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Brief Biography

I am a scientist at Lawrence Berkeley National Laboratory (LBNL), Berkeley, CA, and my research is geared towards coupling novel instruments and approaches to synchrotron radiation to perform cutting edge work in chemical physics and physical chemistry. I did my doctoral work at University of Cambridge, England and was a postdoctoral research fellow at Universities of Leicester & Manchester in England and at the Max Planck Institute in Gottingen, Germany before joining LBNL in 1995. My focus is to understand and map the physical and chemical principles that govern complicated phenomena in nature. My goal is to gain a molecular level understanding of alternative carbon neutral energy sources and global climate change, which has led me to work in the fields of imaging and biological mass spectrometry, atmospheric and environmental chemistry, and dynamics of combustion processes. My current interests include: ultrafast photon science incorporating lasers with synchrotron radiation to probe charge and proton transfer dynamics in solvated systems, correlated imaging mass spectrometry/fluorescence microscopy platforms for microbiology and developing new spectroscopic and imaging tools to probe dynamics.

Academic Qualifications

PhD Physical Chemistry, 1989, University of Cambridge, U.K.
Thesis Adviser: Dr. A.B. Callear

BSc (Hons) Chemistry, 1985. University of Delhi, India.

Professional Experience

Program Leader- Chemical Characterization, Transformations, and Dynamics at the Advanced Light Source, Lawrence Berkeley National Laboratory, Berkeley, CA (Appointed October 2013)

Senior Scientist – Chemical Sciences Division, Lawrence Berkeley National Laboratory, Berkeley, CA (Appointed July 2010)

Interim Beamline Director – Chemical Dynamics Beamline, Advanced Light Source, Lawrence Berkeley National Laboratory, Berkeley, CA (January-June 2009, January-June 2010)

Staff Scientist – Chemical Sciences Division, Lawrence Berkeley National Laboratory, Berkeley, CA (2000-2010)

Scientist – Chemical Sciences Division, Lawrence Berkeley National Laboratory, Berkeley, CA (1995-2000)

Post-doctoral Research Fellow – University of Manchester, U.K. 1993-1995 (Prof. J. C. Whitehead);
Max Planck Institute for Strömungsforschung, Göttingen, Germany. 1991-1993 (Prof. P. Potzinger);
University of Leicester U.K. and British Petroleum, Sunbury, U.K. 1989-1991 (Prof. I. M. T. Davidson)

Awards and Grants

Integrated Imaging of Microbial Community Response to External Threats, Laboratory Directed Research Funding, Lawrence Berkeley National Laboratory, 2012

Optimizing plant-microbe interactions for sustainable supply of nitrogen for bioenergy crops, Laboratory Directed Research Funding, Lawrence Berkeley National Laboratory, 2012

New methods and insight into the structure and evolution of melanin-based color in birds and other dinosaurs, NSF, 2012

Visualizing Functional Surfaces with Molecular Nano-imaging, DOE grant, 2006

The Camille and Henry Dreyfus Foundation Grant for Environmental Chemistry, 2005

Gas phase studies of the building blocks of life, Laboratory Directed Research Funding, Lawrence Berkeley National Laboratory, 2003-2006

Outstanding Performance Award, Lawrence Berkeley National Laboratory, 2003

Overseas Research Scholarship, Cambridge University, U.K. 1986-1988

Professional membership and activities

Fellow of American Physical Society.

Member of American Chemical Society.

Member of American Association for the Advancement of Science. Editorial

Board – Journal of Visualized Experiments.

Reviewer - Journal of Physical Chemistry, Journal of the American Chemical Society, Journal of Chemical Physics, Journal of American Society of Mass Spectrometry, Rapid Communications in Mass Spectrometry, Chemical Physics, Chemical Physics Letters, Analytical Chemistry, Journal of Mass Spectrometry, Progress in Energy and Combustion Science, New Journal of Chemistry, Chemistry- an Asian Journal.

Co-organizer - session "Physical chemistry for a sustainable future" at the 44th ACS Western Regional Meeting. San Jose, October 2013

Organizing Committee and discussion leader - International Workshop on Photon Tools for Combustion and Energy Conversion, Argonne National Labs. February 2013

Organizer- Advanced Light Source User Meeting Workshop – New directions in probing chemistry and physics with lasers and synchrotrons. Berkeley, October 2012

Discussion leader -2011 Gordon Research Conference (GRC) on gaseous ions, Galveston, TX, February 2011

Discussion leader -2009 Gordon Research Conference (GRC) on Atomic and Molecular Interactions, New Hampshire, July 2009

Organizer- Advanced Light Source User Meeting Workshop – Energy and Environmental Science with Synchrotron Radiation. Berkeley, October 2008

Organizer- Advanced Light Source User Meeting Workshop – Atoms to Aerosols with Synchrotron Radiation. Berkeley, October 2002

Member of committees

Laboratory Staff committee, Lawrence Berkeley National Laboratory (2013-2016)
Staff committee, Chemical Sciences Division, Lawrence Berkeley National Laboratory (2010-present)
Best Practices Diversity Council, Lawrence Berkeley National Laboratory (2001-2004)

Scientific Collaborators (2005-present)

Manfred Auer (LBNL), Ali Belkacem (LBNL), Matthew Berg (Mississippi), Joel Bowman (Emory), Kristie Boering (UC, Berkeley), Ksenia Bravaya (Boston), Chris Cappa (UC. Davis), Romy Chakraborty (LBNL), Agnes Chang (National Dong Hwa, Taiwan), John Daily (Colorado, Boulder), Hugo Destaillats (LBNL), Luke Hanley (Illinois, Chicago), Mike Duncan (Georgia, Athens), Barney Ellison (Colorado, Boulder), Oliver Gessner (LBNL),Martin Head Gordon (Berkeley), Debashree Ghosh (NCL, India), Mattanjah De Vries (UC Santa Barbara), Ralf Kaiser (Hawaii, Manoa), Kostas Kalogerakis (SRI), Marcus Kleber (U Oregon), Anna Krylov (USC), Stephen Klippenstein (ANL), Stephen Leone (LBNL, UC Berkeley), Dominic Loque (LBNL), Alex Mebel (Florida International), Ricardo Metz (Mass., Amherst), Dan Neumark (Berkeley), Peter Nico (LBNL), Trent Northen (LBNL), Deirdre Olynick (LBNL), David Osborn (Sandia), Darcy Peterka (Columbia), Corie Ralston (LBNL), Fritz Schaeffer III (Georgia, Athens), George Schatz (Northwestern), Matt Shawkey (Akron) Tom Slanger (SRI), Dan Slaughter (LBNL), Mohamed Sleiman (LBNL), John Stanton (Texas, Austin), Craig Taatjes (Sandia), Mark Thiemens (UC San Diego), Kevin Wilson (LBNL), Doug Worsnop (Aerodyne), Jingsong Zhang (UC Riverside).

Postdoctoral and graduate student supervision (2002-present)

Biswajit Bandhopadhay (LBNL-present), Leonid Belau (LAM), Yigang Fang (LBNL-present), Amir Golan (Civan Advanced Technologies, Israel), Theresa Hofstetter (US Air Force), Oleg Kostko (SRI), Shirley Liu (Kyoto, Japan), Christophe Nicholas (Synchrotron Soleil, France), Lionel Poisson (CNRS, France), Lynelle Takahashi (DOW), Tyler Troy (LBNL-present), Jinian Shu (Institute Eco Environment, China), Jia Zhou (Wisconsin, Madison).

Invited talks and lectures (1999-present)

Hot nozzle and synchrotron radiation shed light on combustion chemistry. International Discussion Meeting on Chemical Kinetics for Aerospace Applications, December 2016, IISER, Bangalore, India

Probing chemical transformations with mass spectrometry and photoelectron spectroscopy. Seminar at Dept. of Atomic and Nuclear Physics, Tata Institute of Fundamental Research, December 2016, Bombay India

Probing Proton Transfer and Electronic Structure via VUV Photoionization Mass Spectrometry & X-Ray Photoelectron Spectroscopy. Seminar, Spectroscopy and Dynamics of Molecules and Clusters 2016, Mahabaleshwar, India, February 2016

Probing Chemical Transformation and Dynamics in Clusters and Nanoparticles with VUV Radiation. Seminar, Symposium on VUV FELs in Molecular, Cluster and Surface Science: Perspectives at the Dalian Coherent Light Source, Dalian, China, October 2015

Photoionization Dynamics, Molecular Growth & Nucleation with Molecular Beams and Synchrotron Radiation. Seminar, Second workshop on laboratory experimental astrophysics, Kauai, Hawaii, February 2015

Hot Nozzles & Cold Beams: Revealing Ion Chemistry, Solvation, & Dynamics. Seminar, Joint Center for Artificial Photosynthesis, Berkeley, CA, November 2014

Hot Nozzles & Cold Beams: Revealing Ion Chemistry, Solvation, & Dynamics. ISIC Seminar, Ecole Polytechnique, Lausanne, Switzerland, October 2014

Rings of Fire: From Carbon to the Grain. Advanced Light Source User Meeting, Berkeley, CA, October 2014

Chemistry at ALS. International Workshop in Photon Tools for Physical Chemistry, Beatenberg, Switzerland, October 2014

Hot Nozzles & Cold Beams: Revealing Ion Chemistry, Solvation, & Combustion. Seminar, Synchrotron Soleil, France, September 2014

Probing proton transfer, ion chemistry, and excitonic transfer in clusters with VUV radiation. Summer School on Interatomic Coulombic Decay (ICD), Bad Honnef, Germany, September 2014

Mass spectrometry based approaches to probe bacterial and archaeal colonies and environments. Extreme Biochemistry Symposium, American Chemical Society National Meeting, San Francisco, CA, August 2014

Hot Nozzles & Cold Beams: Revealing Ion Chemistry, Solvation, & Combustion. NASA Ames, Chemistry Seminar, Mountain View, CA, August 2014

Probing dynamics with multi-color, multi-pulse laser and synchrotron photons. 7th International Conference on Coherent Multidimensional Spectroscopy, Eugene, OR, July 2014

Laser desorption mass spectrometry coupled to synchrotron radiation for analysis of complex organic matter. Conference on Lasers and Electro-Optics, San Jose, CA, June 2014

The Chemical Dynamics Beamline, DOE Gas Phase Chemical Physics Contractor's meeting, Potomac, MD, May 2014

Probing Chemical Systems with Synchrotron Radiation, Chemistry seminar, KAUST, Saudi Arabia, December 2013

Synchrotron based photoionization mass spectrometry for chemical problems, Physical Chemistry & Chemical Physics Seminar, Dept. of Chemistry and Biochemistry, University of Colorado, JILA, Boulder, CO, November 2013

Synchrotron based photoionization mass spectrometry for chemical problems, Seminar, NREL, Golden, CO, November 2013

Laser desorption, molecular beams, and synchrotron radiation for analysis of complex organic matter, 246 ACS National Meeting, Astrochemistry Symposium, Indianapolis, IN., September 2013

Synchrotron based photoionization mass spectrometry for chemical problems, Molecular foundry seminar, LBNL, July 2013

Synchrotron based photoionization mass spectrometry, Chemistry seminar, Indian Institute of Technology, Guwahati, Assam, India, June 2013

Synchrotron based photoionization mass spectrometry for chemical systems, Chemistry seminar, Tezpur University, Assam, India, June 2013

Chemical physics at a synchrotron… excitons, proton transfer and water, ALS Cross-Cutting Review/Workshop on Dynamics and Spectroscopy of Atoms, Ions, and Molecules, LBNL, April 2013

Synchrotron based tools for studying combustion chemistry and molecular growth mechanisms. International Workshop on Photon Tools for Combustion and Energy Conversion, Argonne National Labs. March 2013

Performing astrophysical measurements at a synchrotron, First workshop on laboratory experimental astrophysics, Kauai, Hawaii, February 2013

Imaging Mass Spectrometry with lasers, ion beams and synchrotron, Integrative Bioimaging seminar series, Lawrence Berkeley National Laboratory, November 2012

Electronic Structure and Proton Transfer in Hydrogen Bonded, π Stacked and Micro-Hydrated Systems, CPIMS-DOE contractors meeting, Washington DC, October 2012

Imaging Mass Spectrometry and Electronic Structure of Organic Molecules, Glen T. Seaborg Center Seminar, LBNL, October 2012

Probing electronic structure and proton transfer in stacked and solvated systems, visualizing fossil feathers and identifying dirt with synchrotron radiation, Analytical and Physical Chemistry Seminar, University of Texas, Austin, September 2012

(1) Probing molecular growth and thermal decomposition processes with a heated tubular reactor and tunable VUV radiation; (2) *A Next Generation X-ray Laser Array at the Berkeley Lab.* International Workshop on Frontiers in Synchrotron Tools for Studies of Combustion and Energy, Shanghai, China, October 2011
Spectroscopy, analysis, and imaging of molecules with synchrotron radiation and laser desorption, Telluride Workshop "New Frontiers and Grand Challenges in Laser-based Biological Microscopy", Telluride, CO, August 2011

Probing Kinetics with Synchrotron Radiation. International Conference on Chemical Kinetics, Cambridge, MA, July 2011

Spectroscopy, Analysis, and imaging of organic molecules with vacuum ultraviolet synchrotron radiation, Seminar at Environmental and Molecular Sciences Laboratory, PNNL, Richland, May 2011

Mass Spectrometry with VUV radiation, First Annual Berkeley Metabolomics Symposium, LBNL, Berkeley, January 2011

Imaging mass spectrometry, cluster and biomolecule energetics with VUV radiation, Chemical Society seminar, Cotton College, Guwahati, India, December 2010

Imaging mass spectrometry, cluster and biomolecule energetics with VUV radiation, Chemistry department seminar, Guwahati University, India, December 2010

Imaging Mass Spectrometry, aerosol chemistry, cluster and biomolecule energetics with VUV radiation. Topical Conference on Interaction of EM Radiation with Atoms, Molecules & Clusters (TC - 2010), RRCAT, Indore, India, March 2010

Imaging Mass Spectrometry, aerosol chemistry, cluster and biomolecule energetics with VUV radiation. National workshop on catalysis-2009, Catalysis for clean environment and sustainable future. Tezpur University, India, December 2009

Imaging Mass Spectrometry, Aerosol Chemistry and Biomolecule Energetics with VUV Radiation. Condensed Phase, Interfaces and Molecular Sciences (CPIMS) DOE contractors meeting, Arlington, VA, October 2009

Investigating atoms to aerosols with Synchrotron Radiation, Chemistry Dept. Seminar, University of the Pacific, Stockton, October 2009
"WE LUV VUV" Investigating atoms to aerosols with Synchrotron Radiation, Chemistry Dept. Seminar, University of Southern California, Los Angeles, August 2009

Energy and Environmental science at a synchrotron; Aerosol Chemistry, Nanoparticle Physics, Biomolecule energetics with VUV radiation; Physical Chemistry Chemical Physics with Synchrotron Radiation, Visualizing Chemistry and Biology with IR, VUV, and X-Ray photons; 4 lectures at the Joint ICTP/IAEA School on Novel Synchrotron Radiation Applications, Trieste, Italy, March 2009

Investigating atoms to aerosols with VUV Synchrotron Radiation, ALS ESG/SSG seminar, LBNL, Berkeley, CA, November 2008

Energy and Environmental science at a synchrotron, workshop at ALS user meeting, Berkeley, CA, Oct. 2008

Visualizing organic surfaces with imaging mass spectrometry, Visualizing Chemistry: Advances in Chemical Imaging, ACS National Meeting, Philadelphia, August 2008

Investigating Atoms to Aerosols with Vacuum Ultraviolet Radiation, DOE Imaging, Separations and Analysis Contractors meeting, Annapolis, Maryland, May 2008

Aerosol Chemistry, Nanoparticle Physics, and Imaging Mass Spectrometry with Vacuum Ultraviolet (VUV) Radiation, PIRE-ECCI Seminar series, UCSB, Santa Barbara, CA, February 2008

Physical Chemistry Chemical Physics with Synchrotron Radiation, SESAME users annual meeting, Amman, Jordan, November 2007

Aerosol Chemistry Nanoparticle Physics, Biomolecule Mass Spectrometry with VUV radiation, Institute of Eco-Environment, Beijing, China, July 2007

Aerosol Chemistry Nanoparticle Physics, Biomolecule Mass Spectrometry with VUV radiation, NSLS users meeting, Dalian, China, July 2007

Visualizing photoionization dynamics on nanoparticles with synchrotron radiation, 22nd International Symposium of Molecular Beams, Freiburg, Germany, May 2007

Probing aerosol chemistry and nanoparticle physics with vacuum-ultraviolet radiation, Chemistry Department seminar, Argonne National Labs, Argonne, IL, February 2007

Probing Atoms to Aerosols with Synchrotron VUV radiation PITTCON, Chicago, IL, February 2007

Investigating Atoms to Aerosols with Vacuum Ultraviolet Radiation, Condensed Phase, Interfaces and Molecular Sciences (CPIMS) DOE contractors meeting, Arlington, VA, October 2006

Past, present & future multicolor experiments at the ALS, Multicolor scientific opportunities at CIRCE and ALS workshop, ALS user meeting, October 2006

*Conducting State-of-the Art Chemical Physics at a Synchrotron***,** 2nd Jordanian workshop – SESAME in research, training and technological applications, Amman, Jordan, September 2006

Vacuum-Ultraviolet photoionization of fragile molecules, 10th Post-ionization Techniques in Surface Analysis workshop, Bommerholtz, Germany, September 2006

Photoionization studies of astrochemically relevant molecules, Astrochemistry - From Laboratory Studies to Astronomical Observations, Pacifichem, Hawaii, December 2005

Vacuum ultraviolet photoionization studies of biomolecules. Photophysical Dynamics in Biological Molecules Pacifichem, Hawaii, December 2005

Photoelectron imaging of nanoparticles. Frontiers in Structural and Functional Studies of Atomic and Molecular Clusters and Nano-particles, Pacifichem, Hawaii, December 2005

Single-Photon Ionization with Vacuum-Ultraviolet (VUV) Radiation, Chemistry department seminar, Penn State University, College Station, October 2005

VUV Interactions with Nanoparticles, Chemistry department seminar, University of Manchester, UK, September 2005

Photoelectron Imaging of Nanoparticles. 354. WE-Heraeus-Seminar "Structure and Dynamics of Free Clusters and Nanoparticles using Short Wavelength Radiation". Bad Honnef, Germany, September 2005

VUV photoionization of the building blocks of life, 21st International Symposium of Molecular Beams, Crete, Greece, May 2005

Interaction of nanoparticles with VUV light. Laboratoire de Chimie Physique, Université Paris Sud, Orsay, France, March 2005

Interaction of nanoparticles with VUV light. Laboratoire de Spectrometrie Ionique et Moleculaire, University of Lyon, France, March 2005

Interaction of nanoparticles with VUV light. Laboratoire Francis Perrin, CEA SACLAY, Orsay, France, March 2005

Interaction of nanoparticles with VUV light. Department of Chemistry, University of Hawaii, February 2005

Interaction of nanoparticles with VUV radiation. ALS SSG seminar series, LBNL, Berkeley, January 2005

Photoelectron imaging of nanoparticles," Chemistry Department seminar, University of California at Davis, Davis, CA, November 2004

Photoelectron imaging of nanoparticles," AMO seminar, Department of Physics, University of California at Berkeley, Berkeley, CA, October 2004

Atoms to aerosols, The Chemical Dynamics Beamline at the Advanced Light Source, Seminar, Combustion Research Facility, Sandia, CA, August 2004

Cutting edge science to real world applications, The Chemical Dynamics Beamline," National Organization of Black Chemists and Chemical Engineers (NOBCCHE), Annual meeting, San Diego, CA, April 2004

Flames, DNA, & lasers, Chemical physics at the Advanced Light Source, National Society of Black Physicists (NSBP), Washington DC, February 2004

Particle beam delivery systems for ultra-fast light sources, LCLS Instrumentation workshop, SLAC, Stanford University, Palo Alto, CA, February 2004

Flames, DNA, & lasers, Chemical physics at the Advanced Light Source, ALS SSG seminar series LBNL, Berkeley, CA, November 2003

Flames, DNA, & lasers, Chemical physics at the Advanced Light Source, National Organization of Black Chemists and Chemical Engineers (NOBCCHE), Indianapolis, April 2003

Reaction dynamics using synchrotron radiation. 223th ACS National Meeting, Orlando, FL, April 2002

Imaging in chemical dynamics in conjunction with synchrotron radiation. ACS National Meeting, Pacifichem 2000, Hawaii, December 2000

Velocity Map Imaging Studies of Reaction Dynamics. ACS western regional meeting, San Francisco, October 2000

Velocity Map Imaging Studies of Reaction Dynamics. Symposium on Imaging in Chemical Dynamics, ACS National Meeting, New Orleans, August 1999

Velocity Map Imaging Studies of Reaction Dynamics. Photoionization workshop, ICPEAC, Okazaki, Japan, July 1999

Publications

143. L. Zhao, T. Yang, R.I. Kaiser, T.P. Troy, M. Ahmed, J.M. Ribeiro, D. Belisario-Lara, A.M. Mebel, "*A Combined Experimental and Computational Study on the Unimolecular Decomposition of JP-8 Jet Fuel Surrogates II: n-Dodecane (n-C12H26*)," J. Phys. Chem. A, 2017, DOI 10.1021/acs.jpca.6b11817

142. L. Zhao, T. Yang, R.I. Kaiser, T.P. Troy, M. Ahmed, D. Belisario-Lara, J.M. Ribeiro, A.M. Mebel, "*A Combined Experimental and Computational Study on the Unimolecular Decomposition of JP-8 Jet Fuel Surrogates I: n-Decane (n-C10H22*)," J. Phys. Chem. A, 2017, DOI 10.1021/acs.jpca.6b11472

141. T. Yang, T.P. Troy, B. Xu, O. Kostko, M. Ahmed, A.M. Mebel and R.I. Kaiser, *"Hydrogen-Abstraction/Acetylene-Addition Exposed*," Angew. Chem. Int. Ed. 2016, 55, 14983 DOI: 10.1002/anie.201607509

140. M.I. Jacobs, B. Xu, O. Kostko, N. Heine, M. Ahmed, and K.R. Wilson, *"Probing the Heterogeneous Ozonolysis of Squalene Nanoparticles by Photoemission,"* J. Phys. Chem. A, 2016, 120 (43), pp 8645–8656 DOI: 10.1021/acs.jpca.6b09061

139. H. Xie, J. H. Zou, X. T. Kong, W. Q. Zhang, M. Ahmed, L. Jiang, "*Probing the microhydration of metal carbonyls: a photoelectron velocity-map imaging spectroscopic and theoretical study of Ni(CO)(3)(H2O)n(-)*," Phys. Chem. Chem. Phys., (2016), 18, 26719, DOI: 10.1039/C6CP05035B

138. O. Kostko, T. P. Troy, B. Bandyopadhyay, and M. Ahmed, "*Proton transfer in acetaldehyde-water clusters mediated by a single water molecule*," Phys. Chem. Chem. Phys. (2016) **18**, 25569, DOI: 10.1039/C6CP04916H

137. S. Chakraborty, T. L. Jackson, B. Rude, M. Ahmed, and M. H. Thiemens, "*Nitrogen isotopic fractionations in the low temperature (80K) vacuum ultraviolet photodissociation of* N_2," J. Chem. Phys. (2016) 145, 114302, DOI: 10.1063/1.4962447

136. G. T. Buckingham, J.P. Porterfield, O. Kostko, T. P. Troy, M. Ahmed, D. J. Robichaud, M. R. Nimlos, J. W. Daily, G. B. Ellison, "*The thermal decomposition of the benzyl radical in a heated micro-reactor. II. Pyrolysis of the tropyl radical,"* J. Chem. Phys. (2016), 145, 14305, DOI: 10.1063/1.4954895

135. K. A. Larsen, J. P. Cryan, N. Shivaram, E. G. Champenois, T. W. Wright, D. Ray, O. Kostko, M. Ahmed, A. Belkacem, and D. S. Slaughter, "*VUV and XUV reflectance of optically coated mirrors for selection of high harmonics*," Optics Exp. (2016) **24**, 18209, DOI: 10.1364/OE.24.018209

134. B. Bandyopadhyay, T. Stein, Y. Fang, O. Kostko, A. White, M. Head-Gordon, and M. Ahmed, "*Probing Ionic Complexes of Ethylene and Acetylene with Vacuum Ultraviolet Radiation*," J. Phys. Chem A. (2016) **120**, 5053, DOI: 10.1021/acs.jpca.6b00107

133. S. Alayoglu, D. Rosenberg & M. Ahmed, "*Hydrothermal Synthesis and Characterization under Dynamic Conditions of Cobalt Oxide Nanoparticles Supported over Magnesium Oxide Nano-plates*," Dalton Trans., (2016) **45**, 9932, DOI: 10.1039/C6DT00204H

132. O. Kostko, B. Bandyopadhyay, and M. Ahmed, "*Vacuum Ultraviolet Photoionization of complex chemical systems*," Ann. Rev. Phys. Chem. (2016) Vol. 67, 19, DOI: 10.1146/annurev-physchem-040215-112553

131. W. T. Ralston, N. Musselwhite, G. Kennedy, K. Ana,Y. Horowitz, A. A. Cordones, B. Rude, M. Ahmed, G. Melaet, & S. Alayoglu, "*Soft X-ray Spectroscopy Studies of Adsorption and Reaction of CO in the presence of H_2 over 6 nm MnO Nanoparticles Supported on Mesoporous Co_3O_4,*" Surface Science (2016) **648**, 14, DOI: 10.1016/j.susc.2015.12.006

130. J. P. Porterfield, J. H. Baraban, T. P. Troy, M. Ahmed, M. C. McCarthy, K. M. Morgan, J. W. Daily, T. L. Nguyen, J. F. Stanton, and G. B. Ellison, "*Pyrolysis of the Simplest Carbohydrate, Glycolaldehyde (CHO-CH_2OH), and Glyoxal in a Heated Micro-Reactor*," J. Phys. Chem. A. (2016) **120**, 2161, DOI: 10.1021/acs.jpca.6b00652

129. J. P. Porterfield, T. L. Nguyen, J. H. Baraban, G. T. Buckingham, T. P. Troy, O. Kostko, M. Ahmed, J. F. Stanton, J. W. Dailey, and G. B. Ellison, "*Isomerization and Fragmentation of Cyclohexanone in a Heated Micro-Reactor,*" J. Phys. Chem. A. (2015) **119**, 12635, DOI: 10.1021/acs.jpca.5b10984

128. D. S. N. Parker, R. I. Kaiser, O. Kostko, T. Troy, M. Ahmed, B. J. Sun, S. H. Chen, and A. H. Chang, "*On the Formation of Pyridine in the Interstellar Medium*," Phys. Chem. Chem. Phys. (2015) **17**, 32000, DOI: 10.1039/C5CP02960K

127. K. N. Urness, Q. Guan, T. P. Troy, M. Ahmed, J. W. Dailey, G. B. Ellison, and J. M. Simmie, "*Pyrolysis Pathways of the Furanic Ether 2-Methoxyfuran,*" J. Phys. Chem. A. (2015) **119**, 9962, DOI: 10.1021/acs.jpca.5b06779

126. A. K. Perras, B. Daum, C. Ziegler, L. Takahashi, M. Ahmed, G. Wanner, A. Klingl, G. Leitinger, D. Kolb-Lenz, S. Gribaldo, A. Auerbach, M. Mora, A. J. Probst, A. Bellack, C. Moissl-Eichinger, "*S-layers at second glance? Altiarchaeal grappling hooks (hami) resemble arhaeal S-layer proteins in structure and sequence,"* Front. Microbiol. (2015, accepted) DOI: 10.3389/fmicb.2015.00543

125. D. S. N. Parker, R. I. Kaiser, O. Kostko, and M. Ahmed, "*Selective Formation of Indene via the Reaction of Benzyl Radicals with Acetylene*," Chem. Phys. Chem. (2015) **16**, 2091, DOI: 10.1002/cphc.201500313

124. B. Bandyopadhyay, O. Kostko, Y. Fang, and M. Ahmed, "*Probing Methanol Cluster Growth by Vacuum Ultraviolet Ionization*," J. Phys. Chem. A. (2015) **119**, 4083, DOI: 10.1021/acs.jpca.5b00912

123. Z. Liu, N. Destouches, G. Vitrant, Y. Lefkir, T. Epicier, F. Vocanson, S. Bakhti, Y. Fang, B. Bandyopadhyay, and M. Ahmed, *"Understanding the Growth Mechanisms of Ag Nanoparticles Controlled by Plasmon-Induced Charge Transfers in Ag-TiO_2 Films*," J. Phys. Chem. C. (2015) **119**, 9496, DOI: 10.1021/acs.jpcc.5b01350

122. T. K. Ormond, P. Hemberger, T. P. Troy, M Ahmed, J. F. Stanton, and G. B. Ellison, "*The Ionization Energy of Cyclopentadienone: A Photoelectron-Photoion Coincidence Study*," Mol. Phys. (2015) **113**, 2350, DOI: 10.1080/00268976.2015.1042936

121. D. S. N. Parker, R. I. Kaiser, B. Bandyopadhyay, O. Kostko, T. P. Troy, and M. Ahmed, "*Unexpected Chemistry from the Reaction of Naphthyl and Acetylene at Combustion-Like Temperatures*," Angew. Chem. Int. Ed. (2015) **127**, 5511, DOI: 10.1002/anie.201411987

120. T. P. Troy, M. Ahmed, "*Rings of fire: Carbon combustion from soot to stars*," Phys. Today, (2015) **68**, 62, DOI: 10.1063/PT.3.2729

119. D. S. N. Parker, R. I. Kaiser, O. Kostko, T. P. Troy, M. Ahmed, A. M. Mebel, and A. G. G. M. Tielens, "*Gas Phase Synthesis of (Iso)Quinoline and Its Role in the Formation of Nucleobases in the Interstellar Medium*," Astrophys. J. (2015) **803**, 53, DOI: 10.1088/0004-637X/803/2/53

118. T. K. Ormond, A. M. Scheer, M. R. Nimlos, D. J. Robichaud, T. P. Troy, M. Ahmed, J. W. Daily, T. L. Nguyen, J. F. Stanton, and G. B. Ellison, "*Pyrolysis* of *Cyclopentadienone: Mechanistic Insights From a Direct Measurement of Product Branching Ratios,"* J. Phys. Chem. A. (2015) **119**, 7222, DOI: 10.1021/jp511390f

117. P. T. Lynch, T. P. Troy, M. Ahmed, and R.S. Tranter*, "Probing Combustion Chemistry in a Miniature Shock Tube with Synchrotron VUV Photo Ionization Mass Spectrometry,"* Anal. Chem. (2015) **87**, 2345, DOI: 10.1021/ac5041633

116. G. T. Buckingham, T. K. Ormond, J. P. Porterfield, P. Hemberger, O. Kostko, M. Ahmed, D. J. Robichaud, M. R. Nimlos, **J.** W. Daily, and G. B. Ellison, "*The thermal decomposition of the benzyl radical in a heated micro-reactor. I. Experimental findings,"* J. Chem. Phys. (2015) **142**, 044307, DOI: 10.1063/1.4906156

115. D. S. N. Parker, R. I. Kaiser, T. P. Troy, O. Kostko, M. Ahmed, and A. M. Mebel, "*Toward the Oxidation of the Phenyl Radical and Prevention of PAH Formation in Combustion Systems*," J. Phys. Chem. A. (2015), **119**, 7145, DOI: 10.1021/jp509170x

114. H. W. Chang, C. C. Hsu, M. Ahmed, S. Y. Liu, Y. G. Fang, J. Seog, G. S. Oehrlein, D. B. Graves, *"Plasma flux-dependent lipid A deactivation,"* J. Phys. D: Appl. Phys. (2014), 47, 224015, 10.1088/0022-3727/47/22/224015

113. S. Chakraborty, B. H. Muskatel, T. L. Jackson, M. Ahmed, R. D. Levine, and M. H. Thiemens, *"Massive isotopic effect in vacuum UV photodissociation of N_2 and implications for meteorite data,"* PNAS (2014) **111**, 14704, DOI:10.1073/pnas.1410440111

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