS Meeting, New York, 1986  
Chair, Symposium on "Chemical and Physical Properties of Bimetallic and Alloy Surfaces," 1986 Rocky Mountain ACS Meeting, Denver, 1986  
Instructor, Surface Analysis, Short Course "Analytical Chemistry," U. Colorado, Boulder, 1985-1989  
Co-Chair, Physical Chemistry Workshop, University of Colorado, Boulder, June 1985  
Member, Review Panel for University Coal Research Program, DOE, Pittsburgh Energy Technology Center (PETC), 1985

*Consulting:* Surface Chemistry Discoveries, Inc., 2005; Arkema (ATOFINA Chemicals, Inc.), 2004; Atherton Quantum Insight, ChevronTexaco, 2003-05; Jet Propulsion Laboratory, 1998-2000; Dow Chemical Co., 1995; Chem Alert Corp., 1993-95; Burge and Associates, 1992-94; CLS-1, Los Alamos National Lab., 1992-94; CLS-2, Los Alamos National Lab., 1984-92; Hewlett-Packard, 1985-89; J&A Associates, 1986.

**Patent:** *Layered Nanofabrication*, U.S. Patent No. 6,508,979 (2003) A. A.G. Requicha, B. E. Koel, R. Resch, D. Lewis, M. E. Thompson

**Invited Talks at Technical Meetings:**

2019 ACS Natl. Meeting, 257<sup>th</sup>, Symposium on "Applied Electrocatalysis for Renewable Energy and Synthesis", Orlando, FL

- ACS Natl. Meeting, 257<sup>th</sup>, Symposium on “Elucidation of Mechanisms and Kinetics on Surfaces”, Orlando, FL
- Metro. New York Catalysis Society (NYCS) Annual Symposium 2019, Princeton, NJ
- 2018 MRS Fall Meeting 2018, Symposium PM07: “PlasmaBased Synthesis, Processing and Characterization of Novel Materials for Advanced Applications”, Boston, MA
- XXVII International Materials Research Congress (IMRC 2018), Symposium C3: Solar Hydrogen Production, Cancún, México
- International Conference on Energy, Materials and Photonics 2018 (EMP18), Session: Catalysis and Photocatalysis, Montreal, Canada
- 45<sup>th</sup> IEEE International Conference on Plasma Science (ICOPS 2018), Session 5D: 4.7 Plasma Material Interactions I, Denver, CO
- 45<sup>th</sup> IEEE International Conference on Plasma Science (ICOPS 2018), Session 7E: 5.1 Nonequilibrium Plasma Applications IV, Denver, CO
- Invited Tutorial: 23<sup>rd</sup> International Conference on Plasma Surface Interactions in Controlled Fusion Devices (PSI-23), Princeton, NJ
- 40<sup>th</sup> DOE Solar Photochemistry Research Conference, Gaithersburg, MD
- 2018 University Coalition for Fossil Energy Research (UCFER) Annual Meeting, National Energy Technology Laboratory, Morgantown, WV
- 2018 MRS Spring Meeting, Symposium: NM03: “Rational Designed Hierarchical Nanostructures for Photocatalytic Systems”, Phoenix, AZ
- 42<sup>nd</sup> Internat’l Conf. & Expos. on Adv. Ceramics & Composites (ICACC), Symposium S7: 12<sup>th</sup> Internat’l Symp. on Nanostruct. Mat, Functional Nanomat. and Thin Films for Sustainable Energy Harvesting, Environmental and Health Applic, Daytona Beach, FL
- 2017 MRS Fall Meeting 2017, Symposium ES02: “On the Way to Sustainable Solar Fuels— New Concepts, Materials and System Integration”, Boston, MA
- APS Mid-Atlantic Section, 2017 Annual Meeting, Session M4: Chemistry and Energy Science-I, Newark, NJ
- Singh Nanovation Conference, 2017 Annual, Session: Nanotechnology in Energy and the Environment, U. Pennsylvania, Philadelphia, PA
- ECS National Meeting, 232<sup>nd</sup>, Symposium on “Photocatalysts, Photoelectrochemical Cells and Solar Fuels 8”, National Harbor, MD
- AFOSR Molecular Dynamics/Theoretical Chemistry Program Review, 2017, Albuquerque, NM
- ACS Natl. Meeting, 253<sup>rd</sup>, “Molecular Surface Science, Nanomaterials & Catalysis: Symposium in Honor of Gabor Somorjai at 80”, San Francisco, CA
- ACS Natl. Meeting, 253<sup>rd</sup>, Symposium “GSSPC: Water Sustainability: Chemists in Pursuit of Clean Water”, San Francisco, CA
- 2016 Summer School on “Interfaces and Energy”, Göttingen, Germany
- Keynote: SPIE Optics + Photonics 2016, Solar Hydrogen and Nano. XI, San Diego, CA
- ACS Natl. Meeting, 252<sup>nd</sup>, Symposium “Novel Materials”, Philadelphia, PA
- 9<sup>th</sup> International Conference on High Temperature Ceramic Matrix Composites and Global Forum on Advanced Materials and Technologies for Sustainable Development 2016, Toronto, Canada
- 2016 Middle Atlantic Regional Meeting (MARM), “Photocatalysis and Solar Fuel” Symposium, Riverdale, NY
- 2016 MRS Spring Meeting, Symposium EE2: Advancements in Solar Fuels, Generation, Materials, Devices and Systems, Phoenix, AZ

- ACS Natl. Meeting, 251<sup>st</sup>, Symposium “Advances in In situ Pollutant Destruction by Nanoscale Zero Valent Iron & Other Engineered Nanoparticles”, San Diego, CA  
ACS Natl. Meeting, 251<sup>st</sup>, Symposium “Surface Chemistry & Catalysis of Metal Oxides”, San Diego, CA  
2016 Plasma Chemistry AFOSR BRI Annual Program Review: Plasma-Surface Interactions in Reactive Environments, Arlington, VA
- 2015 46<sup>th</sup> Eastern Analytical Symp. & Exhib., Session: Surface Functionalization of Nanoparticles and Nanomaterials, Somerset, NJ  
ECS Natl. Meeting, 228<sup>th</sup>, Symposium on Solar Fuels, Photocatalysts and Photoelectrochemical Cells, Phoenix, AZ  
Keynote: 3<sup>rd</sup> International Workshop on Nanotechnology, Renewable Energy & Sustainability, Xi’an, China  
Keynote: SPIE Optics + Photonics 2015, Solar Hydrogen and Nano. X, San Diego, CA  
2015 IEEE/NPSS Symposium on Fusion Engineering (SOFE): Session SO14 PMI and Plasma, Austin, TX  
37<sup>th</sup> DOE Solar Photochemistry Research Conference, Gaithersburg, MD  
2015 MRS Spring Meeting, Symposium J: Latest Advances in Solar Water Splitting, San Francisco, CA  
ACS Natl. Meeting, 249<sup>th</sup>, George A. Olah Award Symposium in Honor of Jingguang G. Chen, Denver, CO
- 2014 AFOSR BRI Review: Plasma-Surface Interactions in Reactive Environments, Albuquerque, NM  
AVS Prairie Chapter Symposium, Chicago, IL  
Keynote: SPIE Solar Energy + Technology 2014, Solar Hydrogen and Nanotechnology IX, San Diego, CA  
International Conference on Nanoscience + Technology 2014 (ICN+T 2014), Vail, CO  
Materials Challenges in Alternative & Renewable Energy Conference, MCARE 2014, Solar Fuels: Materials for Water Splitting: Hematite, Clearwater, FL
- 2013 66<sup>th</sup> Gaseous Electronics Conference of the APS, GEC 2013, Princeton, NJ  
ACS Natl. Meeting, 245<sup>th</sup>, Fuel Symp.: Catalysts for Energy Conversion and Storage, New Orleans, LA
- 2012 ACS Natl. Meeting, 244<sup>th</sup>, ENFL Symp.: Frontiers in Energy and Fuels, Philadelphia, PA  
2012 Annual Symposium of The Catalysis Society of Metro. New York, Clinton, NJ
- 2011 Int’l Symposium and the 3<sup>rd</sup> Iwasawa Conference on Catalysis and Surface Science for Efficient Utilization of Carbon Resources and Related Topics, Xiamen Univ., China  
Int’l Symposium on Controlled Surface Reactions, 41<sup>st</sup> Summer Annual Conf. of the Korean Vacuum Society, Daegu, Korea
- 2010 ACS Natl. Meeting, 240<sup>th</sup>, CATL Symp.: Surface Science of Catalysis, Boston, MA  
ACS Natl. Meeting, 239<sup>th</sup>, George A. Olah Award Symposium in Honor of Peter C. Stair, San Francisco, CA
- 2009 EPI Workshop, Particles for Emerging Needs: Directed Synthesis and Characterization toward Biomedical and Catalytic Applications, Lehigh University, Bethlehem, PA  
ACS Natl. Meeting, 237<sup>th</sup>, George A. Olah Award Symposium in Honor of Cynthia M. Friend, Salt Lake City, UT
- 2008 AIChE Annual Meeting, A Century of Surface Science and Catalysis, Philadelphia, PA  
ACS Natl. Meeting, 236<sup>th</sup>, Symposium in Memory of Mike White, Philadelphia, PA  
20<sup>th</sup> International Conference on the Application of Accelerators in Research and Industry (CAARI 2008), Fort Worth, TX

- ACS Natl. Meeting, 235<sup>th</sup>, George A. Olah Award Symposium in Honor of Israel E. Wachs, New Orleans, LA
- ACS Natl. Meeting, 235<sup>th</sup>, Arthur W. Adamson Award Symposium in Honor of Francisco Zaera, New Orleans, LA
- ACS Natl. Meeting, 235<sup>th</sup>, Symposium Honoring Priestley Medal Winner Gabor Somorjai, New Orleans, LA
- 2007 46<sup>th</sup> Eastern Analytical Symp. & Exhib., Catalysis and Surface Sci. Symp., Somerset, NJ
- ACS Natl. Mtg., 233<sup>rd</sup>, Div. of Colloid and Surface Chemistry Award Symp., Chicago, IL
- ACS Natl. Mtg., 233<sup>rd</sup>, George A. Olah Award Symp. in Honor of Bruce E. Koel, Chicago, IL
- 2006 2006 AIChE Annual Meeting, Topics in Surface Science and Catalysis, In Honor of Robert J. Madix, San Francisco, CA
- ACS Natl. Meeting, 232<sup>nd</sup>, Dynamics of Single Atoms, Molecules and Clusters on Surfaces Symposium, San Francisco, CA
- Spring Symposium of the New York Catalysis Society, Bethlehem, PA
- 4<sup>th</sup> Annual Univ. of California Surface Science and Applic. Symposium, Berkeley, CA
- 2005 AVS 52<sup>nd</sup> Internat'l Symp. & Exhib., Bimetallic Surfaces Symposium, Boston, MA
- 207<sup>th</sup> Mtg. of The Electrochemical Society, Electrocatalysis Symp., Quebec City, Canada
- Southern California Symposium on Surface Science, University of California, Irvine
- 2004 AVS, Rocky Mountain Annual Symp., RMAVS 2004, Nanostructured Materials Symposium, Golden, CO
- BioNEMS Symposium, sponsored by the Center for Interdisciplinary Research of USC and the National Cancer Institute (NCI), Los Angeles, CA
- ACS Natl. Meeting, 227<sup>th</sup>, Vibrations at Surfaces Symposium, Anaheim, CA
- 2<sup>nd</sup> Annual Univ. of California Surface Science and Applic. Symposium, San Diego, CA
- 2003 204<sup>th</sup> Meeting of The Electrochemical Society, Electrochemistry Symposium in Memory of Michael Weaver, Orlando, FL
- 77<sup>th</sup> ACS Colloid and Surface Science Symposium, Atlanta, GA
- ACS Natl. Meeting, 225<sup>th</sup>, Mechanistic Surface Chemistry Symposium, New Orleans
- ACS Natl. Meeting, 225<sup>th</sup>, Electrochemistry and Surface Science Symposium in Memory of Mike Weaver, New Orleans
- 2002 ACS Natl. Meeting, Nanoscale Studies of Surface Phenomena Symposium, Orlando
- Int'l Technol. Service Mission on Nanotechnology to West Coast USA, Los Angeles
- 2001 Molecular Visualization in Science Education Workshop, NSF, Arlington
- Int'l Collaboration Programme, Catalysis of Gold Nanoparticles Deposited on Titanium Oxides, AIST, 2000, Osaka Nat'l Research Inst., Osaka, Japan
- Gordon Conference on Chemical Reactions at Surfaces, California.
- ACS Natl. Meeting, 221<sup>st</sup>, Adamson Award Symp. Honoring J. Michael White, San Diego
- Workshop on Nanotechnology: Opportunity and Challenge for Industry, LARTA, CNSI, UCLA, Los Angeles
- 3<sup>rd</sup> Int'l Symposium on Electronic and Atomic Structure (ISEAS-3) Tamkang Univ., Taiwan
- 2000 ACS Natl. Meeting, 219<sup>th</sup>, Surface Chemistry Symposium Honoring Gabor A. Somorjai, San Francisco
- Keynote Address: Brazilian Vacuum Society Annual Conf., Sao Jose dos Campos, Brazil
- 11<sup>th</sup> DOE/BES Heterogeneous Catalysis and Surface Science Contractors Mtg., Rockville, Maryland, 2000

- 21<sup>st</sup> Century Chemical Catalysis: A Symposium in Honor of Wolfgang Sachtler & Tobin J. Marks, Ipatieff Professors of Chemistry, Northwestern Univ., Evanston  
FEA Cathodes for Electrodynamic Tethers Workshop, JPL, Pasadena  
4<sup>th</sup> Int'l Chemical Congress of Pacific Basin Societies (Pacifichem 2000), Symposium on Electrochemical Surface Science at Molecular/Atomic Resolution, Honolulu, Hawaii  
4<sup>th</sup> Int'l Chemical Congress of Pacific Basin Societies (Pacifichem 2000), Symposium on Photon and Electron Induced Processes on Surfaces, Honolulu, Hawaii
- 1999 Twelfth International Workshop on Inelastic Ion-Surface Collisions, Padre Island, Texas  
ARO Workshop on Fuel Cell/Fuel Processor Catalysis/Computational Chem., Chicago  
Gordon Research Conference on Clusters, Nanocrystals, and Nanostructures
- 1998 IBC's 3<sup>rd</sup> Annual Molecular Nanotechnology Conf., San Francisco
- 1997 ACS Natl. Meeting, 213<sup>th</sup>, Symp. Honoring the Memory of B.E. Bent, San Francisco  
Brian Bent Symposium, Columbia University, New York  
Workshop on "Structure and Topography of Surfaces", La Plata, Argentina
- 1995 ACS Natl. Mtg., 209<sup>th</sup>, Metal-Metal Bonding: From Clusters to Surfaces Symp, Anaheim  
Stauffer Symposium on Surface Chemistry, Los Angeles
- 1994 ACS Natl. Meeting, 207<sup>th</sup>, Surface Science of Catalysis Symposium, San Diego
- 1992 ACS Natl. Meeting, 204<sup>th</sup>, Catalytic Selective Oxidation Symposium, Washington
- 1991 Union Carbide Innovation Research Colloquium, South Charleston  
FACSS/Pacific Conference, Symposium on Reactions at Surfaces, Anaheim
- 1990 APS March Meeting, Division of Condensed Matter Physics, Symposium on Atomic and Electronic Structure of Alloy Surfaces, Anaheim  
ACS Natl. Meeting, 199<sup>th</sup>, Kendall Award Symposium, Boston  
Union Carbide Innovation Research Colloquium, South Charleston  
DOE Surface Studies Conference, 16th, Golden  
Symposium on Frontiers of Surface Chemistry, Catalysis Research Center, Hokkaido University, Sapporo, Japan  
Chemistry at Surfaces Meeting, Irvine
- 1989 Center for Separations Using Thin Films Conference, Boulder  
Catalysis Society, 11<sup>th</sup> North Amer. Meeting., Surface and Spectrosc. Symposium  
Workshop on Hydrocarbon Discharge Plasma Diagnostics, Madison  
Gordon Conference on Catalysis, New London  
Symposium on New Horizons in Chemical Sensors, Tempe  
Chemically-Modified Oxide Surfaces Symposium, Dow Corning, Midland  
IUVSTA Workshop Meeting on the Structure and Reactivity of Small Molecules on Surfaces, Ofir, Portugal  
Advances in Catalytic Chemistry IV, A Symposium in Honor of John H. Sinfelt, Snowbird, Utah  
International Chemical Congress of Pacific Basin Societies, Solid Surfaces and Catalysis Symposium, Honolulu
- 1988 AVS, 24<sup>th</sup> Annual Symp. of the New Mexico Chapter, Surface Science Session  
ACS Natl. Meeting, 195<sup>th</sup> (3rd Chemical Congress of North America), Surface Science of Catalysis Symposium, Toronto
- 1986 ACS, 8<sup>th</sup> Rocky Mtn. Regional Meeting, Surface Analysis Symposium, Denver  
MRS, 1986 Fall Meeting, Boston
- 1985 Scanning Electron Microscopy/1985 International Meeting, Las Vegas  
Summer Symposium on Analytical Chemistry, 38<sup>th</sup> Annual: Surface Characterization of Catalytic and Electronic Materials, Potsdam



Symposium on Surface Chemical Processes, Austin

**Invited Lectures at Universities and Laboratories:**

- 2019 Stevens Institute of Technology, Castle Point on Hudson, Hoboken, NJ, Department of Chemical Engineering and Materials Science
- 2017 Queens College, City University of New York, Flushing, NY, Department of Chemistry  
INRS, Energy Materials and Telecommunication, Varennes, Canada  
University of Cologne, Institute of Inorganic Chemistry, and E-MRS/MRS Cologne  
Chapter Materials Science Lecture Series, Cologne, Germany  
Tongji University, State Key Laboratory of Pollution Control and Resources Reuse, Shanghai, P. R. China, Advanced Institute of Environmental Science and Engineering  
Tsinghua University, Beijing, P. R. China, Department of Chemical Engineering  
Chinese Academy of Sciences, Institute of Physics and State Key Laboratory for Surface Physics (SKLSP) Beijing, P. R. China, Surface Science Colloquium  
Tianjin University, Tianjin, P. R. China, School of Chemical Engineering & Technology  
Beijing Jiaotong University, Beijing, P. R. China, School of Mechanical and Electronic Control Engineering  
McGill University, Montréal, Québec, Canada, Department of Chemistry  
National Research Council Canada, Ottawa, Ontario, Canada, Emerging Tech. Division  
General Atomics, San Diego, CA, DIII-D Boundary/PMI Center
- 2016 Eastman Lectureship, Dept. of Chemical Engineering, University of South Carolina  
South Dakota School of Mines & Technol., Rapid City, SD, Chem. & Bio. Engin. Dept.  
Drexel University, Philadelphia, PA, Dept. of Chemical and Biological Engineering
- 2015 Tongji University, Shanghai, China, College of Environmental Science and Technology
- 2014 General Atomics, San Diego, CA, DIII-D Boundary/PMI Center  
Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ, LM PFC Strategy Series  
Univ. of Pittsburgh, Pittsburgh, PA, Department of Chemical and Petroleum Engineering
- 2013 McGill Univ., Montréal, Québec, Canada, Brace Centre for Water Resources Mgmt.
- 2012 Rutgers U./Princeton U. Joint Seminar, Nanotechnology for Clean Energy IGERT
- 2011 University of Notre Dame, Notre Dame, IN, Department of Chemistry and Biochemistry  
Indiana University, Bloomington, IN, Department of Chemistry  
Clemson University, Clemson, SC, Dept. of Chem. and Biomolec. Engineering (ChBE)  
Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Korea, EEWS-MIRC-KINC Distinguished Lecture  
Seoul National University, Seoul, South Korea, Department of Chemistry  
PPPL, Princeton, NJ, Boundary Physics Science Focus Group (BPSFG)  
University of Wyoming, Laramie, WY, Department of Chemistry  
Iowa State University, Ames, IA, Department of Chemistry  
Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ, PPPL Colloquium
- 2010 Yeshiva University, New York City, Department of Physics  
Princeton University, Joint Depts. of Chem. Bio. Engin., and Mech. and Aero. Engin.
- 2008 University of Edinburgh, Edinburgh, Scotland, Department of Chemistry  
St. Andrews University, St. Andrews, Scotland, Department of Chemistry  
Univ. of Pennsylvania, Philadelphia, Lab. for Research on the Struct. of Matter (LRSM)
- 2007 Brown University, Providence, Joint Solid Mechanics/Materials Seminar  
ExxonMobil Corporate Strategic Research Laboratories, Clinton  
Air Products and Chemicals, Inc., Corporate Research Services Dept., Allentown, PA  
Università degli Studi di Napoli Federico II, Napoli, Italy, Dipartimento di Chimica

- University of Florida, Gainesville, Department of Chemical Engineering  
Georgetown University, Washington, DC, Department of Chemistry  
Lebanon Valley College, Annville, PA, Department of Chemistry  
Carnegie Mellon University, Pittsburgh, Department of Chemical Engineering  
Yale University, New Haven, Department of Chemical Engineering
- 2006 Temple University, Philadelphia, Department of Chemistry  
Johns Hopkins University, Baltimore, Department of Chemistry  
Thomas Jefferson University, Philadelphia  
Air Products and Chemicals, Inc., Corporate Research Services Dept., Allentown, PA
- 2005 Brookhaven National Laboratory (BNL), Upton, Chemistry Department  
Lehigh University, Bethlehem, Dept. of Chemistry, Undergraduate Research Seminar  
Lehigh University, Bethlehem, Department of Chemistry  
Rutgers, The State Univ. of New Jersey, Piscataway, Inst. Adv. Mat. and Dev. (IAMD)
- 2004 Arkema (ATOFINA Chemicals, Inc.), Philadelphia, Additives Group  
ExxonMobil Corporate Strategic Research Laboratories, Clinton  
Columbia University, New York, Department of Chemistry  
Princeton University, Princeton Department of Chemistry  
Rutgers, The State Univ. of New Jersey, Piscataway, Dept. of Chemistry and LSM  
Princeton University, Princeton, Department of Chemical Engineering  
Lehigh University, Bethlehem, Department of Chemistry  
University of Delaware, Newark, Department of Chemistry  
Princeton University, Princeton, Department of Chemical Engineering  
University of Pennsylvania, Philadelphia, "Frontiers in Materials" lecture, LRSM  
Princeton University, Princeton, Depts. of Chemistry, Chem. Engineering, and PRISM  
University of California, Los Angeles, Department of Materials Science
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- 2002 California Institute of Technology (CIT), Pasadena, Department of Materials Science  
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- 2001 Osaka National Research Institute (ONRI), Ikeda, Japan  
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University of California, Los Angeles, Department of Chemistry
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ITA-San Jose de Campos, Brazil  
Campinas University, Campinas, Brazil  
University of Northern Colorado, Greeley, Department of Chemistry  
Colorado State University, Fort Collins, Department of Chemistry  
University of Colorado, Boulder, Department of Chemistry
- 1999 Celanese Technical Center, Corpus Christi

- Texas Instruments, Dallas  
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Univ. of Southern California, Dept. of Chemistry, "Perspectives on the Sciences" Series  
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- 1998 University of Southern California, Los Angeles, Department of Chemical Engineering  
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Westmont College, Division of Natural Sciences  
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- 1994 University of Southern California, Los Angeles, Environmental Engineering Department  
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Shell Development Co., Westhollow Research Center

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University of Southern California, Los Angeles, Physics Department
- 1993 Los Alamos National Laboratory, Los Alamos, Chemistry Seminar  
Sandia National Laboratory, Albuquerque, Surface and Interface Science Seminar
- 1992 California Institute of Technology, Pasadena, Dept. of Chemistry and Chem. Engineering  
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University of Texas, Austin, Department of Chemistry  
Texas A&M University, College Station, Department of Chemistry  
Allied Signal Inc., Research and Technology, Des Plaines
- 1991 University of California, Riverside, Department of Chemistry  
IBM Almeden Research Center, San Jose  
University of Washington, Seattle, Department of Chemistry  
Battelle Pacific Northwest Laboratories, Richland  
California State University, Northridge, Department of Chemistry  
University of California, Berkeley, CA, Surface Science and Catalysis Seminar
- 1990 Amoco Oil Company, Naperville  
Ford Motor Company, Dearborne  
Dow Chemical Company, Midland  
Michigan Catalysis Society, Detroit  
California Institute of Technology, Pasadena, Department of Chemistry  
Columbia University, New York, Department of Chemistry  
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General Motors Research Laboratories, Warren  
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University of California, Irvine, Department of Chemistry
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Oak Ridge National Laboratory, Oak Ridge
- 1988 University of Colorado, Boulder, CO, Department of Physics  
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- 1987 University of California, Berkeley, CA, Surface Science and Catalysis Seminar  
University of California, Irvine, CA, Department of Chemistry  
Stanford University, Stanford, CA, Department of Chemistry
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- 1985 Colorado State University, Fort Collins, CO, Department of Chemistry

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- University of Wisconsin, Madison, WI, Department of Chemistry
- General Motors Research Laboratories, Warren, MI
- Exxon Corporate Research Laboratories, Linden, NJ
- 1980 Los Alamos National Laboratory, Los Alamos, NM

## PUBLICATIONS

[Total citations=16,742; average citations per paper = 53; h-index = 65; i10-index = 222]

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