

## ELLEN R. FISHER

Assistant Vice President for Strategic Initiatives  
Office of the Vice President for Research  
Professor of Chemistry

### EDUCATION

- 1991-1993 Postdoctoral Associate, Sandia National Laboratories, Albuquerque, NM
- 1991 University of Utah, Ph.D. in Physical-Analytical Chemistry  
Research Advisor: Prof. Peter B. Armentrout
- 1986 Texas Lutheran College (now University), B.S. in Chemistry/ Mathematics (double major), Summa Cum Laude

### PROFESSIONAL APPOINTMENTS

- 2017-present Assistant Vice President for Strategic Initiatives, Office of the Vice President for Research
- 2015-present University Research Integrity Officer (RIO)
- 2015-2017 Founding Director, School of Advanced Materials Discovery (SAMD)
- 2014-2017 Senior Faculty Advisor to the Vice President for Research (VPR)
- 2009-2014 Department Chair, Chemistry, Colorado State University
- 2006-2009 Associate Department Chair, Chemistry, Colorado State University
- 2004-present Professor of Chemistry, Colorado State University
- 1999-2003 Assistant Department Chair, Colorado State University
- 1999-2004 Associate Professor of Chemistry, Colorado State University
- 1993-1999 Assistant Professor of Chemistry, Colorado State University

### AWARDS AND HONORS

- 2018 Pennock Award for Distinguished Service, CSU
- 2015 Fellow, American Chemical Society (ACS)
- 2011 Fellow, American Association for the Advancement of Science (AAAS)
- 2010 Scholarship Impact Award, CSU
- 2009-2012 Professor Laureate, College of Natural Sciences, CSU
- 2008 Margaret B. Hazaleus Award for Empowering Women, CSU
- 2005 Fellow, American Vacuum Society (AVS)
- 2001 Natural Sciences Award for Mentoring Undergraduate Research, CSU
- 1998-2003 Camille Dreyfus Teacher-Scholar
- 1996-1997 Jack E. Cermack Outstanding Graduate Advisor Award, CSU
- 1995-1998 Office of Naval Research Young Investigator Award
- 1995 National Science Foundation CAREER Award
- 1991 Cheves Walling Outstanding Graduate Research Prize, U. Utah

### PROFESSIONAL ACTIVITIES

- 2016-2018 Director, American Vacuum Society (AVS, elected position)
- 2014-present Executive Editor, *ACS Applied Materials & Interfaces*
- 2012 Visiting Professor, Dipartimento di Chimica, Universita di Bari, Bari Italy
- 2012-2014 Trustee, American Vacuum Society (elected position); Chair 2014

2009-2014 Associate Editor, *ACS-Applied Materials and Interfaces*  
 2008-2009 Editorial Advisory Board, *ACS-Applied Materials and Interfaces*  
 2007-2009 Director, NSF-sponsored Research Experiences for Undergraduates (REU) program in Chemistry  
 2007-2010 Co-Director, Women in Natural Sciences (WINS) Group, CSU  
 2007-2010 Editorial Board, *Journal of Vacuum Science and Technology A & B*  
 2005-2008 Board of Directors, International Plasma Chemistry Society  
 2005-2018 Editorial Board, *Plasma Chemistry and Plasma Processing*  
 2003 Chair, Plasma Science and Technology Division (PSTD) of the AVS  
 2004-2016 Editorial Board, *Plasma Processes and Polymers*  
 2000-2006 Co-Director, NSF-sponsored REU program in Chemistry  
 1999-2003 American Vacuum Society (AVS) Program Committee  
 1999-2004 Editorial Board, *Plasmas and Polymers*  
 1998-2001 Student Affairs Coordinator; Executive Committee Member, PSTD–AVS  
 1997-1999 Executive Committee, Rocky Mountain Region of the AVS  
 1995-1999 Co-Organizer, Rocky Mountain Symposium on Photons and Chemistry  
 1993-1999 Younger Chemists Committee (YCC) of the ACS

### **ACADEMIC SERVICE and LEADERSHIP (highlights)**

President's Council on Culture (2020-present)  
Chair, President's Standing Committee on the Status of Women Faculty (2017-2018)  
Chair, Vice President for Research (VPR) Faculty Advisory Committee (VPAC) (2015-present)  
Chair, University Chemical Safety and Compliance Committee (CSCC) (2014-present)  
 President's Standing Committee on the Status of Women Faculty, CNS representative (2014-2016)  
Chair, Central Instrument Facility Advisory Board (2014-2017)  
Chair, Department Chair Search Committee, Department of Psychology (2011)  
Chair, Department of Chemistry (2009-2014)  
Chair, Provost Committee on Responsible Conduct in Research (RCR) (2009-2010)  
 Associate Chair, Department of Chemistry (2006-2009)  
 Department of Chemistry Executive Committee (2006-2014)  
 Faculty Council Committee on Scholarship, Research and Graduate Education (CoSRGE) (2005-2009)  
Chair, Graduate Recruiting Committee, Department of Chemistry (2004-2006)  
 Women's Studies Advisory Board (2003-2006)  
 College Teaching Awards Committee, College of Natural Sciences (CNS) (2002-2009)  
Chair, Materials Chemistry Group, Department of Chemistry (2001-2009)  
 Advisor to Women in Chemistry Group, Department of Chemistry (1997-2014)  
 College Curriculum Committee, CNS (1999-2003)  
 Assistant Department Chair (1999-2003)  
Chair, Graduate Operations Committee, Department of Chemistry (1997-2003)  
 Graduate Operations Committee, Member, Department of Chemistry (1994-1997)  
Chair, Faculty Search Committee, Department of Chemistry (2002)  
 Faculty Search Committee Member, Department of Chemistry (1994, 1996, 1998, 2004, 2008)

### **ADMINISTRATIVE ACTIVITIES and ACCOMPLISHMENTS (highlights)**

#### **Faculty, Graduate Student, Research & Curricular Improvements**

- Co-led Science of Team Science (SciTS) team to assess and study formation and nurturing of multidisciplinary research teams; developed team science programing for OVPR Catalyst for Innovative Partnerships (CIP) programs
- Created VPR-sponsored, university-wide Graduate Fellows Program, including organizing the Three

Minute Challenge Competition; first cohort in the 2016-2017 AY, offering fellowship and travel funding for outstanding graduate students

- Led efforts to reorganize Programs of Research and Scholarly Excellence (PRSE), including writing requests for proposals (RFPs) for both the designation and additional funding sources; interfaced with faculty directors of PRSE programs
- Chaired VPR faculty advisory committee (VPAC) and championed efforts to examine how CSU's technology transfer office interfaced with faculty and created partnership with faculty council efforts for re-envisioning the university from a faculty perspective (ongoing)
- Led university-wide effort on research safety, including: creating new position and hiring Research Safety Culture Coordinator as part of university-wide initiative to enhance a culture of safety across the research enterprise through creation of partnerships with Environmental Health Services, Facilities, University Operations, Provost, and VPR offices (ongoing); creating a university chemical distribution center (UCDC); and overseeing Biosafety Office
- Hired 6 tenure track professors, including 1 senior National Academy of Sciences member; oversaw startup activities and establishment of laboratories for 8 tenure track assistant professors; hired academic support coordinator, general chemistry coordinator, and 3 new undergraduate laboratory coordinators
- Negotiated successful retention packages for 4 senior faculty members, including increases to departmental base budget and instrumentation
- Secured additional tenure-track faculty positions, including searches in 2009, 2010, 2012 and two positions in 2014, as well as a non-tenure track position for a general chemistry coordinator
- Directed establishment of 5-year BS/MS program (implemented Fall 2012) and Plan-B MS degree (non-thesis option) in Chemistry
- Promoted initiative to create interdisciplinary program in Chemical Biology and secured funding for seminar series in planning year (2011-2012), as well as additional GTA support for the first four years of the program
- Facilitated faculty development of on-line courses as well as new undergraduate and graduate courses (e.g. Materials Science and Engineering curriculum; Chemistry of Sustainability, Chemistry of Addictions, Food Chemistry, Advanced Scientific Writing in Chemistry, Flavor and Fragrance Chemistry)
- Provided funding to individual faculty for curriculum development projects
- Created opportunities for course load reductions to help increase faculty research productivity
- Supported unification of general chemistry program to include a common syllabus, common exams, and coordinated instruction using state-of-the-art instructional tools
- Established departmental faculty awards committee to promote excellence in teaching and scholarship

### **Strategic Planning**

- Created 5-year strategic roadmap for shared, core research facilities, with widespread buy-in from faculty and administration, including Cores Advisory Board
- Led task force on Public Health Research efforts at CSU; created summary report with recommendations for enhancing and enabling growth in this strategic area
- Directly assisted in development of VPR strategic planning efforts, including formulation of 10-year research and scholarship success initiative (RSSI)
- Initiated first ever formal strategic planning process for Department of Chemistry, resulting in long range plan unanimously endorsed by the faculty
- Developed departmental 10-year faculty hiring plan unanimously endorsed by the faculty
- Participated in College of Natural Sciences strategic planning process (2012-2013)
- Member of the University Strategic Plan Area Review Committees (SPARC)—Infrastructure 2010-13; Faculty and Staff 2013-2014; Research 2014-2015.

### **Budgets**

- Provided input and decision making on VPR budgets, including specific funding opportunities such as annual OVPR unit requests, quarterly calls for proposals, internal RFPs, and Programs of Research and Scholarly Excellence
- Directed a ~\$5.8M annual instructional budget (with an additional ~\$0.5M in indirect cost return and other research support) in the Department of Chemistry, oversight on ~\$9-10M annual research expenditures and faculty startup packages
- In response to University mandated reductions, implemented severe budget cuts in 2009-2011 while simultaneously eliminating a >\$500K departmental deficit in 3 years (2009-2012)
- Increased accounting staff, streamlined accounting activities and increased frequency of reports to faculty to ensure research activities were well supported
- Established coordinated IT support through collaboration with two other departments (Biology and Biochemistry), thereby dramatically enhancing customer service across all three departments

### **Facilities and Space**

- Created new institutional core facility (Analytical Resources Core) through the merger of three core facilities formerly housed under individual units, now under the OVPR.
- Led efforts to reorganize and redefine university core facilities, including strategic planning, differential levels of support, mechanisms for converging core facilities to individual units, and oversight activities
- Participated in efforts to organize university space planning and prioritization to include research perspective; OVPR representative on University Space Committee (2017-present)
- Responsible for oversight on multiple research lab, classroom (A101, A103, B202, B301, B302), and conference room renovations in 157,000 ft<sup>2</sup> chemistry building and an additional ~50,000 ft<sup>2</sup> educational lab building
- Garnered funding for and oversaw renovation of Chemistry building lobby (~\$200K) and classrooms
- Oversight on funding and repurposing educational space to create Chemistry Resource Learning Center (CLeRC) as well as additional resources for undergraduate science education (~\$90K)
- Planning stage of process for new Chemistry building, (opened in 2018)
- Oversight and management of Central Instrument Facility (CIF), a University Core Facility housing ~\$14M in research instrumentation, employing 7 full time staff members, with an annual budget of nearly \$2M; responsible for hiring of 2 new full-time staff members and for reorganization of operations

### **Advancement**

- Faculty representative to \$1B campaign planning committee; panelist for development workshops (2015-2017); member of CSU Morgan Society
- Successfully completed endowments for three graduate fellowships (Chemistry, Meyers and Hegedus) and two undergraduate scholarships (Chemistry and Puleston); initiated third undergraduate scholarship (DiVerdi) as well as establishing endowed chair (Williams)
- Initiated endowed fund for Chemistry Dissertation Award, first awards presented in 2013
- Organized new alumni events for CSU Chemistry alumni at national ACS meetings and held "Dinner with the Chair" alumni events in multiple cities, resulting in increased alumni giving
- Increased interactions with several Colorado and National private industries, resulting in either in-kind instrumentation or cash donations
- Initiated new departmental newsletter distributed to internal offices, alumni, and friends of the Department
- Fundraising for Women in Natural Sciences (WINS) organization
- Participated in University donor appreciation dinners (member of CSU's 1870 Club)

- Hired an external relations coordinator for department

### **Competitive Funding for Facilities**

2013            **University Facilities Fee Advisory Board (UFFAB):** “Chemistry Lobby Renovation: Creation of Student Advising Center and Study Space”, \$198,275 [PI, Co-PI L. Dysleski]

### **RESEARCH ACTIVITIES AND ACCOMPLISHMENTS**

#### **TRAINEES**

#### **Graduate Students (19 Ph.D. and 8 M.S. graduated; 5 current Ph.D.; 53% women; 13% URM)**

Joshua Blechle (Ph.D., 2016)	Katherine Bogart (Ph.D. 1997)
Jeffrey Bottin (M.S. 1997)	Carmen Butoi (Ph.D. 2000)
Nathan Capps (M.S. 1999)	Michael Cuddy (Ph.D. 2012)
Sarah Fenton (co-advisee, Chem. E., M.S. 2006)	Mary Fisher (M.S. 2007)
Philip Friedman (M.S., 2017)	Angela Hanna (Ph.D., 2020)
Morgan Hawker (co-advisee, Ph.D., 2016)	Kimberly Hiyoto (Ph.D., current)
Bernadette Hernandez-Sanchez (co-advisee, Ph.D. 2004)	Neil Mackie (Ph.D. 1999)
Michelle Mann (Ph.D., 2018)	Zoe Mann (M.S., 2020)
Alexander Manning (Ph.D., current)	Ina Martin (Ph.D. 2005)
Patrick McCurdy (Ph.D. 1999)	Michelle Morgan (M.S. 2009)
Daniel Pulsipher (Ph.D. 2012)	Lucas Quintana (Ph.D., current)
Jeffrey Shearer (Ph.D. 2013)	Michelle Steen (Ph.D. 2001)
Joshua Stillahn (Ph.D. 2010)	Erin Stuckert (Ph.D., 2017)
Kristina Trevino (Ph.D. 2011)	Brendan Tompkins (Ph.D., 2014)
Tara Van Surksun (Ph.D., current)	Keri Williams (Ph.D. 2003)
Jie Zhou (Ph.D. 2006)	

#### **International Advisor**

Carina Ammerlahn (University of Duisburg-Essen, M.S. 2015)

#### **Postdoctoral Scholars**

Dr. Indrajit Bhattacharyya	Dr. Guangli Che
Dr. Nathan Dalleska	Dr. Wendy Flory
Dr. W. M. M. (Erwin) Kessels	Dr. Dongping Liu
Dr. Galiya Sh. Malkov	Dr. Selma Mededovic-Thagard
Dr. Adoracion Pegalajar Jurado	Dr. James Peers
Dr. Vincent Ventura	Dr. Dattatray Wavhal
Dr. Jianming Zhang	

#### **Undergraduate Students**

Prof. Fisher has mentored nearly 50 undergraduate research associates from a range of disciplines (chemistry, biology, biomedical engineering, chemical engineering), more than 50% of whom have been women and ~15% underrepresented minorities. Her undergraduate advisees have been coauthors on 20 peer-reviewed publications.

### **Collaborators (last 5 years)**

A. Bernasek (CSU, Economics), D. G. Castner (Chem. Eng., U. Washington), J. Cross (Sociology, CSU), P. Favia (Univ. Bari, Italy), R. Gristina (Univ. Bari, Italy), N. E. Levinger (CSU), S. P. James (Mech. Eng., CSU), M. Kipper (Chem. & Bio. Eng., CSU), I. T. Martin (Case Western), S. McArthur (Swinburne, Australia), P. R. McCurdy (CSU), C. Olver (Clinical Sciences, CSU), P. Omur-Ozbek (Civil/Environ. Eng, CSU), K. M. Partin (Biomed. Sci., ORI), A. K. Rappé (CSU), M. M. Reynolds (CSU), E. Sardella (Univ. Bari, Italy), K. Schanze (Univ. Florida); S. Sutton (CSU, Geosciences); I. Vernon (CSU, Ethnic Studies)

### **RESEARCH FUNDING RECORD (1993-present; ~\$6.8M total)**

- 1993-94 **CSU Faculty Diversity Enhancement Grant:** “Reactivity Studies of Plasma Radicals.” \$5,000 [PI]
- 1994-96 **NSF-Research Planning Grant for Women:** “Surface Reactivity of Radicals During Plasma Deposition of Thin Films.” \$18,000 [PI]
- 1995 **CSU Faculty Research Grant:** “Investigations of Plasma Deposition Mechanisms.” \$4,500 [PI]
- 1995 **CSU Faculty Diversity Enhancement Grant:** “Plasma Deposition of Silicon Dioxide Films: Novel Precursors and Radical Reactivities.” \$2,500 [PI]
- 1995-96 **Sandia National Labs:** “Measurement of Sticking Coefficients During Plasma Deposition and Etching.” \$50,000 [PI]
- 1995-97 **ACS-PRF-G:** “Surface Reactivity of Radicals During Fluorocarbon Polymer and Diamond Film Deposition Using Fluorocarbon/Hydrogen Plasmas.” \$20,000 [PI]
- 1995-98 **ONR-Young Investigator Program:** “Surface Reactivity of SiH<sub>x</sub> and SiCl<sub>x</sub> Radicals During Plasma Deposition of Hydrogenated Amorphous Silicon Films.” \$225,000 [PI]
- 1995-98 **NSF-CAREER Grant:** “Investigation of Plasma Deposition Mechanisms for Silicon Dioxide and Silicon Nitride Films.” \$247,994 [PI]
- 1995-98 **DOE OBES:** “Nanomaterials in Secondary Battery Research and Development.” \$240,000 [Co-PI w/PI Prof. C. R. Martin]
- 1996-97 **Hewlett Packard:** Graduate Research Fellowship to study Plasma Polymerization of Saturated Fluorocarbons. \$54,000 [Co-PI w/PI Prof. D. W. Grainger]
- 1997-98 **Hewlett Packard:** Graduate Research Fellowship to study Plasma Polymerization of Saturated Fluorocarbons. \$58,000 [Co-PI w/PI Prof. D. W. Grainger]
- 1998-2000 **Center for Separations Using Thin Films:** “Plasma Modification of Hydrophobic Membranes” \$105,000 [PI]
- 1998-2000 **Camille Dreyfus Teacher Scholar:** “Use of Resonantly Enhanced Multiphoton Ionization to Probe Radical-Surface Interactions” \$60,000 [PI]
- 1998-2001 **NSF:** “Investigation of Plasma Deposition and Etching Mechanisms for Silicon-Based Materials” \$326,000 [PI]
- 1998-2000 **NSF-MRI Instrument Grant:** “Acquisition of XPS Instrumentation for a Departmental Materials Characterization Facility” \$380,000 from NSF, \$542,858 with institutional match [PI with several faculty contributors; multi-user instrument acquisition]
- 1999-2001: **DOE-BES:** “Nanostructured Assemblies of Thermoelectric Composite Materials” \$300,000 [Co-PI w/PI Prof. P. K. Dorhout]
- 2001-2002 **Millipore, Inc.:** “Plasma Modification of Polymeric Membranes” \$50,965 [PI]
- 2001-2003 **NSF-IMR Instrument Grant:** “Acquisition of an Integrated Scanning Electron Microscope System for Characterization of Materials” \$300,000 from NSF, \$486,357 with institutional match [PI w/co-PI, staff scientist Dr. J. Chandler; multi-user instrument acquisition]
- 2002-2005 **NSF-DMR:** “Mechanistic Studies of Plasma Deposition and Etching for Integrated Circuit Materials” \$400,000 [PI]

- 2003-2004 **DOE-BES:** “Nanostructured Assemblies of Metal Oxide Composite Materials” \$125,000 [Co-PI w/ PI Prof. P. K. Dorhout]
- 2003-2007 **NSF-REU** “Summer Research Experiences for Undergraduates at Colorado State University” \$252,363 [Co-PI with Prof. N. E. Levinger]
- 2006-2009 **PRF (Type AC):** “Surface Reactivity of Radicals and Ions During Plasma-Catalytic Removal of Nitrogen Oxide (NO<sub>x</sub>) Pollutants” \$120,000 [PI]
- 2006-2009 **NSF/DOE Partnership in Basic Plasma Chemistry:** “Toward Fundamental Understanding: Correlating the Gas-Phase, Surface, and Gas-Surface Interface in Halogenated Plasma Systems” \$450,000 [PI]
- 2007-2010 **NSF-REU:** “REU Site: Materials Chemistry Research: Synthesis, Characterization and Device Fabrication”, \$345,000 [PI, w/co-PI Prof. N. E. Levinger]
- 2008-2010 **NSF-CRIF (Chemistry Research Instrumentation and Facilities):** “Acquisition of an In Situ Surface Sum Frequency Generation Spectrometer”, \$499,927 [Co-PI, PI A. K. Rappé (Department Chair); Co-PI Prof. Nancy Levinger]
- 2009-2010 **Center for Revolutionary Solar Photoconversion (CRSP)** “Plasma Processing for Improved Understanding and Control of Film Properties and Interfaces in Organic/Polymeric/Hybrid Solar Cells”, \$100,000 [PI w/co-PI C. M. Elliott]
- 2009-2012 **NSF:** Toward Fundamental Understanding of Plasma Processing Mechanisms: In Situ Studies of the Gas-Surface Interface During Materials Deposition and Modification”, \$405,401 and additional equipment supplement of \$58,758 (Total costs: \$464,159) [PI]
- 2012-2016 **NSF:** “Systematic Studies of the Dynamics, Energetics, and Surface Interactions of Plasma Species during Materials Processing”, \$500,000 and additional equipment supplement of \$54,868 (Total costs: \$554,868) [PI]
- 2012 **ACS: Global Research Experiences, Exchanges and Training (GREET) Program:** “Plasma Processing for Surface Engineering of Advanced Nanostructured Biomedical Devices,” \$11,000 [PI; award for PI/graduate student (Jeffrey Shearer) ambassador team to initiate collaboration at international site]
- 2014-2015 **Dreyfus Postdoctoral Fellowship in Environmental Chemistry:** “Development of Novel High-Performance Filtration Systems,” \$120,000 [PI; award for support of postdoctoral fellow]
- 2014-2015 **Colorado Bioscience Discovery Evaluation Grant Program (BDEGP):** “Plasma Treated NO-Releasing Materials for Antimicrobial Medical Devices,” \$47,500 [co-PI; PI M. M. Reynolds]
- 2015-2017 **Catalyst for Innovative Partnerships Grant (CSU-OVPR):** “Developing Advanced Polymeric Materials for Grand Challenges”: \$195,502 [co-PI; PI S. P. James; co-PI M. J. Kipper]
- 2018-2021 **NSF:** Unraveling Plasma-Assisted Catalysis: Toward Understanding Fundamental Molecule-Surface Interactions and Energy Partitioning Synergisms,” \$350,000 [PI]
- 2019-2021 **ACS-PRF:** “Exploring Fundamental Chemistry in Plasma Aided ignition and Combustion Systems”: \$120,000 [PI]

*Note: Competitive education-related funding and other fundraising activities are listed in other portions of this CV.*

## **PUBLICATIONS (\*indicates undergraduate coauthor)**

### **Refereed Publications**

1. Effect of Dose on the Absorption and Excretion of [<sup>14</sup>C]Benzene Administered Orally or by Inhalation in Rats and Mice, P. J. Sabourin, B. T. Chen, G. Lucier, L. S. Birnbaum, E. Fisher, and R. F. Henderson, *Toxicol. Appl. Pharmacol.* **87**, 325-336 (1987).

2. State-specific Reactions of  $\text{Fe}^+(\text{}^6\text{D}, \text{}^4\text{F})$  with  $\text{O}_2$  and  $\text{c-C}_2\text{H}_4\text{O}$ :  $\text{D}^0_0(\text{Fe}^+-\text{O})$  and Effects of Collisional Relaxation, S. K. Loh, E. R. Fisher, L. Lian, R. H. Schultz, and P. B. Armentrout, *J. Phys. Chem.* **93**, 3159-3167 (1989).
3. Ionic and Neutral Metal-Hydride and Metal-Methyl Bond Energies: Reactions of  $\text{Co}^+$ ,  $\text{Ni}^+$ , and  $\text{Cu}^+$  with Ethane, Propane, 2-Methyl-Propane and 2-2-Dimethyl-Propane, R. Georgiadis, E. R. Fisher, and P. B. Armentrout, *J. Am. Chem. Soc.* **111**, 4251-4262 (1989).
4. Guided-Ion Beam Studies of the Reactions of  $\text{Co}^+$  and  $\text{Ni}^+$  with  $\text{CH}_3\text{X}$  ( $\text{X} = \text{Cl}, \text{Br}, \text{I}$ ). Implications for the Metal-Methyl Ion Bond Energies, E. R. Fisher, L. S. Sunderlin, and P. B. Armentrout, *J. Phys. Chem.* **93**, 7375-7382 (1989).
5. Guided-Ion Beam Studies of the State-Specific Reactions of  $\text{Fe}^+(\text{}^6\text{D}, \text{}^4\text{F})$  with  $\text{CH}_3\text{X}$  ( $\text{X} = \text{Cl}, \text{Br}, \text{I}$ ), E. R. Fisher, R. H. Schultz, and P. B. Armentrout, *J. Phys. Chem.* **93**, 7382-7387 (1989).
6. Intrinsic Transition Metal-Carbon Double Bond Dissociation Energies: Periodic Trends in  $\text{M}^+-\text{CH}_2$  Bond Strengths, P. B. Armentrout, L. S. Sunderlin, and E. R. Fisher, *Inorg. Chem.* **23**, 4436-4437 (1989).
7. Dissociative Charge Transfer Reactions of  $\text{Ar}^+$ ,  $\text{Ne}^+$ , and  $\text{He}^+$  with  $\text{CF}_4$  from Thermal to 50 eV, E. R. Fisher, M. E. Weber, and P. B. Armentrout, *J. Chem. Phys.* **92**, 2296-2302 (1990).
8. Reactions of  $\text{Co}^+$ ,  $\text{Ni}^+$ , and  $\text{Cu}^+$  with Cyclopropane and Ethylene Oxide. Metal-Methylidene Ion Bond Energies, E. R. Fisher and P. B. Armentrout, *J. Phys. Chem.* **94**, 1674-1683 (1990).
9. Heat of Formation of  $\text{HO}_2$ . A Direct Determination from Guided Ion Beam Studies of  $\text{O}_2^+(\text{}^2\Pi_g, \nu = 0) + \text{CH}_4$ , E. R. Fisher and P. B. Armentrout, *J. Phys. Chem.* **94**, 4396-4398 (1990).
10. C-H Bond Activation as the Initial Step in the  $\text{Co}^+$  Mediated Demethanation of Propane: The Critical Role of Angular Momentum at the Rate Limiting Transition State, P. A. M. van Koppen, J. Brodbelt-Lustig, M. T. Bowers, D. V. Dearden, J. L. Beauchamp, E. R. Fisher, and P. B. Armentrout, *J. Am. Chem. Soc.* **112**, 5663-5665 (1990).
11. Reactions of First Row Transition-Metal Ions ( $\text{Ca}^+-\text{Zn}^+$ ) with  $\text{O}_2$ : Metal-Oxide Ion Bond Energies, E. R. Fisher, J. L. Elkind, D. E. Clemmer, R. Georgiadis, S. K. Loh, N. Aristov, L. S. Sunderlin, and P. B. Armentrout, *J. Chem. Phys.* **93**, 2676-2691 (1990).
12. Kinetic Energy Dependence of Dissociative Charge Transfer Reactions of  $\text{He}^+$ ,  $\text{Ne}^+$ ,  $\text{Ar}^+$ ,  $\text{Kr}^+$ , and  $\text{Xe}^+$  with Silane, E. R. Fisher and P. B. Armentrout, *J. Chem. Phys.* **93**, 4858-4867 (1990).
13. The Appearance Energy of  $\text{CF}_3^+$  from  $\text{CF}_4$ : Ion-Molecule Reactions Related to the Thermochemistry of  $\text{CF}_3^+$ , E. R. Fisher and P. B. Armentrout, *Int. J. Mass Spectrom. Ion Processes* **101**, R1-R6 (1990).
14. Guided-Ion Beam Studies of the Ground State  $\text{O}_2^+(\text{}^2\Pi_g, \nu = 0)$  Reaction with  $\text{CH}_4$ : Effect of Internal vs Translational Energy, E. R. Fisher and P. B. Armentrout, *J. Chem. Phys.* **94**, 1150-1157 (1991).
15. Transition Metal Ion Mediated C-H and C-C Bond Activation of Alkanes: Dynamical Coupling Between Entrance and Exit Channel Transition States, P. A. M. van Koppen, J. Brodbelt-Lustig, and M. T. Bowers, D. V. Dearden, J. L. Beauchamp, E. R. Fisher, and P. B. Armentrout, *J. Am. Chem. Soc.* **113**, 2359-2369 (1991).
16. Translational and Internal Energy Effects in Reactions of  $\text{O}^+$  and  $\text{O}_2^+$  with  $\text{SiF}_4$ , E. R. Fisher and P. B. Armentrout, *Chem. Phys. Lett.* **179**, 435-441 (1991).
17. Reactions of  $\text{O}_2^+$ ,  $\text{Ar}^+$ ,  $\text{Ne}^+$ , and  $\text{He}^+$  with  $\text{SiCl}_4$ : Thermochemistry of  $\text{SiCl}_x^+$ , E. R. Fisher and P. B. Armentrout, *J. Phys. Chem.* **95**, 4765-4772 (1991).
18. Kinetic Energy Dependence of the Reactions of  $\text{O}_2^+$  and  $\text{O}^+$  with  $\text{CF}_4$  and  $\text{C}_2\text{F}_6$ , E. R. Fisher and P. B. Armentrout, *J. Phys. Chem.* **95**, 6118-6124 (1991).
19. Activation of Alkanes by  $\text{Cr}^+$ : Unique Reactivity of Ground State  $\text{Cr}^+(\text{}^6\text{S})$  and Thermochemistry of Neutral and Ionic Chromium-Carbon Bonds, E. R. Fisher and P. B. Armentrout, *J. Am. Chem. Soc.* **114**, 2039-2049 (1992).
20. Electronic Effects in C-H and C-C Bond Activation: Reactions of Excited State  $\text{Cr}^+$  with Propane, Butane, Methylpropane, and Dimethylpropane, E. R. Fisher and P. B. Armentrout, *J. Am. Chem. Soc.* **114**, 2049-2055 (1992).

21. Guided Ion Beam Studies of the Reaction of  $\text{Si}^+(^2\text{P})$  with Methylsilane. Reaction Mechanisms and Thermochemistry of Organosilicon Species, B. L. Kickel, E. R. Fisher, and P. B. Armentrout, *J. Phys. Chem.* **96**, 2603-2609 (1992).
22. Collision-Induced Dissociation and Charge-Transfer Reactions of  $\text{SF}_x^+$  ( $x = 1-5$ ): Thermochemistry of the Sulfur Fluoride Ions and Neutrals, E. R. Fisher, B. L. Kickel, and P. B. Armentrout, *J. Chem. Phys.* **97**, 4859-4870 (1992).
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#### Non-Refereed Articles

1. An Investigation of Aromatic and Aliphatic Fluorocarbon Polymer Films: Is Control of Film Properties Possible via Pulsed Plasma Polymerization? N. M. Mackie and **E. R. Fisher**, *Polym. Prepr.* **38**, 1059-1060 (1997).
2. Radical Surface Reactivities During Fluorocarbon Polymer Deposition, N. M. Mackie, N. E. Capps, and **E. R. Fisher**, *Polym. Prepr.* **39**, 924-925 (1998).
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4. Preface: Forum on Frontiers and Challenges in Biomaterials, **E. R. Fisher** and M. M. Reynolds, *ACS Appl. Mater. Interfaces* **5**, 9247-9248 (2013) [Special Forum Editorial].

#### Patents and Invention Disclosures

- Low-Temperature Plasma Treatments of Asymmetric Polysulfone Membranes for Permanent Hydrophilic Surface Modification,” disclosure filed 7/20/99; revised: “Surface Modified Membranes and Methods for Producing the Same, M. L. Steen and **E. R. Fisher**, U.S. Provisional Patent application filed 7/7/00. PCT application filed 7/2001.
- Conformal Siloxane-Based Plasma Treatment of Porous Membranes to Produce Composite Membranes and Non-Woven Fibrous Materials, M. L. Steen and **E. R. Fisher**, disclosure filed 7/26/00. U. S. Provisional Patent filed 7/10/2001.
- Remote Plasma-Enhanced Chemical Vapor Deposition of Tantalum Diffusion Barrier, P. R. McCurdy and **E. R. Fisher**, University disclosure filed 8/25/2005.
- Plasma-treated NO-releasing Materials for Antimicrobial Medical Devices, M. M. Reynolds and **E. R. Fisher**, University disclosure filed 11/25/2013.
- Development of Novel High Performance Filtration Systems, A. Pegalajar-Jurado and **E. R. Fisher**, University disclosure filed 4/18/2014
- Fabrication of Tunable Three-Dimensional Materials for Biomedical or Food Industry Applications, M. J. Hawker, A. Pegalajar-Jurado and **E. R. Fisher**, University disclosure filed 4/18/2014

- Fabrication of Plasma Modified SnO<sub>2</sub> Nanomaterials for Gas Sensing Applications, E. P. Stuckert and E. R. Fisher, University Invention Disclosure filed 4/24/2014. Provisional Patent filed 4/25/14 (assigned Application No. 61/983,820).
- Modification of a Commercial Thromboelastograph® to Measure Coagulation Dynamics with Three-dimensional Biomaterials, Morgan J. Hawker, Christine S. Olver, **E. R. Fisher**, University Invention Disclosure filed 2/20/16. U.S. Provisional Patent filed 2/23/16.
- M. N. Mann and **E. R. Fisher**, “Fabrication of Essential Oil-derived Antibacterial Thin Films for Biomedical Applications”, University Invention Disclosure filed 12/21/17.
- K. A. M. Hiyoto and **E. R. Fisher**, “Plasma Modified Paper-based Tin Dioxide Gas Sensors”, University Invention Disclosure file 1/11/2018.

### **Research-Related Meetings, Workshops and Symposia**

- Annual “Photons and Chemistry” Conference [Co-organizer, Discussion Leader], Estes Park 1995-99.
- Younger Chemists Committee Symposium on “Tenure and Tots: Balancing an Academic Career and Parenting [Organizer], American Chemical Society National Meeting; Orlando, FL: August 1996
- Younger Chemists Committee Symposium “Career Choices for Young Chemists” [Organizer], American Chemical Society National Meeting, Dallas, TX: March, 1998.
- Plasma Science and Technology Division of the American Vacuum Society, National Meeting Program Committee [Organized invited speakers and abstract selection process], 1999-2003
- Surfaces and Colloids Division, Symposium on “Frontiers and Challenges in Biomaterials Analysis” [Co-organizer], American Chemical Society National Meeting, New Orleans, LA: April, 2013.
- Special Focus Topic Symposium “Surface Modification of Materials by Plasmas for Medical Purposes” [Organizer], 61<sup>st</sup> International American Vacuum Society Meeting, November 2014.
- Pacific Rim Symposium on Surfaces, Coatings, and Interfaces, Program Chair, December 2020.

## **RESEARCH PRESENTATIONS**

### **I. Invited Research Presentations**

- “Ion-Molecule Reactions Related to Plasma Deposition and Etching of Silicon: Plasma Additives.”, E. R. Fisher and P. B. Armentrout, Chemical Dynamics After Dark Seminar Series; University of Utah, Salt Lake City, UT: January 1990
- “Dissociative Charge-Transfer Reactions of He<sup>+</sup>, Ne<sup>+</sup>, Ar<sup>+</sup>, Kr<sup>+</sup>, and Xe<sup>+</sup> with Silane”, E. R. Fisher and P. B. Armentrout, American Chemical Society National Meeting, Symposium on Silicon Hydride Chemistry and Silicon CVD Mechanisms; Atlanta, GA: April 1991.
- “Interactions of Plasma Molecules”, E. R. Fisher, P. Ho, W. G. Breiland and R. J. Buss, Pacific Lutheran University; Tacoma, WA: April 1992.
- “Imaging of Radicals Interacting with the Surface of Depositing Films”, University of Denver; Denver, CO: March 1994.
- “Mechanisms for Plasma Deposition of Thin Films”, St. Olaf College, Northfield, MN: November 1994
- “Mechanisms for Plasma Deposition of Thin Films”, University of Wisconsin at Eau Claire, Eau Claire, WI: November 1994
- “Measurements of Reactive Sticking Coefficients in Deposition Plasmas”, American Physical Society, March Meeting, Symposium on Reactive Surfaces in Plasma Processing; San Jose, CA: March 1995.
- “Examining the Interactions of Plasma Radicals with the Surface of Depositing Films”, Joint Northwest Regional and Rocky Mountain Regional Meeting of the American Chemical Society, Symposium on Analytical Chemistry on Surfaces; Park City, UT: June 1995
- “Mechanisms of Plasma Deposition through Measurement of Radical Reactivities”, Department of Chemistry, University of Wyoming: November, 1995

- “Exploring the Mechanisms for Plasma Deposition of Low  $\epsilon$  Dielectric Films”, N. M. Mackie, A. E. Lefohn, and E. R. Fisher, Naval Research Laboratories, Washington D. C.: June 1996
- “Plasma Enhanced CVD of Aromatic Amorphous Carbon Films for Use as Protective Coatings on Electrochemical Electrodes, N. M. Mackie, J. R. Bottin, and E. R. Fisher, Rocky Mountain Conference, Symposium on Electrochemistry; Denver, CO: July 1996.
- “Exploring the Mechanisms for Plasma Deposition of Electronic Materials”, P. R. McCurdy, K. H. A. Bogart, and E. R. Fisher, Regional American Vacuum Society Meeting, Symposium on Electronic Materials and Processing; Denver, CO: August 1996.
- “Using Plasmas to Produce and Modify Materials for Emerging Technologies”, American Chemical Society National Meeting, Symposium on “The Surface of Things to Come”; Orlando, FL: August 1996.
- “Exploring the Mechanism for Plasma Deposition of Silicon Dioxide from Alkoxysilanes”, K. H. A. Bogart and E. R. Fisher, Fed. Anal. Chem. and Spectroscopy Societies; Kansas City, MO: September 1996.
- “Mechanisms for Plasma Deposition of Electronic Materials”, Pacific Coast Regional Meeting of the American Chemical Society; San Francisco, CA: November 1996.
- “An Investigation of Aromatic and Aliphatic Fluorocarbon Polymer Films: Is Control of Film Properties Possible via Pulsed Plasma Polymerization?”, N. M. Mackie and E. R. Fisher, American Chemical Society National Meeting, Symposium on Plasmas and Polymers; San Francisco, CA: April, 1997.
- “Chemical Vapor Deposition Methods for the Production of Carbon Nanofiber and Nanotube Ensemble Materials”, G. Che, N. M. Mackie, N. E. Capps, and E. R. Fisher, Electrochemical Society International Meeting; Symposium on Diamond Like Materials; Paris, France: September 1997.
- “Probing the Energetics and Surface Reactivity of Plasma Generated Radicals”, E. R. Fisher, K. H. A. Bogart, P. R. McCurdy, and N. M. Mackie, Federation of Analytical Chemistry and Spectroscopy Societies; Providence, RI: October 1997.
- “Probing the Energetics and Surface Reactivity of Plasma Generated Radicals”, Indiana University, November 1997.
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- “Exploring the Mechanisms for Plasma Deposition of Electronic Materials”, Texas Lutheran University, November 1997.
- “Probing the Surface Reactivity and Energetics of Plasma Generated Radicals”, California Institute of Technology, January 1998.
- “Probing the Surface Reactivity and Energetics of Plasma Generated Radicals”, University of California, Irvine, January 1998.
- “Probing the Surface Reactivity and Energetics of Plasma Generated Radicals”, University of California, Los Angeles, January 1998.
- “Probing the Surface Reactivity and Energetics of Plasma Generated Radicals”, Engineering Research Center for Plasma-Aided Manufacturing, University of Wisconsin, Madison, February, 1998.
- “Probing the Surface Reactivity and Energetics of Plasma Generated Radicals”, University of Arizona, February 1998.

- “Probing the Surface Reactivity and Energetics of Plasma Generated Radicals”, University of Colorado, Boulder, February 1998.
- “Probing the Surface Reactivity and Energetics of Plasma Generated Radicals”, University of Utah, March 1998.
- “Surface Reactivity of Fluorocarbon Radicals on Many Surfaces: Insights into Plasma-Surface Interactions”, **Plenary Lecture**: International Workshop on Fluorocarbon Plasmas, Grenoble, France; March, 1998
- “Chemical Vapor Deposition-based Template Synthesis of Nano-Structured Graphitic Carbon and Metal Nanocluster-filled Carbon Ensemble Materials”, G. Che, C. R. Martin and E. R. Fisher, ACS Society National Meeting, Symposium on Electrochemistry of Nanostructured Materials; Dallas, TX: March, 1998.
- “Probing the Surface Reactivity and Energetics of Plasma Generated Radicals”, Pennsylvania State University, April 1998.
- “Surface Interactions of CF and CF<sub>2</sub> Radicals in Fluorocarbon Plasmas with a Variety of Substrate Materials”, N. E. Capps, N. M. Mackie, and E. R. Fisher, Plasmadynamics and Lasers Conference of the American Institute of Aeronautics and Astronautics (AIAA); Albuquerque, NM: June 1998.
- “Radical Surface Reactivities During Fluorocarbon Polymer Deposition”, N. M. Mackie, N. E. Capps, and E. R. Fisher, American Chemical Society National Meeting, Symposium on Fluorinated Surfaces, Coatings, and Films; Boston, MA: August, 1998.
- “Probing the Surface Reactivity and Energetics of Plasma Generated Radicals”, University of Alabama, Tuscaloosa, September 1998.
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- “Surface Reactivity of Fluorocarbon Radicals: Insights into Plasma-Surface Interactions”, Materials Research Society National Meeting, Symposium on Plasma Modification of Polymers, Boston, MA: December, 1998
- “Surface Interactions of Plasma Radicals During Plasma Processing of Polymers”, **Plenary Lecture**: 1st Alpine International Symposium on Plasma Processing of Polymers, Park Hotel & Club Diamant, Campitello di Fassa (TN) ITALY: February, 1999
- “Using the Imaging of Radicals Interacting with Surfaces Technique to Explore Plasma Processing Mechanisms”, Dipartimento di Chimica, Università di Bari, Centro di Studio per la Chimica dei Plasmi, CNR, Bari, ITALY: February 1999
- “Exploring Chemical Mechanisms for Plasma Processing”, Department of Chemical Engineering, University of Illinois, Urbana: March, 1999
- “Combining Gas-Phase and Surface Interaction Measurements to Explore Mechanisms for Plasma Polymerization”, 2<sup>nd</sup> International Symposium on Plasma Polymerization/Deposition, Newark: May 1999.
- “Exploring the Chemistry of Plasmas for Deposition of Silicon Dioxide and for Membrane Modification”, Pall Corporation, Port Washington, NY: June 1999.
- “Radical-Surface Interactions During Plasma Processing of Electronic Materials”, American Chemical Society National Meeting, Symposium on Processing and Surface Chemistry of Electronic Materials; New Orleans, LA: August, 1999.
- “Surface Interactions of Plasma Radicals During Materials Processing”, Workshop on Basic Aspects of Nonequilibrium Plasma Interactions with Surfaces; Nagasaki, Japan: January 2000
- “Exploring the Chemical Mechanisms for Plasma Polymerization and Modification of Polymers”, Colorado School of Mines: April 2000.
- “Plasma Modification of Polymeric Membranes”, Gordon Research Conference on Membranes: Materials and Applications; Connecticut College: August 2000.

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- “Plasma Modification of Polymers: from the Macroscopic to the Molecular”, Fort Lewis College: November 2000.
- “On the Interplay between Plasma Ions, Radicals and Surfaces: Who Dominates the Process?”, **Topical Lecture:** International Conference on Phenomena in Ionized Gases; Nagoya, Japan: July 2001.
- “Investigation of Radical-Surface Interactions During Plasma Processing of Polymers Using the IRIS Technique”, 7<sup>th</sup> Pacific Polymer Conference of the Pacific Polymer Federation; Oaxaca, Mexico: December 2001.
- “Energetics of Plasma Radicals: Rotational and Translational Energy Measurements for SiH, SiF<sub>x</sub>, OH, and NH<sub>2</sub>”, Chemistry Division, Naval Research Labs, April 2002.
- “Exploring the Plasma-Surface Interface: Energetics and Reactivity”, **Conference Plenary Lecture:** 8<sup>th</sup> International Conference on Plasma Science and Engineering, Garmisch-Partenkirchen, Germany, September 2002.
- “Plasma Technology: From Nature to the Lab to the Market”, Sigma-Aldrich Seminar Series, Sigma Aldrich, St. Louis, October 2002.
- “Plasma Chemistry and Technology: From Nature to the Lab to the Market” Department of Chemistry, University of Missouri, February 28, 2003.
- “Understanding the Mechanisms of Plasma Processing by Exploring the Chemistry of the Plasma-Surface Interface,” Department of Chemistry, Yale University, March 3, 2003.
- “Plasma Technology and Chemistry: From Nature to the Lab to the Market”, Connecticut College, March 4, 2003.
- “Protein-Surface Interactions in Plasma-Modified Membranes” New Mexico Regional AVS Meeting, Albuquerque, NM April 19-21, 2003.
- “Understanding the Mechanisms of Plasma Processing by Exploring the Chemistry of the Plasma-Surface Interface,” **Keynote Lecture**, 14<sup>th</sup> International Colloquium on Plasma Processes (CIP'03), Antibes-Juin les pins/France (June 29-July 03, 2003).
- “Energetics of Plasma Radicals: Rotational and Translational Energy Measurements in Materials Processing Systems,” University of Colorado, September 6, 2003.
- “Towards Understanding the Chemistry of PECVD of Polymeric Materials,” 37<sup>th</sup> IUVSTA Workshop on Plasma Deposition of Advanced Materials, September 15-18, 2003; Kerkrade, The Netherlands.
- “Plasma Technology and Chemistry: From Nature to the Lab to the Market”, CSU Materials Science Colloquium, September 29, 2003.
- “Testing Hypotheses for Radical-Surface Interactions During Plasma Deposition and Etching”, Department of Chemistry, Colorado School of Mines, September 2004.
- “Hypothesis Testing for Radical-Surface Interactions During Plasma Processing”, Department of Chemistry, Temple University, January 27, 2005.
- “Hypothesis Testing for Radical-Surface Interactions During Plasma Processing”, Department of Chemistry, The Ohio State University, March 4, 2005.
- “Exploring Radical-Surface Interactions During Plasma Etching and Deposition”, 17<sup>th</sup> International Symposium on Plasma Chemistry, Toronto, Canada, August 7-12, 2005.
- “Mechanistic Musings on Plasma-Enhanced CVD of Polymeric Materials”. 52<sup>nd</sup> International Symposium of the American Vacuum Society, Boston, MA, October 31-November 4, 2005.
- “Radical-Surface Interactions During Plasma Processing: Chemistry at the Gas-Surface Interface,” Department of Chemical Engineering, University of New Mexico, October 3, 2006.

- “From Nature to the Lab to the Market: Understanding the Chemistry of Plasmas”, Department of Chemistry, New Mexico Technological Institute, October 4, 2006.
- “From Nature to the Lab to the Market: Understanding the Chemistry of Plasmas”, Department of Chemistry, New Mexico State University, October 5, 2006.
- “Molecular-Level Investigations of Plasma Processing of Polymers Using the IRIS Technique”, International Vacuum Congress, Stockholm, Sweden, July 1-6, 2007.
- “Molecular-Level Investigations of Plasma Processing: Interfaces and Surfaces”, University of Calgary, Calgary, Canada, September 19, 2008.
- “Understanding Plasma Processing on a Molecular-Level: Deciphering Plasma Deposition and Etching of Silicon and Carbon-based Materials”, Department of Chemistry, University of Arkansas, Fayetteville, AR, November 3, 2008.
- “Understanding Plasma Processing on a Molecular-Level: Interfaces and Surfaces”, Texas Lutheran University, Seguin, TX, November 14, 2008.
- “Using Spectroscopy to Understand Mechanisms for Plasma Processing on a Molecular-Level” Western Spectroscopy Association Meeting, January 27-29, 2009, Asilomar CA.
- “Gremlins, Monsters, and Vegetable Soup: Three Keys to Understanding the Materials Chemistry of Plasmas”, Professor Laureate **Keynote Address**, College of Natural Sciences, Colorado State University, April 29, 2009.
- “Using the Imaging of Radicals Interacting with Surfaces (IRIS) Technique to Understand Molecular-Level Plasma Chemistry”, the Quebec Network on Plasmas (Plasma-Québec), University of Montreal, June 1-3, 2010.
- “On the Importance of Nothingness in Plasma Modification of Materials”, ACS Award in Chemistry of Materials: Symposium in Honor of Debra R. Rolison, 241<sup>st</sup> National ACS Meeting, Anaheim, CA, March 28-April 1, 2011.
- “Correlating Gas-Phase Energetics of Plasma Radicals with Surface Interaction Data”, Plasma-Surface Interactions Symposium, GEC conference, Salt Lake City, UT, November 15-18, 2011.
- “On Fluorocarbons and Fish”, Plasma Processes: Past, Present and Perspectives, Workshop in Honor of Riccardo d'Agostino, Bari, Italy, June 21-23, 2012
- “Gas-Phase Ion and Neutral Energetics and Their Contributions to Plasma-Surface Interactions”, 12<sup>th</sup> European Plasma Conference (High-Tech Plasma Processes, HTPP), Bologna, Italy, June 24-29, 2012.
- “Deciphering Complex Systems: Toward Molecular-level Understanding of Mechanisms for Plasma Polymerization and Plasma Surface Modification of Polymers”, Washington University, St. Louis February 28, 2013
- “Plasma-surface Modification for Improved Biocompatibility and Next Generation Biomaterials”, J. C. Shearer, E. Sardella, R. Gristina, P. Favia, and E. R. Fisher, Symposium on Frontiers and Challenges in Biomaterials Analysis, 245<sup>th</sup> National ACS Meeting, New Orleans, LA, April 7-April 11, 2013.
- “Plasma Processing for Surface Engineering of 3D Polymer Scaffolds for Biomedical Applications”, J. C. Shearer and E. R. Fisher, ACS GREET Award: Outcomes of the 2012 Global Research Experiences, Exchanges, and Training Program Laureate Teams, 245<sup>th</sup> National ACS Meeting, New Orleans, LA, April 7-April 11, 2013.
- “Advanced (3D) Materials in the Biological, Environmental & Energy Sectors via Plasma Surface Modification”, M. J. Hawker, E. P. Stuckert, A. Pegalajar-Jurado, M. N. Mann, and E. R. Fisher, U.S.-Australia Enabling Technologies Technical Exchange Meeting, Washington D.C., May 11-14, 2015.
- “Advanced (Nano) Materials in the Biological, Environmental and Energy Sectors via Plasma Surface Modification”, International Workshop on Nanomaterials for Energy and Biotechnology, Harbin, China November 2-4, 2015.
- “Confessions of a Gas-Phase Chemist in a Materials World”, 3M Corporation, Minneapolis, MN, October 11, 2016

- “Plasma Surface Modification: From Fundamental Spectroscopy to Biological Interactions”, Minnesota Chapter AVS Meeting, Minneapolis, MN, October 11, 2016.
- “Confessions of a Gas-Phase Chemist in a Materials World”, Department of Chemistry, University of Utah, Salt Lake City, UT, April 17, 2017.
- “Plasma Surface Modification: Utilizing a Well-Established Processing Method to Develop New Advanced Functional Materials”, ACS Applied Materials & Interfaces Chemistry Resource Workshop, Shanghai, China May 16, 2017.
- “Plasma Surface Modification of 2D and 3D Constructs: Creating and Evaluating New Materials for Biomedical Applications”, Biointerfaces Division, 64<sup>st</sup> Annual AVS International Symposium, Tampa, FL: October 29-November 3, 2017.
- “Extending the Legacy of Harold Winters: Probing the Energetics and Plasma-Surface Interface of Halogenated Plasmas”, Special Forum in Honor of Harold Winters, 64<sup>st</sup> Annual AVS International Symposium, Tampa, FL: October 29-November 3, 2017.
- “Understanding Plasma Processing from a Molecular Perspective”, **Conference Plenary Lecture**, 2<sup>nd</sup> International Symposium of the Vacuum Society of the Philippines (ISVSP), Manila, Philippines, January 9-12, 2018.
- “On Fluorocarbons and Fish: Creating a Global Impact on Generations of Plasma Chemists”, 65<sup>th</sup> Annual AVS International Symposium, Long Beach, CA, October 21-26, 2018.
- “Plasma Surface Modification: Optimizing the Positives of Plasma-Materials Interactions” Pacific Rim Symposium on Surfaces, Coatings, and Interfaces, Kohala Coast, HA: December 1-5, 2018.
- Perspectives on Plasma Processing: What Do We Know and What Do We Know We Don’t Know”, Case Western Reserve University, March 28, 2019.

## **II. Contributed Research Presentations**

Dr. Fisher and members of her research group (graduate and undergraduate students and postdocs) have contributed over 150 presentations at various topical international, national, and regional conferences and symposia. In addition, her students have won multiple awards for their presentations at local, regional and national meetings.

## **EDUCATIONAL ACTIVITIES AND ACCOMPLISHMENTS**

### **Courses Taught**

CHEM111	General Chemistry I
CHEM113	General Chemistry II (majors)
CHEM 301	Advanced Scientific Writing in Chemistry <i>(Piloted materials; created course; developed curriculum)</i>
CHEM331/334	Quantitative Analysis Lecture/Lab (non-majors)
CHEM332	Quantitative Analysis Lab (majors) <i>(Developed new writing-based curriculum)</i>
CHEM335	Introduction to Analytical Chemistry (majors) <i>(Developed and significantly modified curriculum to include active learning components, writing assignments and “inverted classroom” opportunities)</i>
CHEM493	Senior Seminar (majors)
CHEM531	Graduate Analytical Chemistry I (team taught)
CHEM532	Graduate Analytical Chemistry II <i>(Significantly modified curriculum to include hands on components)</i>
CHEM577	Surface Chemistry

	<i>(Added substantial laboratory component as well as “flipped classroom” activities)</i>
CHEM601	Responsible Conduct in Chemistry Research <i>(Created course and developed curriculum, including chemistry-focused peer-group activities, active learning exercises, case studies, and reflective reading assignments)</i>
CHEM651	Materials Analysis (Summer Workshop) <i>(Co-organizer and creator; developed curriculum, including peer group activities and hands-on analysis training exercises)</i>
GRAD544	Responsible Conduct in Research (Co-taught) <i>(University-wide course in RCR; Co-creator; developed extensive curriculum, including peer-group activities, active learning exercises, flipped classrooms, and case studies)</i>
WS472	Women’s Studies Seminars: “Women in Science”, and “Women, Science, and Society” <i>(Created courses and developed entire curriculum)</i>
MSE502D	Structure and Properties of Materials: Materials Spectroscopy <i>(Created course and developed entire curriculum, including hands-on instrument training activities)</i>

#### **Competitive Funding for Educational Activities**

2006-2007	<b>CSU-Academic Enrichment Program:</b> “Infusing Nanoscience and Nanotechnology into our Undergraduate Chemistry and Physics Curricula”, \$107,000 [PI, Co-PIs Prof. D. Rickey, Prof. A. Prieto]
2011	<b>CSU-Provost XYZ Curriculum Development Program:</b> “Enhanced Availability and Increased Enrollment Capacity in General Chemistry Labs”, \$71,000 [Co-PI, PI B. Reynolds]
2011	<b>CSU-Provost XYZ Curriculum Development Program:</b> “Generation of a CSU-Ready/DCE/Hybrid Course: CHEM103: Energy and Sustainability for the Liberal Arts,” \$48,000 [Co-PI, PI A. K. Rappé]
2013	<b>CSU-UFFAB Building Committee Proposal:</b> “Chemistry Lobby Renovation: Creation of Student Advising Center and Study Space”, \$198,275 (includes \$50,000 contribution from department/college) [PI]

#### **Education-Related Meetings, Workshops and Symposia (organized and/or led)**

- RCR Workshop “Building a Research Environment at CSU that Promotes Best Practices”, June 9, 2009 [Co-organizer, Discussion Leader, Panel Moderator]
- Ethics Infusion Program, April-May 2011; 2014 [Discussion Leader]
- Plagiarism Workshop, May 8, 2013, Colorado State University [Co-organizer, Discussion Leader] - ~125 on campus faculty and student attendees and >150 distance attendees (national web streaming); included representatives from NSF’s Office of Inspector General (OIG) and NIH’s Office of Research Integrity (ORI).
- “Copyright and Ethics in Scholarly Publishing: What you need to know”, October 2013, 2014 [Presenter, Discussion Leader] CSU Academic Integrity Week Workshop
- “You CAN Negotiate: Ethical Negotiation Skills and Career Advancement”, January 14, 2014 [Organizer, Presenter] CSU Professional Development Institute
- Basics of Scholarly Publishing: “Getting Started” and “Peer Review, What It Is. How It Works and Why It Matters”, dual presentations for ACS *on Campus* workshop, University of Colorado, Boulder, February 24, 2015.

- “Basics of Scholarly Publishing: Getting Started” and “Peer Review, What It Is. How It Works and Why It Matters”, dual presentations for *ACS on Campus* workshop, Colorado State University, February 26, 2015.
- “Peer Review, What It Is. How It Works and Why It Matters”, *ACS on Campus* workshop, Harbin, China, November, 2015.
- “Peer Review, What It Is. How It Works and Why It Matters”, *ACS on Campus* workshop, Changchun, China, November, 2015.
- Office of Research Integrity (ORI) Short Course on Responsible Conduct of Research Instruction: Enhancing Your Teaching, Short Course Organizing Committee and Facilitator for *Workshop on Teaching Data Integrity Topics.*, Washington D.C., April 5-6, 2017.
- AVS Diversity and Inclusion Breakfast, *The Science of Team Science*, 64<sup>th</sup> Annual AVS International Symposium, Tampa FL, 2017.

**Publications Related to Education (full publication list above in Research Activities Section)**

106. A Directed Framework for Integrating Ethics into Chemistry Curricula and Programs using Real and Invented Case Studies, **E. R. Fisher** and N. E. Levinger, *J. Chem. Ed.* **85**, 796-801 (2008).
127. Discovering Nanoscience, A. C. Blair, **E. R. Fisher**, and D. Rickey, *Science* **337**, 1056-1057 (2012) (Recipient of the IBI, *Science* Prize for Inquiry-Based Instruction).
135. The Challenges for Scientists in Avoiding Plagiarism, **E. R. Fisher** and K. M. Partin, *Account. Res.* **21**, 353-365 (2014).

**Invited Presentations Related to Education (research list above in Research Activities Section)**

- “How to be Successful in an Academic Career”, Student Issues Committee Employment Workshop, American Vacuum Society Meeting; San Jose, CA: October 1997.
- “How to make Professional Societies Work for You: Confessions of a Networking-Challenged Chemist”, Women in Science Forum, Depauw University, November 1997.
- “Exploiting Real and Invented Case Studies: Integrating Ethics into Undergraduate Courses and Research Programs”, 227<sup>th</sup> National ACS Meeting, Anaheim, CA: March 28-April 1, 2004.
- “When Smaller is Better: Nanotechnology for Solar Cells”, Adult Programs, Denver Museum Nature and Science, Panel on “Nanotechnology: It’s Not Your Father’s Science”, Denver, CO, September 16, 2008.
- “Cultural Competency in a Responsible Conduct of Research Training Program”, Colorado State University’s Diversity in the 21<sup>st</sup> Century Conference, September 23, 2008.
- “It’s More Than Just What You Learned at Your Mother’s Knee: Teaching Responsible Conduct in Scientific Research”, College of Natural Sciences “Best Practices in Teaching Lecture Series”, Colorado State University, March 11, 2009.
- “Do We Really Teach Students What Plagiarism Is?” Chemical Education Symposium on Plagiarism, National ACS Meeting, Salt Lake City, UT, March 21-25, 2009.
- “How Teaching Responsible Conduct in Chemistry Research is Like Sex Education”, Keynote Address, Colorado Local Section ACS meeting, May 26, 2009
- “Responsible Conduct in Research (RCR) or What You Always Wanted to Know but Your Advisor Never Told You”, Younger Chemists Committee Symposium on Ethics in Graduate School, 239<sup>th</sup> National ACS Meeting, San Francisco, CA, March 21-25, 2010.
- “Copyright and Ethics in Scholarly Publishing: What you need to know”, CSU Academic Integrity Week Workshop, October 14, 2013.
- “Successfully Navigating a Professional Conference”, Graduate School Professional Development for Graduate Students Workshop Series, Colorado State University, February 15, 2014.
- “Copyright and Ethics in Scholarly Publishing: What you need to know”, CSU Academic Integrity Week Workshop, October 8, 2014.

- “Successfully Navigating a Professional Conference”, Graduate School Professional Development for Graduate Students Workshop Series, Colorado State University, October 24, 2015.
- “What Happens Once You’ve Got That Degree? Tips on Marketing, Networking, Interviewing, and Negotiating”, Graduate School Professional Development Workshop – Organized by Graduate Student Council in conjunction with Graduate Showcase, November 15, 2016.
- “Navigating the Non-Technical Side of Your Professional Career: Meetings, Negotiations, and Networking, Graduate School Professional Development Workshop, February 28, 2017.
- AVS Diversity and Inclusion Breakfast, *The Science of Team Science*, 64<sup>th</sup> Annual AVS International Symposium, Tampa FL, 2017, October 31, 2017.
- “What Do I Do When...: Navigating Day-to-Day Research Ethics”, E. R. Fisher, Colorado Section of the ACS, Fort Collins, CO: November 30, 2017.
- “Resilient, Persistent, Strident, and Bossy: Surviving and Thriving in 21<sup>st</sup> Century Academia” ACES program, Case Western Reserve University, March 28, 2019.

### **Contributed Education and Team Science Related Presentations**

- “Cultural Competency in a Responsible Conduct of Research Training Program: Focus on Misconduct”, E. R. Fisher and K. M. Partin, NIH Office of Research Integrity (ORI) Conference on Teaching RCR, May 15-17, 2009.
- “The Challenges for Scientists in Avoiding Plagiarism”, K. M. Partin and E. R. Fisher, Annual Meeting of the Association for Practical and Professional Ethics, San Antonio, TX: March 1-3, 2013.
- “RCR Instruction on Data Acquisition, Analysis, Ownership, and Retention: Can RCR Instruction Cover the Gaps?”, E. R. Fisher, C. Broccardo, and K. M. Partin, Annual Meeting of the Association for Practical and Professional Ethics, Jacksonville, FL: February 27-March 1, 2014.
- “Professional Development for Team Science: Training for Effective Teaming”, M. E. Suter and E. R. Fisher, International Science of Team Science Conference, Clearwater, FL: June 12-14, 2017.
- “The Significance of Intervention on Team Development and Process”, E. R. Fisher, H. B. Love, and J. E. Cross, International Science of Team Science Conference, Galveston, TX: May 20-24, 2018.
- “Using Social Network Analysis to Manage and Foster Effective Interdisciplinary Academic Science Teams” E. R. Fisher, H. B. Love, and J. E. Cross, Sunbelt Conference of the International Network for Social Network Analysis (INSNA), Utrecht, The Netherlands, June 25-July 1, 2018.
- “Principles of Community in Team Science”, E. R. Fisher, H. B. Love, and J. E. Cross, International Science of Team Science Conference, Lansing, MI: May 29-23, 2019.