November, 2017

Suljo Linic
Department of Chemical Engineering, 3330 GG Brown Building, 2300 Hayward,
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Education:

West Chester University, PA, BS Physics (minors: Mathematics, Chemistry) 1998

University of Delaware, DE, Ph.D. Chemical Engineering 2003
Adviser: Prof. Mark A. Barteau
Thesis Title: From fundamental studies to rational catalyst design: a hybrid experimental/theoretical investigation of ethylene epoxidation

Fritz-Haber Institute der Max Planck Gesellschaft, Berlin, Postdoctoral fellow in Theory Department, Adviser: Prof. Dr. Matthias Scheffler 2003-2004

Academic Appointments:

2017 -	Associate Chair at the Department of Chemical Engineering, University of Michigan, Ann Arbor
2014 -	Professor and 1938 Faculty Scholar Professor of Chemical Engineering and Integrative Systems Design, University of Michigan, Ann Arbor.
2015-	Hans Fischer Fellow, Chemistry Department, Technical University in Munich
2010 - 2014	Associate Professor of Chemical Engineering, University of Michigan, Ann Arbor.
2004 - 2010	Assistant Professor of Chemical Engineering, University of Michigan, Ann Arbor.
2003-2004	Postdoctoral fellow at Fritz-Haber Institute der Max Planck Gesellschaft, Berlin.

Administrative Appointment:

2010 -	Director of Energy System Engineering Program, College of Engineering, University of Michigan

Honors, Awards, Editorial Work

- **Paul H. Emmett Award,** 2017, an international, flagship award of North American Catalytic Society (NACS) awarded biannually to the most influential contributors to the field of chemical catalysis below age 45.
- **ACS (American Chemical Society) Catalysis Lectureship** 2014, for the advancement of catalytic science, awarded annually by the ACS Catalysis journal and Catalysis Science and Technology Division of ACS for

groundbreaking research that strengthens connections among the various sub-disciplines of catalysis and advances the field of catalysis as a whole

- **Associate Editor, ACS Catalysis,** 2014 -
- **Michigan Catalysis Society Parravano Award,** 2016, for excellence in catalysis research and development.
- **Hans Fischer Fellowship,** awarded by Technical University in Munich for outstanding achievements in the field of Chemistry.
- **1938 Faculty Scholar Professorship of the University of Michigan,** 2014.
- **Thiele Lectureship,** 2013, awarded by Department of Chemical Engineering at University of Notre Dame.
- **Monroe-Brown Foundation Research Excellence Award by University of Michigan,** 2012, presented to a faculty member who demonstrates sustained excellence in research and related scholarly activities.
- **Nanoscale Science and Engineering Forum Young Investigator Award,** 2011, awarded annually by American Institute of Chemical Engineers recognizing outstanding interdisciplinary research in nanoscale science and engineering by an engineer or scientist in the early stages of their professional career (within 10 years of completion of highest degree).
- **ACS Unilever Award,** 2009, awarded annually by Colloid and Surface Chemistry Division of ACS for significant contributions in colloidal and surface chemistry.
- **Camille Dreyfus Teacher-Scholar Award,** 2009, awarded annually to ~10 researchers by the Dreyfus Foundation for research contributions to the field of chemical science.
- **DuPont Young Professor Award,** 2008, awarded to ~10 – 15 mainly researchers worldwide across multiple disciplines by DuPont corporation.
- **NSF Career Award,** 2005.
- **1938E Award,** 2010, awarded annually by the College of Engineering at the University to Michigan to one junior faculty member for excellence in research, teaching, and service.
- **Chemical Engineering Departmental Award,** 2007, one award is awarded annually to a faculty member for excellence in research, teaching, and service
- **Frontiers in Chemistry Invitee**, 2008, approximately 90 promising early career "rising stars" in chemical sciences (30 from each country; US, Germany, and Great Britain) were identified by the American Chemical Society (ACS), the German Chemical Society (GDCh) and the Royal Society of Chemistry (RSC) to participate at the symposium.
- **Max Planck postdoctoral fellowship,** 2003-2004, Fellowship given by the German Max Planck Society.
- **Young Scientist Prize from the Council of the International Association of Catalysis Societies,** 2004**,** awarded by the Council of the International Association of Catalysis Societies, to the most promising young scientists (under age 35) for research accomplishments.

- **University of Delaware Competitive Fellowship Award,** 2002, awarded to the most accomplished graduate students at the University. Criteria are academic and thesis work.
- **Soros Foundation Fellowship,** 1995-1998.
- **Gordon Research Conference Fellowships,** 2002.
- **Department of Chemical Engineering Teaching Fellowship,** 2002.
- **Robert L. Pigford Outstanding Teaching Assistant Award,** 2001, University of Delaware.

RESEARCH

Research Interests: Fundamental Heterogeneous Catalysis, Surface chemistry, Electronic structure calculations, Electro-chemical conversion, Photo-chemical conversion.

Research group

Past members

- Adam Holewinski (graduated 01/2104, Assistant Professor at University of Colorado in Boulder).
- Hongliang Xin (graduated 06/2013, Assistant Professor at Virginia Tech University).
- Andiappan Marimuthu (graduated 05/2013, Assistant Professor at Oklahoma State University).
- Phillip Christopher (graduated 08/2011, Associate Professor at University of California, Santa Barbara).
- Eranda Nikolla (graduated 05/2009, Associate Professor at Wayne State University).
- Siris Laursen (graduated 09/2009, Assistant Professor at University of Tennessee).
- Neil Schweitzer (graduated 11/2010, Research Professor at Northwestern University).
- David Ingram (graduated 08/2011, R & D engineer at Phillips 66).
- Thomas Yeh (graduated 2/2015, R & D engineer at Johnson Matthey).
- Matt Morabito, (graduated 12/2015, R & D engineer at Exelon).
- Brittany Lancaster, (graduated 12/2015, R & D engineer at Clean Power Research).
- Timothy Van Cleve (graduated 12/2015, postdoctoral associate at U of Colorado).
- Calvin Boerigter (graduated 9/2016, data analyst at Mu Sigma, a data analytics and consulting company).
- Paul Hernley (graduated 1/2017, Chief Engineer, Battery Solutions company).

Current Members

- Umar Aslam (fifth year PhD student).
- Valentina Omoze Igenegbai, Joseph Quinn (fourth year PhD students).
- Steven Chavez (third year PhD student).

- Sean Dix, John Hemmerling (second year graduate students)
- Rachel Elias, Rawan Almallahi (first year graduate students)

Peer-reviewed publications (in reverse chronological order, http://scholar.google.com/citations?hl=en&user=99XfGykAAAAJ&view_op=list_works)
(Corresponding authorship is denoted by *, undergraduate students are underlined, graduate students are underlined with two lines):
Published

1. U. Aslam, S Chavez, Linic* S., Controlling Energy Flow in Multimetallic Nanostructures for Plasmonic Catalysis. **Nature Nanotechnology 2017**, doi:10.1038/nnano.2017.131
2. P. Hernley, S. Chavez, J. Quinn, S. Linic*, Engineering the Optical and Catalytic Properties of Co-Catalyst/Semiconductor Photocatalysts, **ACS Photonics** 4 (4), 979-985
3. T. Van Cleve, Tim, S. Moniri, G. Belok, K More, S. Linic*, Nanoscale Engineering of Efficient Oxygen Reduction Electro-Catalysts by Tailoring Local Chemical Environment of Pt Surface Sites, **ACS Catalysis,** 7, 17, 2017
4. S. Moniri, S. Linic*, Pitfalls and best practices in measurements of the electrochemical surface area of platinum-based nanostructured electro-catalysts, **J. of Catalysis,** 345, 1, 2017
5. J.G. Chen*, C.W. Jones*, S. Linic*, V.R. Stamenkovic*, Best Practices in Pursuit of Topics in Heterogeneous Electrocatalysis, **ACS Catalysis** 7, 6392-6393, 2017
6. U. Aslam, S. Linic*, Kinetic trapping of immiscible metal atoms into bimetallic nanoparticles through plasmonic visible light-mediated reduction of a bimetallic oxide precursor: Case study of AgPt nanoparticle synthesis, **Chemistry of Materials**, 28(22), 8289, 2016
7. C. Boerigter, U. Aslam, S. Linic*, Mechanism of charge transfer from plasmonic nanostructures to chemically attached materials, **ACS Nano**, 10 (6), 6108, 2016.
8. B. Lancaster Farrell, V. Omoze Igenegbai, S. Linic*, A viewpoint on direct methane conversion to ethane and ethylene using oxidative coupling on solid catalysts, **ACS Catalysis**, 6 (7), 4340, 2016.
9. H Xin, S Linic*, Analyzing relationships between surface perturbations and local chemical reactivity of metal sites: alkali promotion of O2 dissociation on Ag (111), **Journal of Chemical Physics,** 144, 234704, 2016.
10. C. Boerigter, R. Campana, M. Morabito, S. Linic*, Evidence and implications of direct charge excitation as the dominant mechanism in plasmon-mediated photocatalysis, **Nature Communication**, 7, 2016.
11. B. Lancaster Farrell, S Linic*, Oxidative coupling of methane over mixed oxide catalysts designed for solid oxide membrane reactors, **Catalysis Science and Technology,** 6, 4370, 2016.

12. B. Lancaster Farrell, S Linic*, Direct electrochemical oxidation of ethanol on SOFCs: Improved carbon tolerance of Ni anode by alloying, **Applied Catalysis B: Environmental,** 183, 386, 2016.
13. T. Van Cleve, E. Gibara, S. Linic*, Electrochemical oxygen reduction reaction on Ag nanoparticles of different shapes, **ChemCatChem,** 8 (1), 256, 2016.
14. S Chang, P Fornasiero, TB Gunnoe, CW Jones, S Linic, R. M. Williams, H. Zhao, ACS Catalysis and the scope of papers sought in three catalysis subdisciplines: biocatalysis and enzymology, molecular catalysis for organic synthesis, and heterogeneous photocatalysis, **ACS Catalysis**, 6 (7), 4782, 2016
15. S. Linic*, U. Aslam, C. Boerigter, M. Morabito, Chemical reactions on plasmonic metal nanoparticles induced by hot electrons, **Nature Materials**, 14 (6), 567, 2015.
16. TM Yeh, RL Hockstad, S Linic*, PE Savage*, Hydrothermal decarboxylation of unsaturated fatty acids over PtSnx/C catalysts, **Fuel**, 156, 219, 2015.
17. A. Holewinski, J.C. Idrobo, S. Linic*, High performance Ag-Co alloy catalysts for electrochemical oxygen reduction, **Nature Chemistry,** 6 (9), 828, 2014.
18. T. Yeh, S. Linic*, P. E. Savage*, Deactivation of Pt catalysts during hydrothermal decarboxlation of butyric acid**, ACS Sustainable Chemistry and Engineering,** 2(10), 2399, 2014.
19. S. Linic*, P Christopher, H Xin, A Marimuthu, Catalytic and photocatalytic transformations on metal nanoparticles with targeted geometric and plasmonic properties, **Accounts of Chemical Research**, 46 (8), 1890, 2013.
20. M. Andiappan, S. Linic*, Tuning selectivity in propylene epoxidation by plasmon mediated photo-switching of Cu oxidation state, **Science**, 339, 1590, 2013.
21. A. Holewinski, H. Xin, E. Nikolla, S. Linic*, Identifying optimal active sites for heterogeneous catalysis by metal alloys based on molecular descriptors and electronic structure engineering, **Current Opinion in Chemical Engineering**, 2 (3), 312, 2013.
22. TM Yeh, JG Dickinson, A Franck, S Linic*, LT Thompson*, PE Savage*, Hydrothermal catalytic production of fuels and chemicals from aquatic biomass **Journal of Chemical Technology and Biotechnology** 88 (1), 13, 2013.
23. P. Christopher, H. Xin, M. Andiappan, S. Linic*, Singular characteristics and unique chemical bond activation mechanisms of photocatalytic reactions on plasmonic nanostructures, **Nature Materials, 11,** 1044, 2012.
24. A. Holewinski, S. Linic*, Elementary mechanisms in electrocatalysis: revisiting the ORR Tafel slope, **Journal of Electrochemical Society,** 159, H864, 2012.
25. M. Andiappan, P. Christopher, S. Linic*, Design of plasmonic platforms for selective molecular sensing based on surface enhanced Raman spectroscopy, **Journal of Physical Chemistry C**, 116, 9824, 2012.
26. H. Xin, A. Holewinski, N. Schweitzer, E. Nikolla, S. Linic*, Electronic structure engineering in heterogeneous catalysis: identifying novel alloy catalysts based on

rapid screening for materials with desired electronic properties, **Topics in Catalysis,** 55, 376, 2012.

27. H. Xin, A. Holewinski, S. Linic*, Predictive structure-reactivity models for rapid screening of Pt-based multimetallic electrocatalysts for the oxygen reduction reaction, **ACS Catalysis,** 2, 12, 2012.
28. S. Linic*, P. Christopher, D. B. Ingram, Plasmonic-metal nanostructures for efficient conversion of solar to chemical energy, **Nature Materials**, **10**, 911, 2011.
29. P. Christopher, H. Xin, S. Linic*, Visible light enhanced catalytic oxidation reactions on plasmonic silver nanostructures, **Nature Chemistry,** 3, 467, 2011.
30. D. B. Ingram, P. Christopher, J. Bauer, S. Linic*, Predictive model for the design of plasmonic metal/semiconductor composite photocatalysts, **ACS Catalysis**., 1, 1441, 2011.
31. D. B. Ingram, S. Linic*, Water splitting on composite plasmonic-metal/semiconductor photo-electrodes: evidence for selective plasmon induced formation of charge carriers near the semiconductor surface, **Journal of the American Chemical Society,** 133, 5202, 2011.
32. N. Schweitzer, J. Schaidle, E. Obiefune, X. Pan*, S. Linic*, L. Thompson*, High activity carbide supported catalysts for water gas shift, **Journal of the American Chemical Society,** 133, 2378, 2011.
33. S. Linic*, P. Christopher, Overcoming limitation for the design of selective heterogeneous catalysts by manipulating shape and size of catalytic particles: Epoxidation reactions on silver (Ag), **ChemCatChem,** 2, 1061, 2010.
34. H. Xin, S. Linic*, Exceptions to the d-band Model of Chemisorption on Metal Surfaces: the Dominant Role of Repulsion between Adsorbate States and Metal d-states, **Journal of Chemical Physics,** 132, 221101, 2010. (Selected to the 2010 Editors' Choice list, highlighting "notable JCP articles published in 2010 that present ground-breaking research")
35. P. Christopher, D. B. Ingram, S. Linic*, Enhancing photo-chemical activity of semiconductor nanoparticles with optically active Ag nano-structures: Photo-chemistry mediated by Ag surface plasmons, **Journal of Physical Chemistry C**, 114, 9173, 2010.
36. H. Xin, N. Schweitzer, E. Nikolla, Suljo Linic*, Developing relationships between the local chemical reactivity of alloy catalysts and physical Characteristics of Constituent Metal Elements, **Journal of Chemical Physics**, 132, 111101, 2010.
37. P. Christopher, S. Linic*, Shape and size specific chemistry of Ag nanostructures in catalytic ethylene epoxidation, **ChemCatChem,** 78, 2, 2010.
38. N. Schweitzer, H. Xin, E. Nikolla, Suljo Linic*, Establishing relationships between the geometric structure and chemical reactivity of alloy catalysts based on their measured electronic structure, **Topic in Catalysis,** 53, 348, 2010.

39. E. Nikolla, J. Schwank, S. Linic*, Improving the tolerance of Ni electro-catalysts to carbon-induced deactivation in direct electrochemical oxidation of hydrocarbons on SOFCs by alloying, **Journal of Electrochemical Society**, 156(11), B1312, 2009.
40. D. Ingram, S. Linic*, First-principles analysis of the activity of transition and noble metals in the direct utilization of hydrocarbon fuels at solid oxide fuel cell operating conditions, **Journal of Electrochemical Society**, **156**, B1457, 2009.
41. S. Laursen, S. Linic*, Geometric and electronic characteristics of active sites on TiO2-supported Au nano-catalysts: insights from first principles, **Physical Chemistry Chemical Physics**, 11, 11006, 2009.
42. S. Laursen, S. Linic, Strong chemical interactions between Au and off-stoichiometric defects on oxides as a possible source of chemical activity of nano-sized Au adsorbed on the oxide, **Journal of Physical Chemistry C**, 2009, 113, 6689–6693
43. E. Nikolla, J. Schwank, and S. Linic*, Measuring and relating the electronic structures of non-model supported catalytic materials to their performance, **Journal of the American Chemical Society,** 131 (7), 2747, 2009.
44. E. Nikolla, J. Schwank, and S. Linic*, Comparative study of the kinetics of methane steam reforming on supported Ni and Sn/Ni alloy catalysts: the impact of the formation of Ni alloy on chemistry, **Journal of Catalysis,** 263, 220, 2009.
45. J. Carlson, F. Henke, S. Linic*, M. Scheffler*, Two-step mechanism for low temperature oxidation of vacancies in graphene, **Physical Review Letters,** 102, 166104, 2009.
46. P. Christopher, S. Linic*, Engineering selectivity in heterogeneous catalysis: Ag nanowires as selective ethylene epoxidation catalysts, **Journal of the American Chemical Society**, 130, 34, 11264, 2008.
47. E. Nikolla, J. Schwank, and S. Linic*, Hydrocarbon steam reforming on Ni alloys at solid oxide fuel cell operating conditions, **Catalysis Today,** 136, 243, 2008.
48. E. Nikolla, J. Schwank, S. Linic*, Promotion of the long-term stability of reforming Ni catalysts by surface alloying, **Journal of Catalysis**, 250(1), 85, 2007.
49. J. Mukherjee, S. Linic*, First principles investigations of electrochemical oxidation of hydrogen at solid oxide fuel cell operating conditions, **Journal of the Electrochemical Society**, 154(9), B919, 2007.
50. E. Nikolla, A. Holewinski, J. Schwank, S. Linic*, Controlling carbon surface chemistry by alloying: carbon tolerant reforming catalyst, **Journal of the American Chemical Society,** 128(35); 11354, 2006**.**
51. S. Laursen, S. Linic*, Oxidation catalysis by oxide-supported Au nanostructures: the role of supports and the effect of external conditions, **Physical Review Letters,** 97 (2), 026101, 2006.

52. M. Enever, S. Linic, K. Uffalussy, J.M. Vohs and M. A. Barteau*, "Synthesis, structure and reactions of stable oxametallacycles from styrene oxide on Ag(111)", **Journal of Physical Chemistry B**, 2005, 109, 2227.
53. S. Linic*, M.A. Barteau*, On the mechanism of Cs promotion in ethylene epoxidation on Ag, **Journal of the American Chemical Society**, 126, 8086, 2004.
54. S. Linic, H. Piao, K. Adib, M. A. Barteau*, Ethylene epoxidation on Ag: identification of the crucial surface intermediate by experimental and theoretical investigation of its electronic structure, **Angewandte Chemie International Edition**, 43, 2918, 2004.
55. S. Linic, J. Jankowiak, M.A. Barteau*, Selectivity driven design of bimetallic ethylene epoxidation catalysts from first principles, **Journal of Catalysis (Priority Communication),** 224, 489, 2004.
56. S. Linic, M. A. Barteau*, Construction of a reaction coordinate and a microkinetic model for ethylene epoxidation on silver from DFT calculations and surface science experiments, **Journal of Catalysis**, 214, 200, 2003.
57. S. Linic, M. A. Barteau*, Formation of a stable surface oxametallacycle that produces ethylene oxide, **Journal of the American Chemical Society**, 124, 310, 2002
58. S. Linic, M. A. Barteau, Control of ethylene epoxidation selectivity by surface oxametallacycle", **Journal of the American Chemical Society**, 125, 4034, 2003.
59. S. Linic, J.W. Medlin, M.A. Barteau, Synthesis of oxametallacycles from 2-iodoethanol on Ag(111) and the structure dependence of their reactivity, **Langmuir**, 18, 5197, 2002.

Invited book chapters and publications:

1. E. Nikolla, S. Linic*, *" From Molecular Insights to Novel Catalysts", Chapter 13 in Model Systems in Catalysis: Single Crystals to Supported Enzyme Mimics, ed by* R. Rioux, Springer, pp. 275-292, 2010.
2. S. Linic*, M. A. Barteau*, *"Heterogeneous Catalysis of Alkene Epoxidation," Chapter 14.11.6 in the Handbook of Heterogeneous Catalysis, 2nd edition,* volume 7, G. Ertl, H. Knözinger, F. Schüth, J. Weitkamp (eds.), Wiley-VCH, pp. 3448-3464, 2008.

Patents

1. **UM 4082: Highly Selective Catalysts for Epoxidation of Ethylene to Form Ethylene Oxide. US Patent No. 7,820,840**
2. **UM 4414: Nanostructures for Photo-Catalytic Applications. US Patent Application No. 12/800,294**
3. **UM 4719: Plasmon Driven Chemical Reaction. Provisional Patent Application No. 61/346,771**

Invited and Keynote Lectures (in reverse chronological order, keynote lectures are denoted)

1. Workshop on Fundamentals of Catalysis, "Analysis of the mechanism of electrochemical oxygen reduction and development of Ag- and Pt-alloy catalysts for low temperature fuel cells", Munich, Germany, 11/2017.
2. AiChe Annual Meeting, celebrating Prof. Israel Wachs AiChe R. H. Wilhelm Award in Chemical Reaction Engineering, "Analysis of the mechanism of electrochemical oxygen reduction and development of Ag- and Pt-alloy catalysts for low temperature fuel cells", Minneapolis, MN, 11/2017.
3. CS3 Summit at Dalian (China), "The CO2 problem and potential catalytic solutions", Dalian, China, 09/2017
4. Emmett Award Lecture, Biannual meeting North American Catalysis Society, "Catalysis on plasmonic nanostructures", Denver, CO, 7/2017.
5. ACS Annual Meeting, "Analysis of the mechanism of electrochemical oxygen reduction and development of Ag- and Pt-alloy catalysts for low temperature fuel cells", Washington DC, 8/2017.
6. Gordon Research Conference on Plasmon Energy Transfer, "Photocatalysis on plasmonic metal nanostructures", The Chinese University of Hong Kong, Hong Kong, scheduled 7/2017.
7. Pittcon Conference of Analytical Chemistry NH, "Photocatalysis on plasmonic metal nanostructures", Chicago, IL, 3/2017.
8. MRS Annual Meeting, "Photocatalysis on plasmonic metal nanostructures: known knowns and known unknowns about hot electron distribution", Phoenix, AZ, 4/2017.
9. MRS Annual Meeting, "Analysis of the mechanism of electrochemical oxygen reduction and development of Ag- and Pt-alloy catalysts for low temperature fuel cells", Phoenix, AZ, 4/2017.
10. 4th TYC – Toucon Energy Materials Workshop, "Analysis of the mechanism of electrochemical oxygen reduction and development of Ag- and Pt-alloy catalysts for low temperature fuel cells" at King's College London, 12/2016.
11. DOE Conference on Scientific Opportunities for Ultrafast Hard X-rays at High Repetition Rate: An Energy Upgrade of LCLS-II "Catalysis on metals", SLAC at Stanford University, 9/2016
12. Gordon Research Conference on Catalysis, "Analysis of the mechanism of electrochemical oxygen reduction and development of Ag- and Pt-alloy catalysts for low temperature fuel cells", Colby-Sawyer, NH, 6/2016.
13. DOE-BES Contractor's Meeting, "Analysis of the mechanism of electrochemical oxygen reduction and development of Ag- and Pt-alloy catalysts for low temperature fuel cells", Washington, MI, 6/2016.
14. Michigan Catalysis Society Annual symposium, "Analysis of the mechanism of electrochemical oxygen reduction and development of Ag- and Pt-alloy catalysts for low temperature fuel cells", Midland, NH, 5/2016.

15. ACS Annual Meeting, “Analysis of the mechanism of electrochemical oxygen reduction and development of Ag- and Pt-alloy catalysts for low temperature fuel cells”, San Diego, CA, 3/2016.
16. ACS Annual Meeting, “Photochemical reactions on plasmonic metal nanostructures”; San Diego, CA, 3/2016.
17. ACS Pacific-Chem meeting, “Photochemical reactions on plasmonic metal nanostructures”; Honolulu, HI, 12/2015.
18. ACS Pacific-Chem meeting, “Electrochemical ORR on metal alloys”; Honolulu, HI, 12/2015.
19. Symposium on Photonics at Boston University, “Photochemical reactions on plasmonic metal nanostructures: known knowns and known unknowns about hot carrier distribution”, Boston, MA, 12/2015.
20. AVS annual meeting, “Photo-chemical reactions on plasmonic metal nanoparticles”, San Jose, CA, 10/2015.
21. North American Catalytic Society meeting, “Photochemical reaction on plasmonic metal nanoparticles”, Pittsburgh, PA, 06/2015.
22. Southwest Catalysis Society annual meeting, “Analysis of the Mechanism of Electrochemical Oxygen Reduction and Development of Ag- and Pt-alloy Catalysts for Low Temperature Fuel Cells”, Houston, TX, 04/2015.
23. MRS annual meeting, “Photo-chemical reactions on plasmonic metal nanoparticles”, San Francisco, CA, 04/2015.
24. ACS annual meeting, “Analysis of the Mechanism of Electrochemical Oxygen Reduction and Development of Ag- and Pt-alloy Catalysts for Low Temperature Fuel Cells”, celebration of Prof. Jingguang Chen’s ACS Olah award, Denver, CO, 03/2015.
25. ACS annual meeting, “Conversion of solar into chemical energy on plasmonic metal nanostructures”, Denver, CO, 03/2015.
26. ACS annual meeting, “Microscopic mechanisms of plasmon-mediated charge transfer in adsorbates on metal nanoparticles and its chemical consequences”, Denver, CO, 03/2015.
27. Gordon Research Conference on Reactions on Surfaces, “Chemical reaction on plasmonic metal nanoparticles induced by energetic electrons”, Ventura, CA, 02/2015.
28. MRS annual meeting, “Plasmonic metal nanoparticles in the conversion of solar to chemical energy”, Boston, MA, 11/2014.
29. DIET 14: Dynamics, Interactions and Electronic Transitions at Surfaces “Chemical reaction on plasmonic metal nanoparticles induced by energetic electrons”, San Jose, CA, 10/2014.

30. ACS annual meeting, “Controlling electron- and phonon-driven chemical transformations on metals”, award lecture celebrating Suljo Linic’s ACS catalysis lectureship award, San Francisco, CA, 08/2014.
31. ACS annual meeting, “Photo-chemical reactions on plasmonic metal nanostructures”, San Francisco, CA, (award lecture celebrating Suljo Linic’s ACS catalysis lectureship award), 08/2014.
32. Gordon Research Conference on Plasmonics, “Chemical reaction on plasmonic metal nanoparticles induced by energetic electrons”, New Hampshire, 07/2014.
33. C1P Catalysis from first principles workshop, “Using molecular understanding of electrochemical oxygen reduction reaction to design novel alloy electro-catalysts”, Ulm, Germany, 05/2014.
34. Philadelphia Catalysis Society annual meeting, “Analysis of the Mechanism of Electrochemical Oxygen Reduction and Development of Ag- and Pt-alloy Catalysts for Low Temperature Fuel Cells”, Philadelphia, PA, 05/2014.
35. ACS annual meeting, “Molecular mechanism of electrochemical oxygen reduction reaction”, Dallas, TX, 03/2014.
36. ACS annual meeting, “Conversion of solar into chemical energy on plasmonic metal nanostructures”, Dallas, TX, 03/2014.
37. ACS annual meeting, “Modelling molecular processes taking place on optically excited plasmonic metal nanoparticles”, Dallas, TX, 03/2014.
38. APS annual meeting, “Conversion of solar into chemical energy on plasmonic metal nanostructures”, Denver, CO, 03/2014.
39. ACS annual meeting, “Developing molecular mechanism for oxygen reduction reaction and using it to design Pt-free electro-catalysts”, Indianapolis, IN, 08/2013.
40. ACS annual meeting, “Catalysis on optically excited plasmonic nano-particles of noble metals (Ag)”, Indianapolis, IN, 08/2013.
41. ACS annual meeting, “Theoretical models for molecular processes taking place on optically excited plasmonic metal nanoparticles”, Indianapolis, IN, 08/2013.
42. ACS annual meeting, “Designing catalysts based on their electronic structure fingerprints: Predictive structure-performance models for metal alloy catalysts”, Indianapolis, IN, 08/2013.
43. ACS Colloids and Surface Science Meeting, “Photochemistry on metals”, Riverside, CA 06/2013.
44. Workshop on catalysis on plasmonic metals, “Catalysis on optically excited plasmonic nano-particles of noble metals (Ag)”, Rice University, TX, 06/2013.
45. DOE Contractors meeting, “Catalysis on optically excited plasmonic nano-particles of noble metals (Ag)”, Annapolis, MD, 06/2013.

46. IPAM workshop, “Design of targeted nanostructures for efficient and environmentally friendly catalysis and photo-catalysis”, Los Angeles, CA, 05/2013.
47. ACS annual meeting, “Developing molecular mechanism for oxygen reduction reaction and using it to design Pt-free electro-catalysts”, New Orleans, 04/2013.
48. ACS annual meeting, “Catalysis on optically excited plasmonic nano-particles of noble metals (Ag)”, New Orleans, 04/2013.
49. International Congress on Nano Meta Materials (NANOMETA) organized by European Physics Society, “Chemical transformation on optically excited plasmonic nanoparticles”, Seefeld, Austria, 01/2013.
50. Symposia celebrating 60th birthday of Prof. Jens. K. Norskov at Stanford University, “Photo-reaction on plamonic metal nanostructures”, Stanford University, 09/2012.
51. The 2012 Summer School at Danish Technical University, “Computational Heterogeneous Catalysis: Surface Chemistry of Alloys”, Lungby, Denmark, 08/2012.
52. Workshop on Heterogeneous Catalysis, Surface Science and Energy Research, “Direct photo-catalysis on optically excited plasmonic metal nanostructures”, Georg-August University of Göttingen in Göttingen, Germany. July, 2012.
53. The 7th Chemical Engineering Conference for Collaborative Research in Eastern Mediterranean Countries (EMCC7), “Photo-catalysis on Plasmonic Metal/Semiconductor Composites: H2O splitting using visible light”, Corfu, Greece, 04/2012.
54. Catalysis Club of Chicago, “Designing catalysts based on their spectroscopic fingerprints: Relationships between measured local geometric and electronic structure of alloy catalysts and their chemical reactivity”, Chicago, IL, 01/2012.
55. Entretiens Jacques Cartier Colloquium on 21st Century Catalysis Science and Applications, “Design of Targeted Nanostructures for Efficient and Environmentally Friendly Catalysis and Photocatalysis”, Ottawa, Canada, 11/2011.
56. NSF Nanoscale Science and Engineering Grantee Conference, “Plasmonic nanostructures in photochemistry”, Washington DC, 11/2011.
57. AIChE annual meeting, “Design of energy efficient and environmentally friendly nanomaterials for catalysis and photo-catalytic solar fuel production”, award lecture for nanoscience and engineering forum young investigator award, Minneapolis, MN, 10/ 2011.
58. ACS annual meeting, “Photo-catalysis on plasmonic metallic nanostructures and plasmonic nanostructure/semiconductor composites”, Denver, CO, 8/2011.
59. ACS Annual Meeting, “Improving carbon tolerance of Ni heterogeneous (electro)catalysts by alloying: catalysts design guided by first principles calculations”, Denver, CO, 8/2011.

60. ACS Annual Meeting, “Designing catalysts based on their spectroscopic fingerprints: relationships between measured local geometric and electronic structure of alloy catalysts and their chemical reactivity”, Denver, CO, 08/2011.
61. C1P Network of Excellence in Computational Catalysis, “Development of predictive structure-performance relationships for rational design of multi-component catalytic materials”, Copenhagen, Denmark, 05/2011.
62. Workshop on New Trends of Computational Chemistry in Industry Applications), “Development of predictive structure-performance relationships for rational design of multi-component catalytic materials”, Barcelona, Spain, 05/2011.
63. Workshop on Materials Design in Chemical Compound Space, Institute for Pure and Applied Mathematics at UCLA, "Using electronic structure descriptors to identify new catalysts", Los Angeles, CA, 05/2011
64. Symposium on Catalysis Science at the Dawn of the Twenty-First Century, “Exploiting Nanotechnology for Heterogeneous Catalysis: Shaped Metallic Nanostructures as Selective Catalysts and for Characterization of Surface Chemical Reactions”, Lyon, France, 11/2010.
65. Catalysis Society of New York (NYC), “Design of materials for energy conversion from first principles: metallic nanoparticles of targeted shapes as highly selective catalysts, photo-catalysts, and platforms for chemical characterization”, Rutherford, NJ, 10/2010.
66. ACS Annual Meeting, “Enhancing Photo-chemical activity of semiconductor nanoparticles with optically active metallic nano-structures: Photo-chemistry mediated by surface plasmons”, Boston, MA, 08/2010
67. University of Delaware, Department of Chemical Engineering, “Design of materials for energy conversion from first principles: metallic nanoparticles of targeted shapes as highly selective catalysts, photo-catalysts, and platforms for chemical characterization”, Newark, DE, 05/2010.
68. ACS annual meeting, “Well defined, highly uniform, targeted nano-structures as highly selective heterogeneous catalysts, photo-catalysts and characterization tools”, Symposium organized in honor of the recipient of the 2010 Ipatieff Prize Prof. Christopher Jones, San Francisco, 03/2010
69. Annual AVS meetings, “Catalysis on supported metal nano-clusters”, organized by Donna Chen, San Jose, CA, 11/2009
70. Philadelphia Catalysis Society Annual Symposium, “Targeted metallic nanostructures as heterogeneous catalysis, electro-catalysts, and platforms for chemical characterization”, Newark, DE, 5/2009
71. ACS Unilever Award Lecture, “Well defined, highly uniform, targeted nano-structures as highly selective heterogeneous catalysts, photo-catalysts and characterization tools”, ACS Colloids and Surface Science Meeting, New York, NY, 06/2009.

72. ACS Colloids and Surface Science Meeting, “Measuring the electronic structure of metal alloys and relating it to their performance”, New York, NY, 06/2009.
73. ACS Annual Meeting, “Measuring the electronic structure of metal alloys and relating it to their performance”, symposium of the convergence between theory and experiment in surface chemistry and heterogeneous catalysis organized by Prof. John Yates in honor of Prof. Jens Norskov, the recipient of the 2009 Gabor Somorjai award for creative research in catalysis, ACS meeting, Salt Lake City, 04/2009.
74. Gordon Research Conference on Catalysis, "Design of heterogeneous (Electro)catalysts guided by molecular insights”, Colby-Sawyer, NH, 06/2008.
75. International Symposium on Creation and Control of Advanced Selective Catalysis Celebrating the 50th Anniversary of Catalysis Society of Japan, “(Electro)catalyst design guided by molecular insights: controlling carbon poisoning of Ni (electro)catalysts by alloying", Kyoto, Japan, 07/2008.
76. Transatlantic Frontiers in Chemistry Symposium, “Catalysis at nano length scales”, England, 08/2008.
77. DOE NETL symposium, “Hybrid theoretical/experimental studies aimed at the development of carbon- and sulfur-tolerant reforming catalysts”, Pittsburgh, PA, 04/2008.
78. ACS annual meeting, “Controlling carbon chemistry on Ni surfaces by alloying: First principles approaches toward carbon-tolerant alloy catalysts and electrocatalysts”, New Orleans, 04/2008
79. ACS Colloids and Surface Science Meeting: “Surface chemistry of carbon on Ni and Ni-alloys: carbon-tolerant hydrocarbon reforming catalysts from molecular insights”, Newark, DE, 06/2007.
80. Ψ_K network of excellence workshop on novel materials from first principles, “Selectivity in Heterogeneous Ethylene Epoxidation on Ag: From Fundamental Studies to Rational Catalyst Design”, workshop organized by Jens K. Norskov, Matthias Scheffler and Juergen Hafner, Meeting, Copenhagen, Denmark, 06/2004.
81. ACS Colloids and Surface Science Meeting, “Heterogeneous catalysis by gold: DFT and ab initio thermodynamic investigations of Au oxidation state and the role of oxide supports”, Boulder, CO, 06/2006.
82. ACS annual meeting, “Controlling carbon chemistry on Ni surfaces by the surface alloying: An ab-initio approach towards carbon-tolerant alloy catalysts for chemical energy conversion”, Boston, 08/2007
83. Ford Motor Company, “First principles approaches to hydrogen economy and sustainability”, Dearborn, MI, 10/2004.
84. Michigan Catalyst Society, “Ethylene epoxidation on Au: First-principles design of more selective catalysts”, Livonia, MI, 11/2004
85. Delphi Automotive Company, “Ethylene epoxidation on Au: First-principles design of more selective catalysts”, Flint, MI, 4/2005

86. Max Planck Society Meeting, "Ethylene epoxidation on Au: First-principles design of more selective catalysts", Straslund, Germany, 2/2004
87. Fritz Haber Institute, "Ethylene epoxidation on Au: First-principles design of more selective catalysts", Berlin, Germany, 9/2003

Invited Lectures at Universities (in reverse chronological order, keynote lectures are denoted)

1. Tulane University, New Orleans, "Photo-chemical reactions on plasmonic metal nanostructures", Chemical Engineering Department, 12/2017
2. Dumas Lecture at Virginia Tech University, "Photo-chemical reactions on plasmonic metal nanostructures", Chemical Engineering Department, 11/2017
3. Yale University, New Heaven, "Electrochemical Oxygen Reduction: Kinetic analysis and the development of Ag- and Pt-alloy catalysts for low temperature fuel cells", Chemistry Department, 1/2017.
4. Carnegie Mellow University, Pittsburgh, "Electrochemical Oxygen Reduction: Kinetic analysis and the development of Ag- and Pt-alloy catalysts for low temperature fuel cells", Department of Chemical Engineering, 1/2017.
5. Tianjin University (China), "Photo-chemical reactions on plasmonic metal nanostructures", Chemical Engineering Department, 9/2016
6. University of Minnesota, Minneapolis, "Photo-chemical reactions on plasmonic metal nanostructures", Chemistry Department, 11/2016.
7. Rutgers University, New Brunswick, "Photo-chemical reactions on plasmonic metal nanostructures", Chemical Engineering Department, 4/2016
8. Exxon Mobil, "Oxidative coupling of methane", Clinton, New Jersey, 9/2016
9. Technical University, Munich (Germany), "Design of targeted nanostructures for efficient and environmentally friendly catalysis and photo-catalysis", Chemistry Department, Munich (Germany), 01/2016.
10. Iowa State University, Ames, "Electrochemical Oxygen Reduction: Kinetic analysis and the development of Ag- and Pt-alloy catalysts for low temperature fuel cells", Chemical Engineering Department, 11/2015.
11. University of Washington, Seattle, "Photo-chemical reactions on plasmonic metal nanostructures", Nanoscience and Technology Institute 10/2015.
12. University of California, Berkely, " Electrochemical Oxygen Reduction: Kinetic analysis and the development of Ag- and Pt-alloy catalysts for low temperature fuel cells", Chemical Engineering Department, 03/2015.
13. McGill University, Montreal (Canada), "Photo-chemical reactions on plasmonic metal nanostructures", Chemistry Department, 03/2015.
14. Exxon Mobil, "Oxidative coupling of methane", Clinton, New Jersey, 12/2015
15. Sabic corporation "Reactions on metals", Houston, TX, 4/2015

16. Technical University, Munich (Germany), "Electro-catalysis of oxygen reduction reaction (ORR)", Chemistry Department, Munich (Germany), 01/2015.
17. University of California, Riverside, "Design of targeted nanostructures for efficient and environmentally friendly catalysis and photo-catalysis", Materials Science Department, 12/2014.
18. University of Pittsburgh, "Design of targeted nanostructures for efficient and environmentally friendly catalysis and photo-catalysis", Chemistry Department, 11/2014.
19. University of Toronto, "Design of targeted nanostructures for efficient and environmentally friendly catalysis and photo-catalysis", Department of Chemical Engineering, ON (Canada), 01/2014
20. Bawling Green University, "Design of targeted nanostructures for efficient and environmentally friendly catalysis and photo-catalysis", Department of Chemistry 01/2014
21. Exxon Mobil, "Relating Experimental to Theoretical Studies in Heterogeneous Catalysis", New Jersey, 12/2013
22. Vanderbildt University, "Design of targeted nanostructures for efficient and environmentally friendly catalysis and photo-catalysis", Department of Chemical Engineering, TN, 12/2013
23. Georgia Tech University, "Design of targeted nanostructures for efficient and environmentally friendly catalysis and photo-catalysis", Department of Chemical Engineering, GA, 11/2013
24. Notre Dame University, Thiel Lectureship: "Design of targeted nanostructures for efficient and environmentally friendly catalysis and photo-catalysis", Department of Chemical Engineering, IN, 09/2013
25. National Renewable Energy Laboratory, Developing molecular mechanism for oxygen reduction reaction and using it to design Pt-free electro-catalysts, Golden, CO, 04/2013
26. University of Colorado, Catalysis on optically excited plasmonic nano-particles of noble metals (Ag), Department of Chemical Engineering, Boulder, CO, 01/2013
27. National Energy Technology Laboratory, Catalysis of Fuel Cells, Pittsburgh, PA, 02/2013
28. Columbia University, Catalysis on optically excited plasmonic nano-particles of noble metals (Ag), Department of Chemical Engineering, New York City, NY, 01/2013
29. University of Pittsburgh, Nano-scale solutions in catalysis and photo-catalysis, Department of Chemical Engineering, 10/2012
30. RPI, Nano-scale solutions in catalysis and photo-catalysis, Department of Chemical Engin University of Pittsburgh, Title: Nano-scale solutions in catalysis and photo-catalysis, Department of Chemical Engineering, 10/2012

31. University of Southern Florida, Nano-scale solutions in catalysis and photo-catalysis, Department of Chemical Engineering, 10/2012
32. Wayne State University (Detroit, MI), Nano-scale solutions in catalysis and photo-catalysis, Department of Chemical Engineering, 11/2011.
33. Duke University (NC), Nano-scale solutions in catalysis and photo-catalysis, Department of Chemistry, 11/2011. Ohio State University (Columbus, OH), Title: Nano-scale solutions in catalysis and photo-catalysis, Department of Chemical Engineering, April 2011.
34. University of California (Santa Barbara), Department of Chemical Engineering, "Nano-scale solutions in catalysis and photo-catalysis: materials for efficient conversion of solar to chemical energy", March, 2011.
35. Stanford University, Department of Chemical Engineering,"Nano-scale solutions in catalysis and photo-catalysis: materials for efficient conversion of solar to chemical energy", February, 2011.
36. University of Alabama (Tuscaloosa, AL), Nano-scale solutions in catalysis and photo-catalysis, Department of Chemical Engineering, April 2011.
37. University of Washington (Seattle), Center for Nanotechnology,"Nano-scale solutions in catalysis and photo-catalysis: materials for efficient conversion of solar to chemical energy", January, 2011.
38. Washington University (St. Louis), Nano-scale solutions in catalysis and photo-catalysis, December 2010.
39. University of Toledo, Department of Chemical Engineering,"Nano-scale solutions in catalysis and photo-catalysis: materials for efficient conversion of solar to chemical energy", October, 2010.
40. Penn State University, Department of Chemical Engineering,"Nano-scale solutions in catalysis and photo-catalysis: materials for efficient conversion of solar to chemical energy", September, 2010.
41. Massachusetts Institute of Technology, Department of Chemical Engineering, "Design of materials for energy conversion from first principles: metallic nanoparticles of targeted shapes as highly selective catalysis and photo-catalysts", March 2010
42. Technical University of Denmark, Physics Department,"Design of materials for energy conversion from first principles: metallic nanoparticles of targeted shapes as highly selective catalysis and photo-catalysts", Lyngby (Denmark) January 2010.
43. University of Colorado, "Design of heterogeneous (Electro)catalysts guided by molecular insights", Boulder, January 2008.
44. Colorado School of Mines, "Design of heterogeneous (Electro)catalysts guided by molecular insights", Golden, January 2008.

45. University of Wisconsin, Department of Chemical and Biological Engineering,"Molecular approaches to heterogeneous catalysis", November, 2009
46. Lindsay lectureship at the Department of Chemical Engineering at Texas A&M University, "Design of heterogeneous (Electro)catalysts guided by molecular insights", College Station, November 2008.
47. The City College of New York, Department of Chemical Engineering, "Design of heterogeneous (Electro)catalysts guided by molecular insights", New York City, February 2008.
48. Purdue University,"Ab-initio approach to heterogeneous catalysis", Purdue University, Indiana, October, 2005
49. Michigan Catalysis Society Annual Symposium,"From surface chemistry to novel heterogeneous catalysts", Ann Arbor, Michigan, April 2005.
50. Case Western Reserve University, Ethylene epoxidation on Au: First-principles design of more selective catalysts, Department of Chemical Engineering, Cleveland, OH, 2003
51. University of California Los Angeles, Ethylene epoxidation on Au: First-principles design of more selective catalysts, Department of Chemical Engineering, Los Angeles, CA, 2003
52. University of Michigan, Ethylene epoxidation on Au: First-principles design of more selective catalysts, Department of Chemical Engineering, Ann Arbor, MI, 2004

SERVICE

External Professional Activities (in reverse chronological order)

1. Chair of the ACS U.S. delegation at the 2017 Chemical Sciences and Society (CS3) Summit in Dalian, China tasked with the development of a long term NSF and ACS strategy in the field of photo-catalysts and photonics
2. Associate Editor, ACS Catalysis since 09/2014 -
3. Member of the organizing committee for the International Congress on Catalysis to be held in 2020. Worked with multiple colleagues on putting an application for the hosting of the meeting. Application was positively reviewed and the meeting will take place in San Diego in 2020.
4. Invited member of the DOE – BES task team charged to develop long-term plan for the basic research in the development of high energy electron source at SLAC-Stanford, 09/2016
5. Invited member of the DOE task team charged to develop long-term plan for the basic research in the development of material characterization infrastructure, 06/2016
6. Participant of a workshop on the future of hydrocarbon feedstock, National Academies, 03/2016
7. Reviewer for DOE – EFRC program. Reviewed three EFRC centers in DC, 2/2016

8. Reviewer for NSF, reviewer 28 proposals at the NSF panel, 02/2016
9. Member of the scientific committee for the 24th International Symposium on Chemical Reaction Engineering (ISCRE 24), to be held in Minneapolis on June 12-15, 2016.
10. On-site DOE reviewer for the surface science and computational catalysis program at SLAC National Accelerator Laboratory at Stanford, 08/2013.
11. Member of the committee to select new editor-in-chief for the AICHE journal, 2010-2011
12. Coordinator for the Kokes Student Travel Award for North American Catalysis Society meeting in Detroit (06/2011), Obtained funding for the award from NSF and DOE, selected awardees among 204 applicants, and coordinated the process.
13. Editorial Advisory Board for ACS Catalysis, 2010 -
14. Editorial Advisory Board for AICHE journal, 2010 -
15. Elected board member for AIChE Divison 20 (Catalysis and Reaction Engineering)
16. On-site reviewer for the surface science, nanoscience, and catalysis programs at Pacific Northwest National Laboratory (PNNL), March, 2009
17. Invited member of the DOE task team charged to develop long-term plan for the basic energy research (August 2007). Along with four other faculty members drafted a document describing the grand challenges in the basic energy research.
18. Programming Chair, AIChE Division 20c, 2007-2008
19. Programming Vice-Chair, AIChE Division 20c, 2006-2007
20. Chair, Michigan Catalysis Society, 2009-20010
21. President, Michigan Catalysis Society, 2008-2009
22. Vice-president, Michigan Catalysis Society, 2007-2008
23. Treasurer, Michigan Catalysis Society, 2006-2007
24. Memberships**:** American Institute of Chemical Engineers (AIChE), American Chemical Society (ACS), North American catalysis Society, Tau Beta Pi National Engineering Honor Society, Phi Eta Sigma National Honor Society