

Curriculum Vitae

Bruce E. Koel

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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-assisted catalysis – NH₃ synthesis, CH₄ and CO₂ conversion; Heterogeneous catalysis – bimetallic Au catalysis, hydrodeoxygenation; Photoelectrocatalysis, electrocatalysis, electrochemistry – CO₂ reduction, oxygen evolution, solid electrolyte interphase; Environmental remediation – iron and iron oxide nanoparticles; Electron and ion spectroscopy; Scanning probe microscopy.

Professional Positions:

Visiting Researcher, Chemical and Biomolecular Engineering Department, *University of California, Los Angeles*, 2020-2022
Co-founder, Member of the Technology Advisory Committee, *Princeton NuEnergy, Inc.*, 2019–
LTX-β Collaborator, *Princeton Plasma Physics Laboratory (PPPL)*, 2018–
Associated Faculty, High Meadows Environmental Institute (HMEI), *Princeton U.*, 2018–
Associated Faculty, Andlinger Ctr. for Energy and the Environ. (ACEE), *Princeton U.*, 2015–
Associated Faculty, Princeton Inst. Sci. and Tech. of Materials (PRISM), *Princeton U.*, 2011–
Associated Faculty in Mechanical and Aerospace Engineering, *Princeton University*, 2011–
Associated Faculty in Chemistry, *Princeton University*, 2011–
Undergraduate Dept. Representative, Chem. and Bio. Engineering, *Princeton U.*, 2011 – 2014
NSTX Collaborator, *Princeton Plasma Physics Laboratory (PPPL)*, 2011–
Professor of Chemical and Biological Engineering, *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
Member, Center for Advanced Materials and Nanotech. (CAMN), *Lehigh Univ.*, 2005-2010
Professor of Chemistry, *Lehigh University*, 2005-2010
Visiting Research Collaborator, Dept. of Chemical Engineering, *Princeton University*, 2004-05
Chair, 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

Other Work Experience:

Co-founder, Member of the Technology Advisory Committee, *Princeton NuEnergy, Inc.*, established 2019

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; J&A Associates, 1986; Hewlett-Packard, 1985-89; CLS-2, Los Alamos National Lab., 1984-92.

Intellectual Property, Patents and related activity:

Systems and Methods for Lithium Ion Battery Cathode Material Recovery, Regeneration, and Improvement. X. Yang, B. E. Koel, Y. Ju, C. Yan. International Application (PCT) No. PCT/US2021/060502, Filed November 23, 2021.

Process For Safe Discharge of Aged Lithium Ion Batteries. X. Yang, B. E. Koel, Y. Ju, C. Yan. Provisional Patent Application 63/139,439, Filed January 20, 2021.

Direct sorting, purification, and regeneration of cathode materials for aged lithium ion batteries using a novel low-temperature plasma assisted separation process (LPAS). X. Yang, B. E. Koel, Y. Ju, C. Yan. Provisional Patent Application 63/117,267, Filed November 23, 2020.

Plasma Promoted NH₃ Synthesis by Directly Coupling of Hydrogen Production From Water Splitting Reaction, X. Yang, B. E. Koel, Y. Ju, C. Yan. Provisional Patent Application 62/937,326, Filed November 19, 2019.

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

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), International Plasma Chemistry Society (IPCS), International Society of Electrochemistry (ISE), 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, Surface Science Division, American Vacuum Society (AVS), 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, 4th 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, Laboratory for Plasma Nanosynthesis, Princeton Plasma Physics Laboratory, 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, BNL, NSLS-II, 2007-10

Member, Board of Directors, Ben Franklin Technology Partners of Northeastern PA, 2007-10

Member, Executive Board, Lehigh Nanotechnology Network (LNN), 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, Surface Science Division, American Vacuum Society (AVS), 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, 31st 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, 8th DOE-BES Heterogeneous Catalysis & Surface Chemistry Mtg., Los Angeles, 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

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

Invited Lectures at Technical Meetings:

- 2023 13th Asian-European International Conference on Plasma Surface Engineering (AEPSE 2021), Plasma Catalysis Workshop, BEXCO, Busan, Republic of Korea (Hybrid meeting due to COVID-19)
- 2022 ACS Natl. Meeting, 264th, Symposium on "Mechanisms and Kinetics of Reactions at Plasma-Catalyst Interfaces", Chicago, IL
NIEHS Superfund Research Program Internet Seminar, Utilizing Innovative Materials Science Approaches to Enhance Bioremediation: Session I - Per- and Polyfluoroalkyl substances, (**P. Jaffé**, J. Park, S. Huang, B.E. Koel) (Virtual)
- 2021 Engage 2021 Conference, Catalyze the Transformation of Research into Innovation, Celebrate Princeton Innovation 2021, Princeton University, Princeton, NJ, (Virtual meeting due to COVID-19)
NSTX-U / Magnetic Fusion Science Meeting, Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ, (**S. Abe**, B.E. Koel, et al.) (Virtual meeting due to COVID-19)
63rd Annual Meeting of the APS Division of Plasma Physics (DPP-21), Session TI02: MFE IV: Edge and Scrape-Off Layer Plasmas, Pittsburgh, PA, (**S. Abe**, B.E. Koel, et al.)
13th Asian-European International Conference on Plasma Surface Engineering (AEPSE 2021), Plasma Catalysis Workshop, BEXCO, Busan, Republic of Korea (Postponed to 2023 due to COVID-19)
DOE Low Temperature Plasma Centers and User Facilities Annual Meeting, Bethesda, MD, (Z. Chen, H. Zhao, S. Jaiswal, S. Sundaresan, Y. Ju, **B.E. Koel**) (Virtual talk due to COVID-19)
Superfund Research Program (SRP) Newly Funded Individual Research Grants (R01) Programs, RFA-ES-20-004 - Optimizing Natural Systems for Remediation: Utilizing Innovative Materials Science Approaches to Enhance Bioremediation, Kick-Off Call (**P. Jaffe**, B.E. Koel) (Virtual meeting due to COVID-19)
NSTX-U / Magnetic Fusion Science Meeting, Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ, (**J.P. Allain**, **B.E. Koel**, **K. Woller**) (Virtual meeting due to COVID-19)
- 2020 2nd Research Coordination Meeting (RCM) of the CRP on Atomic Data for Vapour Shielding in Fusion Devices, International Atomic Energy Agency (IAEA) Headquarters, Vienna, Austria (Virtual meeting due to COVID-19)
Plasma Centers Virtual Meeting, University of Michigan, Ann Arbor, MI (Virtual meeting due to COVID-19)
ECS National Meeting, 237th with International Meeting on Chemical Sensors (IMCS) 2020, Symposium I04: "Renewable Fuels via Artificial Photosynthesis or Heterocatalysis 5", Montreal, Canada (Cancelled due to COVID-19)

- MRS Spring Meeting 2020, Symposium EN03: “Solar-Energy Conversion for Sustainable Water-Energy-Environmental Nexus”, Phoenix, AZ (Cancelled due to COVID-19)
- 11th International Meeting on Recent Developments in the Study of Radiation Effects in Matter (REM 2020), Cozumel, Mexico, (**P.S. Krstic**, F.J. Dominguez Gutierrez, B. Koel)
- 2019 AVS 66th Internat’l Symp. & Exhib., Symposium on “Plasma Conversion and Enhanced Catalysis for Chemical Synthesis”, Columbus, OH
- NLSL-II Strategic Planning Workshop “Exploring New Science Frontiers at NLSL-II”, Brookhaven National Laboratory, Upton, NY
- ECS National Meeting, 236th, Symposium on “Photocatalysts, Photoelectrochemical Cells and Solar Fuels 10”, Atlanta, GA
- ACS Fall 2019 Natl. Meeting, Symposium on “Adsorption and Reaction at Surfaces: Symposium in Honor of Charles T. Campbell”, San Diego, CA
- Keynote: 70th Annual International Society of Electrochemistry (ISE) Meeting, Symposium S04 - Renewable Energy and Photo-Electrochemistry, Durban, S. Africa
- International Conference on Energy, Materials and Photonics 2019 (EMP19), Session: Energy & Catalysis (II), Shanghai, P. R. China
- European MRS (E-MRS) Spring Meeting 2019, Symposium A: Latest Advances in Solar Fuels, Nice, France
- MRS Spring Meeting 2019, Symposium ES06: “Atomic-Level Understanding of Materials in Fuel Cells and Electrolyzers”, ES06.06: Electrocatalysis III, Phoenix, AZ
- ACS Natl. Meeting, 257th, Symposium on “Applied Electrocatalysis for Renewable Energy and Synthesis”, Orlando, FL
- ACS Natl. Meeting, 257th, Symposium on “Elucidation of Mechanisms and Kinetics on Surfaces”, Orlando, FL
- Metro. New York Catalysis Society (NYCS) Annual Symposium 2019, Princeton, NJ
- 1st RCM of the CRP on Atomic Data for Vapour Shielding in Fusion Devices, IAEA Headquarters, Vienna, Austria, (**Predrag Krstić**, B.E. Koel, F. J. Dominguez-Gutierrez)
- US-Japan and International Workshop on Power and Particle Control in DEMO Fusion Reactor by Liquid Metal Plasma-Facing Components, 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
- 45th IEEE International Conference on Plasma Science (ICOPS 2018), Session 5D: 4.7 Plasma Material Interactions I, Denver, CO
- 45th IEEE International Conference on Plasma Science (ICOPS 2018), Session 7E: 5.1 Nonequilibrium Plasma Applications IV, Denver, CO
- Invited Tutorial: 23rd International Conference on Plasma Surface Interactions in Controlled Fusion Devices (PSI-23), Princeton, NJ
- 40th 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
- 42nd Internat’l Conf. & Expos. on Adv. Ceramics & Composites (ICACC), Symposium S7: 12th 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, 232nd, 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, 253rd, “Molecular Surface Science, Nanomaterials & Catalysis: Symposium in Honor of Gabor Somorjai at 80”, San Francisco, CA
- ACS Natl. Meeting, 253rd, 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, 252nd, Symposium “Novel Materials”, Philadelphia, PA
- 9th 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, 251st, Symposium “Advances in In situ Pollutant Destruction by Nanoscale Zero Valent Iron & Other Engineered Nanoparticles”, San Diego, CA
- ACS Natl. Meeting, 251st, 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 46th Eastern Analytical Symp. & Exhib., Session: Surface Functionalization of Nanoparticles and Nanomaterials, Somerset, NJ
- ECS Natl. Meeting, 228th, Symposium on Solar Fuels, Photocatalysts and Photoelectrochemical Cells, Phoenix, AZ
- Keynote: 3rd 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
- 37th 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, 249th, George A. Olah Award Symposium in Honor of Jinguang 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 66th Gaseous Electronics Conference of the APS, GEC 2013, Princeton, NJ
ACS Natl. Meeting, 245th, Fuel Symp.: Catalysts for Energy Conversion and Storage, New Orleans, LA
- 2012 ACS Natl. Meeting, 244th, 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 3rd 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, 41st Summer Annual Conf. of the Korean Vacuum Society, Daegu, Korea
- 2010 ACS Natl. Meeting, 240th, CATL Symp.: Surface Science of Catalysis, Boston, MA
ACS Natl. Meeting, 239th, 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, 237th, 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, 236th, Symposium in Memory of Mike White, Philadelphia, PA
20th International Conference on the Application of Accelerators in Research and Industry (CAARI 2008), Fort Worth, TX
ACS Natl. Meeting, 235th, George A. Olah Award Symposium in Honor of Israel E. Wachs, New Orleans, LA
ACS Natl. Meeting, 235th, Arthur W. Adamson Award Symposium in Honor of Francisco Zaera, New Orleans, LA
ACS Natl. Meeting, 235th, Symposium Honoring Priestley Medal Winner Gabor Somorjai, New Orleans, LA
- 2007 46th Eastern Analytical Symp. & Exhib., Catalysis and Surface Sci. Symp., Somerset, NJ
ACS Natl. Mtg., 233rd, Div. of Colloid and Surface Chemistry Award Symp., Chicago, IL
ACS Natl. Mtg., 233rd, 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, 232nd, Dynamics of Single Atoms, Molecules and Clusters on Surfaces Symposium, San Francisco, CA
Spring Symposium of the New York Catalysis Society, Bethlehem, PA
4th Annual Univ. of California Surface Science and Applic. Symposium, Berkeley, CA
- 2005 AVS 52nd Internat'l Symp. & Exhib., Bimetallic Surfaces Symposium, Boston, MA
207th 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, 227th, Vibrations at Surfaces Symposium, Anaheim, CA
- 2nd Annual Univ. of California Surface Science and Applic. Symposium, San Diego, CA
- 2003 204th Meeting of The Electrochemical Society, Electrochemistry Symposium in Memory of Michael Weaver, Orlando, FL
- 77th ACS Colloid and Surface Science Symposium, Atlanta, GA
- ACS Natl. Meeting, 225th, Mechanistic Surface Chemistry Symposium, New Orleans
- ACS Natl. Meeting, 225th, 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, 221st, Adamson Award Symp. Honoring J. Michael White, San Diego
- Workshop on Nanotechnology: Opportunity and Challenge for Industry, LARTA, CNSI, UCLA, Los Angeles
- 3rd Int'l Symposium on Electronic and Atomic Structure (ISEAS-3) Tamkang Univ., Taiwan
- 2000 ACS Natl. Meeting, 219th, Surface Chemistry Symposium Honoring Gabor A. Somorjai, San Francisco
- Keynote Address: Brazilian Vacuum Society Annual Conf., Sao Jose dos Campos, Brazil
- 11th DOE/BES Heterogeneous Catalysis and Surface Science Contractors Mtg., Rockville, Maryland, 2000
- 21st 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
- 4th Int'l Chemical Congress of Pacific Basin Societies (Pacifichem 2000), Symposium on Electrochemical Surface Science at Molecular/Atomic Resolution, Honolulu, Hawaii
- 4th 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 3rd Annual Molecular Nanotechnology Conf., San Francisco
- 1997 ACS Natl. Meeting, 213th, 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., 209th, Metal-Metal Bonding: From Clusters to Surfaces Symp, Anaheim
- Stauffer Symposium on Surface Chemistry, Los Angeles
- 1994 ACS Natl. Meeting, 207th, Surface Science of Catalysis Symposium, San Diego
- 1992 ACS Natl. Meeting, 204th, 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, 199th, 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, 11th 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, 24th Annual Symp. of the New Mexico Chapter, Surface Science Session
ACS Natl. Meeting, 195th (3rd Chemical Congress of North America), Surface Science of Catalysis Symposium, Toronto
- 1986 ACS, 8th 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, 38th Annual: Surface Characterization of Catalytic and Electronic Materials, Potsdam
Symposium on Surface Chemical Processes, Austin

Invited Seminars at Universities and Laboratories:

- 2020 University of California, Los Angeles (UCLA), Dept. of Chem. and Biomol. Eng. (Cancelled due to COVID-19)
- 2019 Stevens Institute of Technology, Hoboken, NJ, Dept. of Chem. Eng. and Mat. Sci.
- 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

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PUBLICATIONS

[Total citations= 18,335; average citations per paper = 53; h-index = 70; i10-index = 253]

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358. “Selective Oxidation of Ethanol on Zeolite Supported Au Catalysts”, Y. Zheng, Y. Qi, B. E. Koel, S. G. Podkolzin, to be submitted.
357. “Reaction-Driven Restructuring of Deficient PtSe₂ into Ultra-stable Catalyst for the Oxygen Reduction Reaction”, W. Niu, S. Pakhira, G. Chen, F. Zhao, N. Yao, C.G. Tully, J.L. Mendoza-Cortes, B.E. Koel, to be submitted.
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355. “Water adsorption on GaP(110) surface: a UHV study”, D.V. Potapenko, S. Xu, E.A. Carter, B.E. Koel, to be submitted.
354. “AFM imaging of adsorbed methoxy species on Cu(110) and oxidized p(2×1) Cu(110) surfaces”, Z. Chen, J.M.P. Martirez, P. Zahl, E.A. Carter, B.E. Koel, to be submitted.
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352. “Adsorption and dissociation of methanol on GaP(110) surfaces studied by ambient pressure photoelectron spectroscopy”, Z. Chen, X. Yang, I. Waluyo, B.E. Koel, to be submitted.

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