

Heather Cecile Allen

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Academic Background

1997 Ph.D. Physical Chemistry; University of California, Irvine
 Ph.D. 1997; M.S. 1995
 Advisor John C. Hemminger & coAdvisor Barbara J. Finlayson-Pitts

1993 B.S. Chemistry; University of California, Irvine
 UG Research Advisors: Nobel Laureate F. Sherwood Rowland & Don Blake

Professional Appointments

2020 - present Dow Professor of Chemistry, The Ohio State University, Columbus, OH
 2015 - present Ohio State Distinguished Scholar, The Ohio State University, Columbus, OH
 2015 - present Alexander von Humboldt Fellow, Germany
 2008 - present Professor of Chemistry, The Ohio State University, Columbus, OH
 2011 - present Professor of Pathology, Adjunct, The Ohio State University, Columbus, OH
 2012 - 2013 Faculty Fellow, OSU VP Strategic Planning office, Discovery Themes
 2011 Visiting Scholar, Wexner Medical School, James Cancer Center, OH
 2008 - 2009 Chair - Ohio State University Senate Steering Committee
 2007 - 2010 Ohio State University Senator, College of Math and Physical Sciences
 2005 - 2008 Associate Professor of Chemistry, The Ohio State University, Columbus, OH
 2005 Chair – National Science Foundation: Workshop on Chemistry & Sustainability
 2000 - 2005 Assistant Professor of Chemistry, The Ohio State University, Columbus, OH
 1997 - 1999 NOAA/UCAR Postdoctoral Program in Climate and Global Change, Fellow
 University of Oregon, Advisor: Geraldine L. Richmond

Honors, Awards and Fellowships

2022 Irving Langmuir Award in Chemical Physics, ACS National/International Award
 2018 Tohoku Forum for Creativity Scholar, Sendai, Japan
 2017 Alumna of the Year Award, Saddleback College, California
 2015 Ohio State Distinguished University Scholar Award
 2015 Alexander von Humboldt Research Award, Germany
 2013 - 2020 RESOLV German Center of Excellence Advisory Board
 2013 American Chemical Society National Award for
 Encouraging Women into Careers in the Chemical Sciences
 2012 - 2013 CIC Academic Leadership Program Fellow
 2012 American Association for the Advancement of Science (AAAS) Fellow
 2010-2011 Visiting Scholar, Wexner Medical School @ Ohio State James Cancer Center,
 Pathology and Surgery/Surgical Oncology Departments/Divisions
 2007 Distinguished Diversity Enhancement Award – Ohio State University
 2006 Camille Dreyfus Teacher – Scholar Award
 2006 Columbus Public Schools Service Award - *An Empowered Woman Award*
 2005 Alfred P. Sloan Research Award, Fellow
 2003 Beckman Young Investigator Award
 2002 NSF CAREER Award (2002 – 2007)
 2002 Research Innovation Award, Research Corporation
 2001 Ohio State OMA Distinguished Professional Mentor Award 2000-2001
 1997 - 1999 NOAA Postdoctoral Fellowship in Climate and Global Change
 1996 - 1997 Fannie and John Hertz Foundation Graduate Student Fellowship

1996 - 1997	Environmental Protection Agency (EPA) Graduate Student Fellowship (awarded but declined due to Hertz Fellowship offer)
1996	Joan Rowland Nobel Award, UCI
1994 - 1995	National Science Foundation Traineeship Fellowship, UCI
1993 - 1994	Department of Education Fellowship, UCI
1993	Outstanding Senior in Chemistry, UCI; Magna Cum Laude
1992 - 1993	Science Scholarship Foundation Fellowship - Saddleback
1990 - 1991	ACS Outstanding Chemistry Student, Saddleback College, Mission Viejo, CA

Google Scholar Citations

<https://scholar.google.com/citations?user=xtke6AcAAAAJ>

H-index of 52

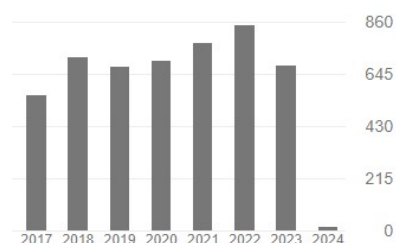
9999 total citations as of 01.09.2024

	All	Since 2019
Citations	9999	3689
h-index	52	33
i10-index	124	88

Editorial Boards

2010 – 2013 Journal of Physical Chemistry Editorial Board Member

2018 – 2021 Chemical Physics Letters Editorial Board Member



Professional Affiliations

- American Chemical Society
- American Physical Society
- American Geophysical Society
- American Association for the Advancement of Science
- OSU Chemical Physics Program
- OSU Environmental Science Graduate Program
- OSU Biophysics Program
- OSU Comprehensive Cancer Center

Summary of Presentations and Publications

- > 240 Invited talks at Professional Meetings (~130) & Invited Seminars at Universities and Colleges (~110)
 - ✓ 16 Gordon Research Conference (GRC) Speaker Invitations
 - ✓ 20+ Plenary, Keynote, Lectureship Invitations
 - ✓ 30+ Departmental Colloquia and Named Lecture Invitations
 - ✓ Additional 250+ Contributed talks by Allen lab members
- 150 Peer-Reviewed Journal Publications

Research Summary

Dr. Allen's research focus is the study of molecular organization and structure at liquid interfaces. Understanding water, hydration, ion pairing, and complexation including solvation structure at the surface and in the liquid solution phase is an area of strong expertise. Research is ongoing to understand ion solvation, interfacial electric fields and surface potentials, and how ions perturb the hydrogen bonding network of water in the interfacial region. Applying electric fields across the air – aqueous interface is Dr. Allen's newest research endeavor to understand and ultimately control interfacial chemistry at liquid surfaces. Understanding lipid and surfactant organization in monolayers for both atmospheric aerosol and biological applications with focus on ocean surfaces, and on understanding lung surfactant and function, and cellular membrane biophysics inclusive of understanding the molecular organization of skin is also of great interest. In addition to structure studies at the air-water interface, Dr. Allen is also conducting studies for understanding charge separation for molecules such as N₂O₅ at various dielectric liquid surfaces such as propylene carbonate, glycerol, and diethyl sebacate. Instrumentation development in several areas, broad band sum frequency generation, ionizing surface potential, Brewster angle microscopy, and polarized Raman spectroscopy coupled with machine learning is ongoing. Dr. Allen also works to develop molecular level methods to evaluate normal versus cancerous tissues and is currently a consultant for IR Medtek LLC, an Ohio start-up company in which she is a co-Inventor of the founding technology.

TEACHING/MENTORING

Courses Taught (UG/Grad)

General Chemistry (UG); Physical Chemistry Laboratory (UG); Advanced Analytical Instrumentation (UG); Quantitative Analysis (UG); Physical Chemistry (UG); Thermodynamics & Kinetics (Grad); Atmospheric Chemistry (Grad); Freshman Seminar: The Air We Breathe (UG).

Current affiliations of past graduate and *postdoctoral students

- Dr. Abbie Enders, Research Scientist, Battelle Labs, Columbus, OH
- Dr. Ka Chon Ng, LLBNL Postdoctoral Fellow, CA
- Dr. Kamal Ray*, Research Scientist, Intel, OR
- Elliot Springfield, M.S.
- Dr. Ankur Saha*, Research Scientist, Bahbha Atomic Research Centre, Mumbai, India
- Dr. Juan Velez Alvarez*, Entrepreneur, Colombia, South America
- Dr. Maria Vazquez de Vasquez, Research Scientist, IR Medtek, Gahanna, OH
- Dr. Michaela Rogers, PNNL Postdoctoral Fellow, WA
- Dr. Kimberly Carter-Fenk, Stanford Postdoctoral Fellow, CA
- Dr. Tehseen Adel, NIST/Brown Univ. Postdoctoral Fellow, MD
- Ms. Meredith Varnecky, M.S., R&D
- Dr. Liwei Yan*, OSU Medical School, Laboratory Manager
- Assoc. Prof. Bethany Wellen Rudd, Ohio Wesleyan University, OH
- Dr. Jennifer Neal, Procter & Gamble, Cincinnati, OH
- Dr. Stephen Baumler*, Encapsys Inc., MI
- Mr. Brant Finzer, M. S. American Regent, OH
- Dr. Lu Lin*, Oak Ridge National Laboratory postdoctoral researcher, TN
- Assoc. Prof. Bethany Wellen Rudd, PhD 5/2018, Ohio Wesleyan, Delaware, OH
- Dr. Ting Zhang, PhD 5/2018, Research Scientist, American Regent, Columbus, OH
- Asst. Prof. Dr. Ellen Adams, PhD 12/2016, Asst. Prof., W3, Dresden Germany
- Dr. Dominique Vereault*, University of Bordeaux, Canada
- Dr. Dana Marie Telesford, PhD Allen Lab 12/2014, Texas Tech Chemistry Laboratory Supervisor
- Dr. Minette Ocampo, PhD Allen Lab 2014, Research Associate, PH Matter
- Dr. Ran Li, Research Scientist, ChinaWaterChemical
- Dr. Wei Hua, PhD Allen Lab 2013, OSU
- Mr. Zishuai Huang, H.S. Instructor, China
- Mr. Xiao Shou, M.S., The Limited, followed by postgraduate studies
- Dr. Aaron Jubb, Research Scientist/postdoc, NOAA Aeronomy lab, CO; 2015, Oakridge nat'l Lab, TN; 2016 USGS
- Dr. Christine Lemon, Naval Research Lab, Key West, FL
- Dr. Ralf Posner*, Scientist @ Henkel, Germany & Adjunct Professor at Paderborn University, Germany
- Dr. Xiangke Chen, Research Scientist, Syngenta Co., Switzerland
- Dr. Cheng Tang, PPG Industries, Pittsburgh, PA
- Dr. Roxana Sierra-Hernandez; Byrd Polar Research Center Researcher, E. Moseley-Thompson & L. Thompson
- Dr. Nadia Ninel Casillas-Iltuarte, Researcher, Prof. Steven Lower, OSU Earth Sciences / Am Heart Assoc Fellow
- Dr. Christopher Beekman, Ohio EPA, Columbus, OH
- Dr. Man Xu, Research Scientist Pacific Northwest National Laboratory, WA; as of 10/14 Evans Analytical Group, CA
- Dr. Lisa Van Loon, Research Scientist & Entrepreneur, Canada
- Dr. Lisa Hommel, Director of the OSU Chemistry Department Surface Science Laboratory
- Prof. Laura Voss*, Johns Hopkins, Education
- Dr. Sandhya Gopalakrishnan*, Research Assoc. & Entrepreneur, KLA Tencor (& Intel Corp), CA
- Dr. Dingfang Liu*, Senior Project Engineer, CH2MHill
- Prof. Dr. Gang Ma*, Professor of Chemistry, Hebei University, Hebei Province, China
- Dr. Hardy Castada, (M.S. Chem/Allen lab) Research Associate, Australia
- Ms. Lori Levering, Research Assoc, Battelle Corp, Aerosol Division
- Mr. Chad Cucksey, Research Assoc., Battelle Corp
- Dr. Lt. Anthony Davis, 2014@Hobson and Motzer, Inc, Durham CT, Project/manufact Engineer/Chemist
- Ms. Ashley Swartzwelder, Chemical Abstracts Service, Ohio

- Mr. Nathan Gaubert, Research Assoc., Spartan Chemical, Ohio

Current Graduate Students (PhD), Postdoctoral Researchers, and Undergraduate Researchers

- Nicole North, Chemistry Graduate Program
- Jessica Clark, Chemistry Graduate Program
- Shamma Prama, Chemistry Graduate Program
- Gwen Gattermeir, Chemistry Graduate Program
- Tai Bowling-Charles, Chemistry Graduate Program
- Dr. Biswajit Biswas, Postdoctoral Researcher
- Dr. Narendra Adhikari, Postdoctoral Researcher

Past Undergraduate Researchers (50+ since 2000; *authored peer reviewed publications while in the Allen Group)

- Jessica Gilman, Elizabeth Coogan, Charles Rhoads, Jacob Schlegel, Julie Thompson, Angela Hudnall, Patrick Veres, *Karen Callahan, Josephine Aimiwu, Nikki (Lisa) Fox, *Rena Minor, Michael Franklin, David Slocum, Imran Shaikh, Amanda Storm, John Mbagwu, *Mohamad Bazerbashi, Joselyn Del Plar, Johnna Burns, *Mazen Roshdy, Kyle Fairchild, Latisha Fields, Tyler Frank, John Galden, Mikaela Keller, *Clayton Casper, *Victoria Reick-Mitrisin, Spencer Day, HS student Annabelle Pan, HS student Hannah Yeack, Cameron Welker, *M. Griff Cathcart, *Andrew Vidalis, *Evan Lach, *Raja Dahnkani, *Alex Grooms, *Mia Zerkle, *Morgan Smeltzer, *Brittany Shook, *Zuqi Liu, *Emma Beasley, Cathryn Schoeppner, *Jeongin Kim, *William Hartt, *Michelle Fiamingo, *Nicole Auvil, Audrey Milligan, *Abdullah Algarni, *Chase Fensore, *Effie Palassis, Yotam Roth, Kezia Duah (current UG)

Past Visiting Scholars

- Pablo Argudo (Universidad de Córdoba, Spain), Juan Velez Alvarez (Universidad Nacional de Colombia), Chenlong Hu (Jiangnan University), Feng Wei (Institution for Interdisciplinary Research, Jiangnan University), Xiping Lei (Xian Tech), Bingyang Hou (Mount Vernon Nazarene Univ, OH)

RESEARCH

Publications (reverse order; cover images feature Allen articles)

150. Saccharide concentration prediction from proxy sea surface microlayer samples analyzed via infrared spectroscopy and quantitative machine learning, Nicole M. North, Abigail A. Enders, Jessica B. Clark, Kezia A. Duah, Heather C. Allen; (funded by NASA & NSF-CHE CAICE), In Review ACS Earth and Space Chem 11.3.23

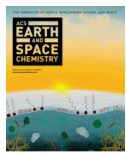
149. Structural Evolution of Water-in-Propylene Carbonate Mixtures Revealed by Polarized Raman Spectroscopy and Molecular Dynamics; Jessica B. Clark, Tai Bowling-Charles, Shamma Jabeen Prama, Biswajit Biswas, David T. Limmer, Heather C. Allen; in ChemRxiv 10.26434/chemrxiv-2023-0r1zw, [DOI: 10.26434/chemrxiv-2023-0r1zw](https://doi.org/10.26434/chemrxiv-2023-0r1zw); (funded by NSF-CHE), DOI: 10.1039/D3CP02181E, *Physical Chemistry Chemical Physics*, **2023**, 25, 23963 – 23976.

148. New insights into cation and temperature driven protein adsorption to the air-water interface through infrared reflection studies of bovine serum albumin; Abigail A. Enders, Jessica B Clark, Scott M. Elliott, Heather C. Allen; (funded by NSF-CHE CAICE) DOI: 10.1021/acs.langmuir.3c00249, *Langmuir* **2023** 39 (15), 5505-5513.

147. Array Based Machine Learning for Functional Group Detection in Electron Ionization Mass Spectrometry; Nicole M. North, Abigail A. Enders, Morgan L. Cable, Heather C. Allen, (funded by NASA (NMN), JPL (MLC), NSF-CHE (AAE), and DOE-BES CPIMS DE-SC0016381 (HCA)), *ACS Omega* **2023**, 8, 27, 24341–24350. [ACS paper link](#)

146. Second-harmonic generation provides insight into the screening response of the liquid water interface; Kamal K. Ray[§], Aditya Limaye[§], Ka Chon Ng, Ankur Saha, Sucheol Shin, Marie-Pierre Gageot, Simone Pezzotti, Adam P. Willard*, and Heather C. Allen* (funded by DOE-BES CPIMS) ChemRxiv. Cambridge: Open Engage; 2023, [10.26434/chemrxiv-2021-qvghs-v5](https://doi.org/10.26434/chemrxiv-2021-qvghs-v5); *J. Phys. Chem. C* **2023**, 127, 30, 14949–14961.

145. Identification of Ion Pairs in Aqueous NaCl and KCl Solutions in Combination of Raman Spectroscopy, Molecular Dynamics and Quantum Chemical Calculations; L Wang, (Tohoku Univ), A Morita (Tohoku Univ), N North, E Springfield, S Baumler, HC Allen, (Funded by DOE BES CPIMS) DOI: 10.1021/acs.jpcc.2c07923 *J. Phys. Chem. B* **2023** 127 (7), 1618-1627.



144. Carbon on the ocean surface: Temporal and geographical investigation; Abigail A. Enders, Scott M. Elliott (LANL), and Heather C. Allen; (funded by NSF CAICE) *ACS Earth and Space Chem*, **2023**, 7, 360–369. COVER HIGHLIGHTS WORK 2022



143. Discerning Poly- and Monosaccharide Enrichment Mechanisms: Alginate and Glucuronate Co-adsorption to a Stearic Acid Sea Surface Microlayer; Vazquez de Vasquez, Maria; Rogers, Mickey; Carter-Fenk, Kimberly; Allen, Heather, (funded by NSF CAICE) *ACS Earth and Space Chem*, Vol. 6, 1581-1595, **2022**.

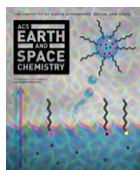
142. Iron(III) Chloro Complexation at the Air–Aqueous FeCl₃ Interface via Second Harmonic Generation Spectroscopy, KC Ng, T Adel, KU Lao, MG Varmecky, Z Liu, M Arrad, HC Allen*, *J. Phys. Chem. C* **2022** 126 (36), 15386-15396. (funded by DOE BES CPIMS)

141. Phase state and thermodynamic properties of proxy sea spray aerosol interfaces derived from temperature-dependent equilibrium surface pressure; Rogers, M. M.; Vazquez de Vasquez, M. G.; Neal, J. F.; Zerkle, M. M.; Shook, B. M.; Allen, H. C., (funded by NSF CAICE) *ACS Earth and Space Chem* **2022** 6 (6), 1563-1573. <https://doi.org/10.1021/acsearthspacechem.2c00063>



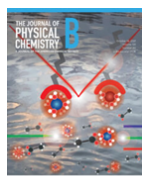
140. Recognition competes with hydration in anion-triggered monolayer formation of cyanostar supra-amphiphiles at aqueous interfaces; Liwei Yan[§], Ankur Saha[§], Wei Zhao[§], Jennifer F. Neal, Yusheng Chen Amar H. Flood*, Heather C. Allen*, DOI: [10.1039/D2SC00986B](https://doi.org/10.1039/D2SC00986B) (Edge Article) *Chem. Sci.*, **2022**, 13, 4283-4294. (funded by DOE BES Separations Science (DE-SC0022099))

139. La³⁺ and Y³⁺ interactions with the carboxylic acid moiety at the liquid/vapor interface: Identification of binding complexes, charge reversal, and detection limits; Adrien Sthoer, Ellen M Adams, Sanghamitra Sengupta, Robert Corkery, Heather C. Allen, Eric Claude Tyrode, (EMA funded by OSU, HCA funded by DOE-BES Separation Science (DE-SC0022099)) *Journal of Colloid And Interface Science*, **Volume 608 Part 2**, 15 February **2022**, Pages 2169-2180. DOI [10.1016/j.jcis.2021.10.052](https://doi.org/10.1016/j.jcis.2021.10.052).



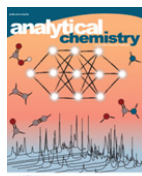
138. Zinc–Carboxylate Binding in Mixed Octadecanoic Acid and Octadecanol Monolayers on Proxy Seawater Solution Surfaces; NC Auvil, M Vazquez de Vasquez, HC Allen*, (funded by NSF-CHE CAICE) *ACS Earth and Space Chemistry*, **2021**, 5, 10, 2947-2956.

137. Hydration and Hydrogen Bond Order of Octadecanoic Acid and Octadecanol Films on Water at 21°C and 1°C; Vazquez de Vasquez, Maria; Carter-Fenk, Kimberly; McCaslin, Laura; Beasley, Emma; Simpson, Jessica; Allen, Heather*; (funded by NSF-CHE CAICE) *Special 125th Year Anniversary Issue of J. Phys. Chem. A* **2021**, 125, 46, 10065-10078.

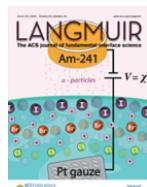


136. Role of Hydration in Magnesium versus Calcium Ion Pairing with Carboxylate: Solution and the Aqueous Interface, M Vazquez de Vasquez, B Rudd, M Baer, E Beasley, Emma, HC Allen, *J. Phys. Chem. B* **2021**, 125, 40, 11308–11319.

135. Calcium Bridging Drives Polysaccharide Co-adsorption to a Proxy Sea Surface Microlayer; Kimberly A. Carter-Fenk, Abigail C. Dommer, Michelle E. Fiamingo, Jeongin Kim, Rommie E. Amaro, Heather C. Allen* ((funded by NSF-CHE CAICE) ChemRxiv: <https://doi.org/10.26434/chemrxiv.14347265.v1>; *Phys. Chem. Chem. Phys.*, **2021**, 23, 16401-16416.



134. Functional Group Identification for FTIR Spectra using Image-based Machine Learning Models; Abigail Enders; Nicole North; Chase Fensore; Juan Velez-Alvarez ; Heather C. Allen*, (funded by NSF-CHE CAICE)
ChemRxiv: <https://doi.org/10.26434/chemrxiv.14188679>; *Anal. Chem.* **2021**, *93*, *28*, 9711–9718.



133. Insight into the Ionizing Surface Potential Method and Aqueous Sodium Halide Surfaces; T Adel, KC Ng, MG Vazquez de Vasquez, J Velez-Alvarez, and HC Allen*; Invited Feature Article, DOI 10.1021/acs.langmuir.1c00465 (funded by DOE-BES CPIMS DE-SC0016381), *Langmuir*, **2021**, *37*, *26*, 7863–7874.

132. Vibrational Exciton Delocalization Precludes the Use of Infrared Intensities as Proxies for Surfactant Accumulation on Aqueous Surfaces; Kimberly A. Carter-Fenk, Kevin Carter-Fenk, Michelle E. Fiamingo, Heather C. Allen*, John M. Herbert*; (funding: Allen group NSF CAICE, CHE-1801971; Herbert group DOE-BES DE-SC0008550) ChemRxiv: <https://doi.org/10.26434/chemrxiv.12994091.v2>; Ranked Hot Article, *Chemical Science*, **2021**, *12*, 8320 – 8332. DOI: 10.1039/D1SC01276B.

131. Circuit Analysis of Ionizing Surface Potential Measurements of Electrolyte Solutions; Tehseen Adel, Juan Velez-Alvarez, Anne C. Co, Heather C. Allen; In review 11/2020 to *The Journal of the Electrochemical Society* (funded by DOE-BES CPIMS DE-SC0016381), *2021 J. Electrochem. Soc.* 168 016507.



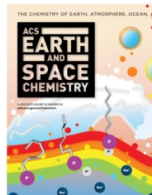
130. The Ocean's Elevator: Evolution of the air-seawater interface during a small-scale algal bloom; Mickey M. Rogers, Jennifer F. Neal, Ankur Saha, Abdullah S. Algarni, Thomas C. J. Hill, Heather C. Allen; In review 11/2020 to *ACS Earth and Space Chemistry* **2020**, *4*, *12*, 2347–2357. (funded by NSF-CHE CAICE)

129. Structural Effects of Cation Binding to DPPC Monolayers; Matti Javanainen*, Wei Hua, Ondrej Ticháček, Pauline Delcroix, Lukasz Cwiklik, and Heather C. Allen, *Langmuir* **2020**, *36*, *50*, 15258–15269. (WH and HCA funded by NSF-CHE and NSF-CHE CAICE)

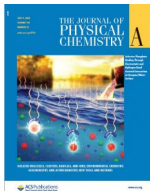


128. Molecular recognition and hydration energy mismatch combine to inform ion binding selectivity at aqueous interfaces; Neal, J., Saha, A., Zerkle, M., Zhao, W., Rogers, M., Flood, A., Allen, H. C.; *J. Phys. Chem. A* **2020** Dec 10;124(49):10171-10180. (funded by NSF-CHE MSN)

127. Relating Structure and Ice Nucleation of Mixed Surfactant Systems Relevant to Sea Spray Aerosol, Perkins, Russell; Vazquez de Vasquez, Maria; Beasley, Emma; Hill, Thomas; Stone, Elizabeth; Allen, Heather; DeMott, Paul, <https://doi.org/10.1021/acs.jpca.0c05849> *J. Phys. Chem. A* 9/2020 (funded by NSF-CHE CAICE)



126. Sodium Drives Interfacial Equilibria for Semi-Soluble Phosphoric and Phosphonic Acids of Model Sea Spray Aerosol Surfaces, J. F. Neal, M. M. Rogers, M. A. Smeltzer, K. A. Carter-Fenk, A. J. Grooms, M. M. Zerkle, H. C. Allen; *ACS Earth and Space Chemistry*, **2020**, *4*, *9*, 1549–1557 (funded by NSF-CHE CAICE)



125. Thermodynamic Signatures of the Origin of Anti-Hofmeister Selectivity for Phosphate at Aqueous Interfaces, A. J. Grooms, J. F. Neal, K. C. Ng, W. Zhao, A. H. Flood, H. C. Allen; *J. Phys. Chem. A* **2020**, 124, No27, 5621-5630. (funded by NSF-CHE MSN)

124. Iron(III) Speciation Observed at Aqueous and Glycerol Surfaces: Vibrational Sum Frequency and X-Ray, L. Lin, J. Husek, Jakub; S. Biswas, S. Baumler, T. Adel, K. C. Ng, L. R. Baker, H. C. Allen; *J. Am. Chem. Soc.* (2019) 141, 34, 13525-13535. (Funded by DOE-BES CPIMS DE-SC0016381)



123. T. A. Neal, J. F. Neal, A. B. Eippert, C. Moore, H. C. Allen, J. D. Badjić*; An easily accessible isospiropyran switch, *Org. Biomol. Chem.*, 2019, 17, 9124. DOI: 10.1039/c9ob01822k122. L. Lin, J. Husek, Jakub; S. Biswas, S. Baumler, T. Adel, K. C. Ng, L. R. Baker, H. C. Allen; Iron(III) Speciation Observed at Aqueous and Glycerol Surfaces: Vibrational Sum Frequency and X-Ray, *J. Am. Chem. Soc.* Accepted July 2019; *J. Am. Chem. Soc.* (2019) 141, 34, 13525-13535. (Funded by DOE-BES CPIMS DE-SC0016381)

121. S. M. Baumler, W. H. Hartt V, H.C. Allen; Hydration of Ferric Chloride and Nitrate in Aqueous Solutions: Water-mediated Ion Pairing Revealed by Raman Spectroscopy, *Phys. Chem. Chem. Phys.* (2019) DOI: 10.1039/C9CP01392J (Funded by DOE-BES CPIMS DE-SC0016381); SI SMB 2019

120. J.K. Denton, P. J. Kelleher, M. D. Baer, S. M. Kathmann, C. J. Mundy, B. A. Wellen Rudd, H. C. Allen, T. H. Choi, K D. Jordan, and M. A. Johnson; Molecular-level origin of the carboxylate head group response to divalent metal ion complexation at the air-water interface, *Proc. Natl. Acad. Sci. USA* (2019), V116 (30), 14874-14880 (funded by: NSF-CHE 1305427-CAICE)

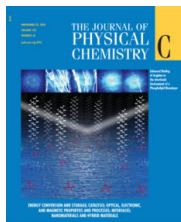
119. J. F. Neal, W. Zhao, A. J. Grooms, M. A. Smeltzer, B. M. Shook, A. H. Flood, H. C. Allen; Interfacial Supramolecular Structures of Amphiphilic Receptors Drive Aqueous Phosphate Recognition; *J. Am. Chem. Soc.* (2019) V141, 7876-7886 10.1021/jacs.9b02148 (funded by NSF MSN, CHE 1609672)

118. S. Elliott, Z. Menzo, A. Jayasinghe, H.C. Allen, O. Ogunro, G. Gibson, F. Hoffman, O. Wingenter; Biogeochemical Equation of State for the Sea-Air Interface, *Atmosphere* (2019), 10, 230; doi:10.3390/atmos10050230

117. Kimberly Carter-Fenk and Heather C. Allen, Collapse Mechanisms of Nascent and Aged Sea Spray Aerosol Proxy Films, *Atmosphere*, In Press (2018), (funded by: NSF-CHE 1801971-CAICE) HTML: <http://www.mdpi.com/2073-4433/9/12/503/htm>; PDF : <http://www.mdpi.com/2073-4433/9/12/503/pdf>

116. Stephen M. Baumler and Heather C. Allen, Book Chapter, Ch. 5. Vibrational Spectroscopy of Gas-Liquid Interfaces, pgs. 105-128; *Physical Chemistry of Gas-Liquid Interfaces* (ISBN: 9780128136416). Edited by J. A. Faust & J. E. House (2018)

115. Heather C. Allen and Douglas J. Tobias, *Preface: Special Topic on Ions in Water*; *J. Chem. Phys.* 148, 222501 (2018). [Guest Editors for the Special Topic Invitation for Papers on Ions in Water.] <https://doi.org/10.1063/1.5039655>



114. Jennifer F. Neal, Wei Zhao, Alexander J. Grooms, Amar H. Flood, Heather C. Allen, Arginine-Phosphate Recognition Enhanced in Phospholipid Monolayers at Aqueous Interfaces, DOI: 10.1021/acs.jpcc.8b03531 *J. Phys. Chem. C*, (2018) v122, pgs. 26307-26776. JPC-C Front Cover (funded by NSF MSN, CHE 1609672)



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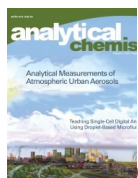
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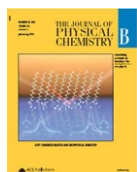
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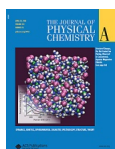
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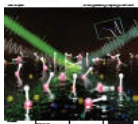
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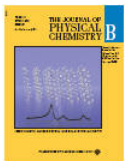


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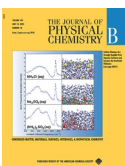
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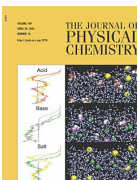
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17. E. L. Hommel, H. C. Allen*; The Air-Liquid Interface of Benzene, Toluene, M-xylene, and Mesitylene: A Sum Frequency, Raman, and Infrared Spectroscopic Study; *Analyst*, **2003**, 128, 750-755.

16. G. Ma, H. C. Allen*; Surface Studies of Aqueous Methanol Solutions by Vibrational Broad Bandwidth Sum Frequency Generation Spectroscopy; *J. Phys. Chem. B*, **2003**, 107, 6343-6349.

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3. H. C. Allen, T. Brauers, B. J. Finlayson-Pitts; Illustrating Deviations in the Beer-Lambert Law in an Instrumental Analysis Laboratory: Measuring Atmospheric Pollutants by Differential Optical Absorption Spectrometry; *J. Chem. Educ.*, **1997**, 74, 1459-1462.

2. H. C. Allen, J. M. Laux, R. Vogt, B. J. Finlayson-Pitts, J. C. Hemminger; Water Induced Reorganization of Ultra-thin Nitrate Films on NaCl: Implications for the Tropospheric Chemistry of Sea Salt Particles; *J. Phys. Chem.*, **1996**, 100, 6371-6375.

1. R. Vogt, C. Elliott, H. C. Allen, J. M. Laux, J. C. Hemminger, B. J. Finlayson-Pitts; Some New Laboratory Approaches to Studying Tropospheric Heterogeneous Reactions; *Atmos. Environ.*, **1996**, 30, 1729-1737.

- H. C. Allen; Fundamental Surface Processes in Heterogeneous Atmospheric Chemistry: Applications to Sea-Salt (NaCl) and Oxide Particulate Chemistry, Dissertation, June 1997.

Current Funding

- Department of Energy: DOE-BES CPIMS, \$700k, 9/2021-9/2024, [PI](#)
- NSF- CHE 2021-2024, \$500k, [PI](#)
- Herbert Hoover Foundation, 2022-2024, \$60k, [PI](#)
- NASA, \$135k 2021-2024, [PI](#)

- *Summary Prior funding*

- *DoD, Office of the Secretary of Defense*
- *Army Aviation Applied Tech Directorate*
- *Mandaree Enterprise Corporation*
- *NIH-NCI/NIBIB*
- *NSF-CHE SGER*
- *NSF-CHE*
- *NSF-CHE CAICE*
- *NSF-ATM*
- *NSF-CRIF*
- *NSF-MSN Macromolecules*
- *ACS-PRF*
- *DOE-BES GEOSCIENCES*
- *DOE-BES CPIMS*
- *DOE-BES SEPARATIONS*
- *Research Foundation*
- *Sloan Foundation*
- *Beckman Foundation*
- *Dreyfus Foundation*
- *OSU Climate Water Carbon program*

Presentations

i. Invited lectures at professional meetings

1. 2000 Central Regional ACS meeting, Nonlinear Optics, Covington, KY, 5/18/2000.
Vapor-Liquid Interfaces of Aqueous Solutions, Vibrational Sum Frequency Studies

2. 2002 ACS National Meeting, Boston, Mass. 8/2002

Within Colloids Div.; *Interfacial Structure of Liquid and Particle Surfaces using Vibrational Broadband Sum Frequency Generation Spectroscopy*

3. 2002 International Symposium: Frontiers in Molecular Science; Qingdao, China 7/2002
Structure and Chemistry of Liquid and Particle Surfaces: Vibrational Broadband Sum Frequency Spectroscopy
4. 2003 UCI CRC Workshop on Chemistry at Interfaces, Beckman Center, Irvine, CA, 7/2003
Air-Liquid Interfaces: From Water to Aromatic Hydrocarbons
5. 2003 Mesilla Workshop: Environmental Chemistry at Interfaces, Mesilla, NM 2/2003
Understanding the Molecular-level Landscape at Air-liquid and Liquid-solid Interfaces: From Water to Aromatic Hydrocarbons
6. 2004 Telluride Workshop on Studies of ice, icy particles, ice surfaces, and ice adsorbate interactions: a molecular view, Telluride, CO
7. 2004 American Physical Society (APS) National Meeting, Montreal 3/22-26/2004; Symposium: Dynamics at Gas-Solid and Gas-Liquid Interfaces, title: *Air-Liquid Interfaces I & II*
8. 2004 SPIE 49th Annual Meeting, Denver, CO, 8/6/2004
Symposium: Physical Chemistry of Interfaces and Nanomaterials, abstract # AM04-AM225-46, title: *Vibrational broad bandwidth and scanning sum frequency generation spectroscopy of air-solid and air-liquid interfaces*
9. 2004 ACS Fall National Meeting, Philadelphia 8/24/2004
Symposium: Chemical Physics and Atmospheric Science within the Physical Division; title: *Interfacial vibrational spectroscopic studies of acids, oleic to sulfuric: Application to atmospheric aerosol chemistry*
10. 2004 ACS Spring National Meeting, San Diego 3/2005
Symposium: Hydrogen Bonds: Developments in Experiment and Theory / Physical Chemistry Division; Title: *Interfacial spectroscopic studies of aqueous phase acids and salts: sodium chloride, bromide, iodide, and ammonium and sulfate*
11. 2005 ACS Spring National Meeting, San Diego 3/2005
Symposium: Applications of Physical Chemistry to Environmental and Biogeochemical Research / Physical Chemistry Division; Title: *Reactions at aqueous surfaces: Alkenes, oleic acid, ozone and ammonium sulfate*
12. 2005 National Goldschmidt Conference, Moscow, Idaho, 5/2005
Symposium: S04: Advances in experimental and theoretical methods for characterization of mineral-fluid interfaces; Title: *Water and organic adsorption and structure at alumina and silica surfaces*
13. 2005 ACS Fall National Meeting, Wash DC, 8/2005
Symposium: Analytical and Biological Applications of Nonlinear Optics / Analytical and Physical Divisions; Title: *Interfacial structure of model lung surfactant monolayers,*
14. 2006 Western Spectroscopy Association (WSA), Monterey, CA 2/3/2006
Title: *Air-Liquid Interfaces studied by Vibrational Sum Frequency Spectroscopy: Understanding Lung Surfactant Systems*
15. 2006 **Gordon Research Conference on *Chemistry at Interfaces***, Biddeford, ME, (Chair N. Spencer); *Molecular Arrangement and Chemistry at the Surface of Liquids and Solids: Understanding Atmospheric Aerosol Chemistry*
16. 2006 **Gordon Research Conference on *Water and Aqueous Solutions***, NH; (Chair B. Ladanyi)
Solution Surfaces: from Water to Lung Surfactant
17. 2006 Beckman Young Investigator Conference, Irvine, CA 8/2006
Title: *Pulmonary Surfactants, Proteins & Membranes Understanding Interfacial Structure using Nonlinear Spectroscopy*

18. 2006 ACS Fall National Meeting, San Francisco, CA
Division of Colloid and Surface Science
Symposium: "Environmental Interfaces"; F. Geiger; G. Smith, H. Fairbrother: organizers
Title: *Structure and Reactivity at Air-Aqueous/Organic Interfaces*
19. 2006 ACS Fall National Meeting, San Francisco, CA
Division of Colloid and Surface Science
Symposium: "Water at Interfaces"; Seong Kim, organizer
Title: *Aqueous surface structure of water and organic monolayers on water*
20. 2006 First Annual Conference on the Physics, Chemistry, and Biology of Water, 10/2006 Organized by Gerald Pollack & Sponsored by Vermont Photonics, Brattleboro, Vermont
Title: *Structure at Air-Aqueous Salt and Lipid Interfaces*
21. 2007 ACS Fall National Meeting, Boston, Mass 8/2007, Division of Physical Chemistry
Symposium: "Hydration: From Clusters to Aqueous Solution";
Organized by Dan Neumark and Ken Jordan, Title: "Hydration of anions, cations, and lipids at air-aqueous interfaces"
22. 2008 Telluride Workshop on Liquid and Solid Aqueous Surfaces and Interfaces, Telluride, CO, Solvation of Ions at Air-Aqueous Interfaces, organizers V. Buch, M. J. Shultz, and P. Devlin
23. 2008 ACS Fall National Meeting, Philadelphia, PA Aug, Division of Physical Chemistry Symposium Spectroscopic Probes of Chemical Dynamics in Gaseous and Condensed Phases, Organizers S. Corcelli and M. Johnson; Ions at the air-water interface: Nitrate, halides, mono and divalent cations, and water
24. 2008 ACS Spring National Meeting, Colloids Division Symposium The Physical Chemistry of Environmental Interfaces; New Orleans, LA; Structure & Chemistry at Air-Aqueous Interfaces
25. 2008 **Gordon Research Conference on Vibrational Spectroscopy**, Mount Holyoke College South Hadley, MA; Studying vibrations of Lipids, Salts, Acids, and Water at Air-Aqueous Interfaces,
26. 2008 FACSS Meeting, Reno, NV, Air-Aqueous Interfaces studied using Vibrational Sum Frequency Spectroscopy
27. 2008 Department of Defense Corrosion Meeting, University of Hawaii, Honolulu, Hawaii; Spectroscopic Role and Corrosion Studies
28. 2009 **Gordon Research Conference on Chemistry Reactions at Surfaces**, Ventura, CA, Molecular Organization and Structure at the Air-Liquid Interface, Chair P. Reid
29. 2009 ACS Spring National Meeting, Salt Lake City, Vibrational sum frequency studies of carboxylic acid deprotonation initiated by cation binding; Division of Analytical Chemistry, Session: Nonlinear Optical Methods for Surface Analysis and Characterization, organizer J. Conboy
30. 2009 ACS and Colloids National Meeting, Columbia University, June 2009, Ionic Binding of Na⁺ versus K⁺ to Palmitic Acid Monolayers Studied by Vibrational Sum Frequency Spectroscopy
31. 2009 Telluride Workshop - Electrification: Liquid surfaces and ion pairing studied by nonlinear surface vibrational spectroscopy, organizers: G. Ewing (U. Indiana), M. Jarrold (U. Indiana), and E. Williams (MIT)
32. 2010 The Future Ocean - Chemistry at Marine Interfaces 9/2010; University of Kiel Cluster of Excellence, Kiel, Germany;
PLENARY LECTURE: Molecular Organization at the Ocean Surface: Ions, Water and the Microlayer; Organizers: G. Friedrichs and F. Temps
33. 2011 Pittcon, ACS-DAC: Analytical Chemistry/Characterization at the Interfaces, March 17th, 2011, "Molecular Organization at Air-aqueous Interfaces: Advances in Vibrational Sum Frequency Spectroscopy" (Organizer: Nick Winograd), Atlanta, Georgia.

34. 2011 Dynamics of Molecular Collisions Meeting (DMC), July 13th, 2011: "Water, Carbonate, Bicarbonate, Sulfate, Bisulfate, and Cation Organization within the Air/Aqueous Interface revealed by Phase Sensitive Sum Frequency Spectroscopy" (Organizer: David Nesbitt), Snowbird, UT.
35. 2011 Vibrational Dynamics TSRC, July 24-28th, 2011, "Organization at the Air/Aqueous Interface" (Organizers: James Skinner & Martina Havenith), Telluride, CO.
36. 2011 FACCS Meeting, Oct 4th, 2011, "Molecular Organization and Reversed Electric Field at Air/Aqueous Interfaces revealed from Phase-Sensitive Sum Frequency Generation Spectroscopy" (Organizers: Tahai Tahara and Rob Walker), Reno, NV.
37. 2011 ACS National Meeting, Aug 28-Sept 1, 2011, "Organization of Sodium, Ammonium, Carbonate, Bicarbonate, Sulfate, Halides, and Phospholipids at the Air-Aqueous Interface" (Organizer: Amanda Grannas; symposium: Air-Surface Interactions: Chemistry from Molecular to Global Climate Scales), Denver, CO.
38. 2011 IGERT Univ. Cincinnati, Sept 30th, 2011, "Bio-membrane and lung surfactant organization: Interfacial spectroscopy and microscopy studies" (Organizer: IGERT on Biomembranes Committee, Engineering), Cincinnati, OH. (also listed as invited seminar)
39. 2011 Eastern Analytical Society, EAS Gold Medal Session for Gary Blanchard, Nov 14th-17th, 2011, "Molecular Organization and Electric Field Reversal at Air/Aqueous Interfaces revealed from Phase-Sensitive Sum Frequency Generation Spectroscopy: Sulfate, Carbonate, Chloride, Ammonium, and Sodium" (Organizer: Lydia Breckenridge), Somerset, NJ.2.
40. 2012 APS meeting, Feb 26-27, 2012, Boston convention Center, (organizers: Don Baer, PNNL, Ilja Seipleman, U. Minn) "Organization at the Air-Aqueous Interface by Heterodyne-detected Phase-Sensitive Sum Frequency Spectroscopy"
41. International Molecular Spectroscopy Conference, June 2012, Spectroscopy at Interfaces session, Ion Organization and Reversed Electric Field at Air/Aqueous Interfaces Revealed by Heterodyne-Detected Sum Frequency Generation Spectroscopy, (organizer: Michael Duncan), Columbus, OH
42. Goldschmidt Conference, June 2012, Structure and dynamics of ions and water at mineral-water interfaces: Insights from experimental and computational studies session, Sulfate adsorption at buried mineral/solution interfaces probed by TIR-Raman spectroscopy, D. Verreault presented (organizers: Sang Soo Lee, Man Xu, Louise Criscenti), Montreal, QC, Canada
- 43 ACS national meeting, March 25th 2012, Geochemistry Division, San Diego; PAPER ID: 22108
PAPER TITLE: "Water and ion organization at environmental interfaces" (final paper number: 4)
DIVISION: GEOC: Division of Geochemistry (organizers: Franz Geiger, NW; Dennis Hore, Univ Victoria)
SESSION: Atmospheric and Geochemical Interfaces
44. 2012 International Symposium on Molecular Spectroscopy, Ohio State, OH, June 19th 2012, Organizer of Interfacial Session: Michael Duncan; "Ion organization and Reversed Electric Fields revealed by Heterodyned Sum Frequency"
45. 244th ACS National Meeting & Exposition - August 19-23, 2012, Philadelphia, PA; Document ID: 13483
Title: Organization of sodium, ammonium, carbonate, bicarbonate, sulfate, halides, and phospholipids at the air-aqueous interface
Division: ENVR: Division of Environmental Chemistry (Hind Al-Abadleh organizer) Session: Air-Surface Interactions: Chemistry from Molecular to Global Climate Scales
46. 244th ACS National Meeting & Exposition - August 19-23, 2012, Philadelphia, PA; PAPER ID: 16311
PAPER TITLE: "Lipid and water organization at biological surfaces" (final paper number: 17)
DIVISION: PHYS: Division of Physical Chemistry (Casey Londergan and Steve Corcelli organizers)
SESSION: Solvent Dynamics at Biomolecular Interfaces: Experiment and Theory
47. 244th ACS National Meeting & Exposition - August 19-23, 2012, Philadelphia, PA; Document ID: 16174
Title: Lipid and ion organization at air-aqueous interfaces revealed by sum frequency spectroscopy and Brewster angle microscopy studies
Division: COMP: Division of Computers in Chemistry (Liem Dang and Hongfei Wang organizers)

Session: Recent Advances in Studies of Molecular Processes at Liquid Interfaces

48. 244th ACS National Meeting & Exposition - August 19-23, 2012, Philadelphia, PA; Document ID: 16186

Title: Organization at the surface of atmospheric aerosols and the ocean of ions, water, and organic molecules revealed by vibrational sum frequency spectroscopy and Brewster angle microscopy

Division: COLL: Division of Colloid and Surface Chemistry (Eric Borguet and Andre W. organizers)

Session: Applications of Vibrational Spectroscopy to Studies of Environmental Interfaces

49. 2012 Gordon Research Conference on Aqueous Corrosion held at Colby-Sawyer College, New London, NH, USA, July 8-13, 2012; Invited talk; "Atmospheric Chemistry and Corrosion" (organized by Chair David Shoesmith)

50. 2013 Air-UCI Workshop, NSF CCI on Atmospheric Aerosols, February 1, 2013, Laguna Beach CA (organized by Barbara Finlayson-Pitts), "Ions, Lipids, Water and Electric Fields: From the Oceans to the Surface of Aerosol"

51. 2013 Cleveland Meeting on Corrosion: Yeager Award Symposium, March 15, 2013, Case Western Reserve "Corrosion and Atmospheric Chemistry" Honor of J Frankel@OSU

52. 2013 ACS National Meeting, New Orleans, LA, April 9, 2013, Chemical Pictures of Environmental Interfaces, Colloids (invited by Shaw, Soerno), "Air-Aqueous Interfaces, ion distributions, and lipid organization by vibrational SFG"

53. 2013 ACS National Meeting, New Orleans, LA, April 10, 2013, WCC award Symposium: ACS Award for Encouraging Women into Careers into the Chemical Sciences, "Water, Ions, and Organization at the Air-Aqueous Interface"

54. 2013 RESOLV Cluster of Excellence meeting, June 4, 2013, Ruhr-University at Bochum (organizer Martina Havenith), "Ions, Lipids, Water and Solvation at the Air-Water Interface"

55. 2013 ACS Colloids National Meeting, June 25, 2013, Wet and Dry Atmospheric Aerosol symposium (organizers Akua Asa-Awuku and Paul Ziemann), Riverside, CA, "Water Surfaces and Impact on Aerosol: Nitrates, Sulfates, and Carbonates with Mono and Divalent Cations"

56. 2013 Gordon Research Conference on Chemistry and Physics of Liquids, Holderness, NH, August 6, 2013 (organized by Mark Ediger and Phil Geissler), "Organization at Air/Aqueous Interfaces: Water and Ions"

57. 2013 ACS National Meeting, Theory and Experiment on Water and Hydration symposium, Indianapolis, IN, September 12, 2013 (organized by Sotiris Xantheas and Rich Saykally) "Air-aqueous interfacial organization of solvated inorganic salts"

58. 2014 ACS National Meeting, Award Symposium Honoring Ken Eisenal, Dallas, TX, March 17 (organized by Franz Geiger) "Organization of Lipids, Ions, and Water at Air/Aqueous Interfaces"

59.- 2014 Gordon Research Conference on Vibrational Spectroscopy, Maine, August 5, 2014 (organized by Mischa Bonn and Art Utz), "Hydration, Electric Fields, and Interfacial Organization of Ions and Lipids"

60. 2014 ICMR UCSB - Materials Research Center at UC Santa Barbara, Conference/Workshop, July 7, 2014 (organized by NMira Todorova) "Electric Fields at the Air/Water Interface"

61. 2014 Nordita, Stockholm, Sweden, Workshop on Water, "Water - the Most Anomalous Liquid" Oct 19-24, 2014, International Conference (organized by Anders Nilsson & Lars Pettersson), "The Air-Water Interface: As Influenced by Ions, Lipids, and Electric Fields"

62. 2015, COVACS - Central Ohio Valley ACS talk, Jan 27th, 2015 (Organized by Rosalynn Quinones) "Ions and Lipids at the Air/Water Interface",

63. 2015 INFEWS Workshop invitee/participant: Accelerating our Understanding of Supramolecular Chemistry in Aqueous Solutions May 31-June 4 2015, Invited, "Session 3: Understanding The Hydrophobic Effect"

64. 2015, APS National Meeting, Chem Phys Division, Invited talk, "Solvation and Organization of Ions at the Air-Water Interface", 03.05.15
65. 2015 249th ACS National Meeting held in Denver, Colorado, March 22-26, 2015.
Air-water interface: As Influenced by ions, lipids, and electric fields, Session: Atmospheric Chemistry: Transformations of Matter in the Troposphere, 03.23.15
66. 2015 250th ACS National Meeting held in Boston, Massachusetts, August 16-20, 2015.
Complex water solutions: Organization and intermolecular interactions revealed for water, ions, and lipids at surfaces; Session: Structure & Dynamics in Complex Chemical Systems: Gaining New Insights through Recent Advances in Time-resolved Spectroscopies,
67. 2015 German Bunsentagung 2015, Ruhr University; Bunsen Society for Physical Chemistry, Invited speaker, "Ions and Water" Understanding Solvation at the Air-Water Interface", 05.15.16
68. 2016 CECAM workshop liquids/solids (M Sulpizi and MP Gageot, Lausanne, Switzerland); (weather cancelation)
69. 2016 ACS National Meeting held in San Diego, CA, Invited talk in Session on Physical Chemistry of Complex Environmental Interfaces, "Aqueous Interfaces and Organization", 03.17.16
70. 2016 Telluride Workshop Invited Talk, Nonlinear Optics, June; "Cation-Specific Binding to DPPC Monolayers at the Air/Aqueous Interface, 06.22.16
71. 2016 Telluride Workshop Invited Talk, Lipids, July; "Lipid Monolayers at Aqueous Surfaces: Water, Ions, and Soluble Organics", 07.08.16
72. 2016 Telluride Workshop Invited Talk, Ion solvation, July; "Ions at the Air-Water Interface" 07.12.16
73. 2016 Telluride Workshop Invited Talk, Interfaces, July; "DPPC, Palmitic Acid, Ions: Monolayers on Aqueous Solutions" 07.21.16
74. 2016 EMLG meeting, Crete, Greece, September; "Ions and Lipids at Aqueous Interfaces: Understanding Ion Surface Segregation and ion and Lipid Headgroup Hydration", 09.13.16
- 75. 2017 "2D Assembly, Cation Specific Binding and Deprotonation of Atmospheric Aerosol Relevant Surfactants and Biomolecules at Aqueous Interfaces" Gordon Research Conference (GRC) Invited talk: Chemical Reactions at Surfaces, Feb 8th 2017, Barga Italy.**
[GRC Invited Talk]
76. 2017 "Ion-induced stabilization of palmitic acid monolayers "Dynamics & Structure of Molecular Fluids: Honoring the Work & Life of Branka Ladanyi, ACS National Meeting, PHYS div, "Ion-induced stabilization of palmitic acid monolayers" April 2, 2017
[Invited Talk]
77. 2017 "Hydrophobicity", Department of Energy Basic Research Needs (DOE-BRN) Workshop: ENERGY-WATER NEXUS, DOE Basic Energy Sciences (DOE-BES), January 4-6th, 2017, Bethesda, MD
[Invited Workshop Group Talk]
78. 2017 "Aqueous Surfaces", Dalian Nonlinear Optics Workshop, July 24th, 2017, Dalian, China
[Invited Talk]
79. 2017 "Aqueous Environmental Surfaces: How Interfacial Molecules & Ions Organize", SERMACS ACS Southeastern Regional Meeting session: Surface Science of Catalysis and the Environment, November 10th, 2017, Charlotte, North Carolina.
[Keynote Lecture]
80. 2017 "Iron speciation at the air-aqueous interface: Insights into surface hydration", DOE-BES Condensed Phase Interfacial Molecular Science (CPIMS) PI Annual Meeting October 15th, 2017, Bethesda, MD
[Invited Talk]

81. 2018 CAICE Annual meeting, Scripps Institute, Title: New Directions for Understanding the Evolution of SSML, May 19-21, 2018, talk given on May 19th, 2018.
82. 2018 Interfacial Molecular and Electronic Structure and Dynamics, Telluride Workshop (invitation from Prof. Paul Cremer), Title: Surface Speciation and Ion Interactions at the Air-Aqueous Interface, June 17-21st, 2018, invited talk on June 19th, 2018.
83. 2018 **Gordon Research Conference, Holderness**, NH, Environmental; Title: Salt Water and Ocean Gunk: Ion and Lipid Organization at the Ocean's Surface, June 24-28th, 2018, **invited talk** on June 25th, 2018.
84. 2018 **Gordon Research Conference, Molecular Interactions and Dynamics**, Easton, Mass, Title: Ion Pairing and Interfacial Aggregation at Water Surfaces: New Insights; July 8-12th, 2018, **invited talk** July 10th, 2018.
85. 2018 Goldschmidt, Title: Aqueous surfaces of Iron Salts, in Goldschmidt; session 06c: Nanoscale Interfacial Geochemistry in Extreme Environments (invited by Rosso, Stack, Pearce); Aug 17th, 2018
86. 2018 National Academy of Sciences, Wash DC, Separations, Title: Surfaces and Sum Frequency Generation, Aug 22-23, 2018
87. 2018 **Keynote speaker**: 8th SFG Symposium, Nonlinear Optics, Saitama, Japan, Title: Aqueous Surfaces of Selected Salts, October 26-27th, 2018.
88. 2019 Invited **Plenary Lecture**, Women in STEM Conference, UTenn & ORNL, Knoxville, TN; 'Opportunities and Transitions: A Story of a Nonscientist to Forever a Scientist', March 27th, 2019.
89. 2019 Invited Speaker, 102nd Canadian Chemistry Conference and Exhibition (CCCE2019), Quebec City, (PTC Division) - Interactions of Macromolecules, Ions, and Colloids in the Condensed Phase: Computational and Experimental Advances Session: (PTC Division) – Interactions of Macromolecules, Ions, and Colloids in the Condensed Phase: Computational and Experimental Advances; 'Interfaces, Water, Iron Salts, and Ion Pairing'; Tuesday AM2 10:20 AM - 11:00 AM; June 4th, 2019.
90. 2019 Invited **Keynote Speaker**, Swedish Society Inorganic Days Conference, Umea, Sweden, 'The Air-Aqueous Interface: Inherent and Induced Organization studied by Sum Frequency Generation'; June 10th, 2019.
91. 2019 Invited speaker: CECAM, Paris, France, 'Air/Aqueous Salt Interfaces, Organization, and Binding: Surface Potential, Sum Frequency, and IR Reflection'; July 15th, 2019.
92. 2019 Invited **Plenary Speaker**; 5th Conference and School on Frontiers in Water Biophysics; Erice, Sicily (Italy), ETTORE MAJORANA FOUNDATION AND CENTRE FOR SCIENTIFIC CULTURE (organized by G. Franzese & committee); 'Electric Fields, Ion Pairing, Lipids, and Salty Aqueous Surfaces', July 23rd, 2019.
93. 2019 Invited **Keynote talk**, Gordon Research Seminar, **GRS** Keynote speaker for GRS Dynamics at Surfaces, Salve Regina GRC location; 'Testing the State Function Hypothesis of Interfacial Science with the Journey to Success', July 26-27th, 2019.
94. 2019 Invited GRC talk shared with J. Skinner (Univ Chicago), Gordon Research Conference, GRC Physics and Chemistry of Liquids, Holderness, NH; 'Liquid Interfaces', Discussion leader presentation of the field of liquid interfaces, Tuesday, 9:00-9:15AM, Aug 6th, 2019.
95. 2019 Invited speaker, ACS, Hydration from the Gas to the Condensed Phase Symposium in Phys Division; 'Hydration and Ion Pairing at Surfaces', August 27th, 2019.
96. 2019 Invited speaker, ACS in Environmental Marine Interfaces Symposium in Colloids; 'Marine Interfaces: Inherent Electric Fields from Dipole and Electrolyte Organization', Aug 26th, 2019.
97. 2019 Invited speaker, NSF CAICE Center annual symposium, Scripps Institute, Technical Session #7, 'Interfacial Structure and Properties', October 3rd, 2019.

98. 2019 Invited speaker, AVS 66 National meeting, Biomaterial Interfaces Division; Iron Speciation at Aqueous Surfaces, Columbus Convention Center, Columbus, OH; 'Iron speciation and Lipids @ Aqueous Surfaces', October 22nd, 2019.
99. 2019 Invited speaker, DOE CPIMS annual meeting; 'Aqueous Iron Salt Solutions and Interfaces: Understanding Hydration through Electric Field and Spectroscopy Measurement', Gaithersburg Marriott Washingtonian Center, Gaithersburg, MD; November 4th, 2019.
100. 2020 Invited Speaker, FOCUS STEM@OSU group, Opportunities and Transitions: A Story of a Nonscientist to Forever a Scientist, Ohio State, January 14, 2020.
101. 2020 Invited KEYNOTE Speaker, Nanomaterial formation at fluid-fluid interfaces, *Spectroscopy and simulations at fluid-fluid interfaces*, Lorentz meeting, Leiden, Netherlands, Nov 2-6, 2020. Virtual
102. 2020 Invited Speaker APS meeting, Denver Colorado *Surface Potential + Second Harmonic Generation presents Na salts & SDS screening experiments (Covid CX), 2/27/2020*
103. 2020 Invited Speaker PacificChem; Molecular Adsorption and Reactivity at Biological and Environmental Interfaces Symposium #406; Competitive adsorption and surface binding of carbohydrates, phosphate, sodium, calcium, and magnesium with carboxylate functionalities within monolayer films of fatty acids and alcohols (Covid CX), Dec 2020
104. 2020 Invited Speaker PacificChem; PacificChem: (#392) "Advanced Understanding of Soft Interfaces at the Molecular-Scale." Effects of Applying kVolt Electric Fields across Liquid-Vapor Interfaces: Pure Water to SCN- (Covid CX), Dec 2023
105. 2020 **Gordon Research Conference (GRC)** Invited Speaker - Water/Liquids in Holderness, NH, Covid CX, 07/2020
106. 2020 **Gordon Research Conference (GRC)** Invited Speaker - Vibrational Spectroscopy at Bryant, Covid CX, 08/2020
107. 2020 Invited Speaker ACS national meeting, San Francisco, (org. Alex Benderskii and Yi Rao), Resistive Reorientation and Applied Electric Fields at Aqueous Interfaces probed by Second Harmonic and Vibrational Sum Frequency Spectroscopy, Covid CX, 08/2020
108. 2021 Invited Speaker Anion-Driven Organization in Lipid Monomolecular Films, Telluride Seminar in Complexity in the Chemistry and Physics of Lipid Membranes, Telluride, CO, June 22, 2021.
109. 2021 Invited Speaker Interfacial Aqueous Organization and Electric Fields Generated from Chemical Composition: Environmental and Material Surfaces, 8th APXPS – 2021, Brookhaven National Lab, Upton, NY, December 9, 2021
110. 2021 Invited Speaker Interfacial Structure and Properties, CAICE NSF Site Visit RT1b Talk, Scripps, San Diego, CA, May 10, 2021.
111. 2021 Invited Speaker Anion-Triggered Organization at Aqueous Surfaces, ChemMatCARS Soft Matter Interest Group Seminar Series, Argonne Lab, Illinois, July 12, 2021.
112. 2021 Invited Speaker KEYNOTE - Interfacial Aqueous Organization and Electric Fields generated from Chemical Composition: Environmental and Material Surfaces, ACS National Meeting, Division of Geochemistry, Interfaces for Society: The Next Frontier, August 25th, 2021.
113. 2021 Invited Speaker The water surface: Hydroxide, hydronium, thiocyanate, and iron ions resistively reorganize in response to applied electric fields, ACS National Meeting, Division of Geochemistry, Advances in Nonlinear Optics at Interfaces August 23rd, 2021.
114. 2021 Invited Speaker Interfacial Aqueous Organization and Electric Fields Generated from Chemical Composition: Environmental and Material Surfaces, HANACHEM, Leaders in Research Symposium, Livonia, Michigan, November 11th, 2021.
115. 2021 Invited Speaker Effects of Applying kVolt Electric Fields across Liquid-Vapor Interfaces: Pure Water to SDS to SCN, PACIFICHEM, Advanced Understanding of Soft Interfaces at the Molecular-Scale [392], Hawaii, December 19th, 2021.

116. 2021 Invited Speaker Competitive adsorption and surface binding of carbohydrates, phosphate, sodium, calcium, and magnesium with carboxylate functionalities within monolayer films of fatty acids and alcohols, PACIFICHEM, Symposium: Molecular Adsorption and Reactivity at Environmental and Biological Interfaces [406] Hawaii, December 17th, 2021
117. 2022 Invited Speaker Anion-Driven Organization in Lipid Monomolecular Films, ACS National meeting, San Diego, CA (Env symposium), March 2022. Virtual
118. 2022 Invited Speaker Bhabha atomic Research centre, BARC Mumbai, India, Virtual conference, invited talk by H. C. Allen, Jan12-14 2022 Virtual.
119. 2022 Invited Speaker Hydration, Ocean and Atmospheric aerosol Surfaces, MUOAA Conference, Lake Arrowhead, CA, Invitation Only, CX. May 15-20, 2022.
120. 2022 Invited Speaker **Gordon Research Conference, GRC**, Separations invited talk (org. J. Brenecke) Oct 2022, Invitation Only, CX Fall 2022
121. 2022 Invited Speaker **Gordon Research Conference, GRC**, Vibrational Spectroscopy (org. Massari) Invitation Only, CX. 07/2022.
122. 2022 Invited Speaker ACS National meeting, Chicago August 2022, invited talk given by my student A. Enders
123. 2022 Invited Speaker American Vacuum Society, November 2022, Invitation only, CX.
124. 2023 Invited Speaker KAUST Clean Combustion Research Center, AI Initiative (In Person), Machine Learning Molecular Spectroscopic Sensing Development through Machine Learning, KAUST, Saudi Arabia, March 8, 2023
125. 2023 Invited Speaker, Telluride Workshop, Organization and Binding at Aqueous Surfaces, June 25, 2023
126. 2023 Invited Speaker, Aqueous Supramolecular Chemistry Workshop, Informing on Aqueous Surfaces Binding, Hydration, Structure, Bozeman Montana July 24-27, 2023
127. 2023 Invited Speaker, Simplicity of Complex Sea and Aerosol Surfaces: Organization and Interactions of Saccharides, Lipids, Fatty Acids, and Ions; CAICE Final Symposium, San Francisco, CA, Aug 2023
128. 2024 Invited Speaker, Brown University, Providence, RI Jan 2024
129. 2024 Invited **Welch Emerging Science Speaker**, University of Texas, Austin, TX Feb 2024
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ii. Invited seminars and colloquia

1. 2000 Wright State University Chemistry Department, 10/13/2000
From Global Change to the Antarctic Ozone Hole: An Atmospheric Chemistry Perspective
2. 2001 Indiana State University; Terre Haute, IN 11/2001
Understanding Heterogeneous Atmospheric Chemistry: Surface Studies to Instrumentation Advances
3. 2001 CMR – Center for Materials Research, Ohio State, 10/25/2001
Surface Vibrational Studies of Liquids and Particles: Recent Advances in Sum Frequency Generation Spectroscopy
4. 2001 Miami University; Oxford, OH 10/18/2001
Understanding Heterogeneous Atmospheric Chemistry: Surface Studies to Instrumentation Advances
5. 2001 SUNY (State University of New York) Brockport; NY, 0/11/2001
Understanding Heterogeneous Atmospheric Chemistry: Surface Studies to Instrumentation Advances

6. 2002 Ashland Chemical, Dublin, OH 1/10/2002
Recent Advances in Surface Vibrational Sum Frequency Spectroscopy: Understanding Structure and Chemistry of Liquid and Particle Surfaces, (Invited by Drs. Alex Krawczak and Jeff Warmkessel)
7. 2002 OSU Physics AMO talk, Columbus, OH 6/2002
Applications and Advances in Vibrational Sum Frequency Generation Spectroscopy
8. 2002 Cal Poly San Luis Obispo, Calif., 9/2002
Heterogeneous Atmospheric Chemistry: Understanding Surface Structure of Solutions and Particles
9. 2002 Wayne State University, Detroit, Mich. 10/2002
Broadband Sum Frequency Generation: Understanding the Surface Structure of Liquids
10. 2002 Central Michigan University, Mich. 3/2002
Recent Advances in Surface Vibrational Sum Frequency Spectroscopy: Understanding Structure and Chemistry of Liquid and Particle Surfaces
11. 2003 Mesilla Workshop, Environmental Chemistry at Interfaces, 2/2003
Understanding the Molecular-level Landscape at Air-liquid and Liquid-solid Interfaces: From Water to Aromatic Hydrocarbons
12. 2003 Smith College, Amherst, Mass. 4/2003
Heterogeneous Atmospheric Chemistry: The Molecular Landscape of Interfaces
13. 2003 CCERCI seminar series, Ohio State, Rattan Lal organizer, 5/30/2003
Heterogeneous Atmospheric Chemistry: Understanding the Molecular-level Landscape of Aerosol Surfaces
14. 2003 EMSI Annual Meeting, Columbus, OH 6/2003
From ice grain-boundaries to water surface structure, What do they have in common?
15. 2003 EMSI Annual Meeting, Columbus, OH 6/2003
Aromatic Hydrocarbons and Atmospheric Aerosols
16. 2003 Workshop on Chemistry at Interfaces, Irvine, CA 7/1/2003
Air-Liquid Interfaces: Alcohols, Aromatic Hydrocarbons, and Water
17. 2003 Indiana University, Bloomington, Indiana, 10/2003
Air-Liquid Interfaces: Alcohols, Aromatic Hydrocarbons, and Water
18. 2003 Butler University, Indianapolis, Indiana, 10/2003
Air-Liquid Interfaces: Alcohols, Aromatic Hydrocarbons, and Water
19. 2003 Amherst College, Amherst, Mass., 10/2003
Air-Liquid Interfaces: Alcohols, Aromatic Hydrocarbons, and Water
20. 2003 University of New Hampshire, NH, EOS & Dept of Chem., 11/2003
Air-Liquid Interfaces: Alcohols, Aromatic Hydrocarbons, and Water
21. 2003 Michigan State University, Lansing, Mich., 11/2003
Air-Liquid Interfaces: Alcohols, Aromatic Hydrocarbons, and Water
22. 2003 Texas A&M University, College Station, TX, 12/5/2003
Air-Liquid Interfaces: Alcohols, Aromatic Hydrocarbons, and Water

23. 2004 Wooster College, Wooster, OH, Invited by PSI (Pursuing Science Interests student club), 4/26/2004
Atmospheric Chemistry and Particles: Understanding Liquid Particle Surfaces and Their Role in the Atmosphere
24. 2004 Southern Illinois University, Carbondale, Indiana, 4/30/2004; *Air-Liquid Interfaces...*
25. 2004 University of Colorado, Boulder, CO, 4/12/2004
Atmospheric Chemistry and Particles: Understanding Liquid Particle Surfaces and Their Role in the Atmosphere
26. 2004 NOAA Aeronomy Lab, Boulder, CO, 4/13/2004
Organics, acids and reactions: Understanding atmospheric aerosol chemistry at the molecular-level
27. 2004 EMSI Annual Meeting, Columbus, OH 6/2004; *Oxide Surfaces...*
28. 2004 Central State University, Ohio, January 20th 2005, *Atmospheric Aerosol Chemistry*.
29. 2005 Purdue University, Analytical chemistry division (host: G. Simpson), 4/19/2005
Acids, salts, and water: Spectroscopy at air-liquid interfaces
30. 2005 University of Wisconsin, Madison, Physical chemistry division (host: G. Nathanson), 4/12/2005
Acids, salts, and water: Spectroscopy at air-liquid and air-oxide interfaces
31. 2005 University of Michigan, Ann Arbor, Analytical chemistry division (host: Z. Chen), 4/19/2006
Understanding Structure and Reactivity of Liquid Surfaces: Atmospheric Aerosols to Lung Surfactant
32. 2006 Kent State, Ohio, 2006 (host: Shanhu Lee) – Seminar was given by postdoc Laura Voss, *Oxidation and replacement of oleic acid at the air/water interface to understand fat-coated aerosols*
33. 2006 Youngstown State University, Ohio, 4/7/2006 (host: Allen Hunter) – Seminar was given by my postdoc Laura Voss, *Oxidation and replacement of oleic acid at the air/water interface to understand fat-coated aerosols*
34. 2007 University of Texas at Austin, Physical/Analytical joint chemistry seminar (host: P. Rosicky), 2/8/2007
Structure at Air - Aqueous Interfaces: Salts, Acids, Lipids, and Water
35. 2007 University of California, Berkeley, Physical division chemistry seminar (host: D. Neumark), 2/28/2007
Structure at Air - Aqueous Interfaces: Lipids, Acids, and Water
36. 2007 University of Pennsylvania, Institute for Environmental Medicine, U Penn Medical School (host: Director A. Fisher), 4/6/2007
Biophysics and Chemistry of Lipids, Water, and Lung Surfactant
37. 2007 Oberlin College (host: Jason Belitsky), 09/12/07
Air-Aqueous Interfacial Structure: Lipids, Salts, Acids, and Water
38. 2007 University of Notre Dame (host: Masaru Kuno), 10/04/07
Structure at Air - Aqueous Interfaces: Lipids, Salts, Acids, and Water
39. 2007 Johns Hopkins University, **Departmental Colloquium** -Chemistry Department (host: H. Fairbrother), *Air - Aqueous Interfaces and Life, Lipids, Salts, Acids, and Water*
40. 2007 University of Maryland, Physical division chemistry seminar (host: R. Walker), *Structure at Air - Aqueous Interfaces: Lipids, Salts, Acids, and Water*
41. 2007 University of Notre Dame (host: Masaru Kuno), 10/04/07
Structure at Air - Aqueous Interfaces: Lipids, Salts, Acids, and Water
42. 2007 Georgia Tech, **Departmental Colloquium** -Chemistry Department (hosts: Paul Wine

& Jean-Luc Bredas), 10/25/07

Structure at Air - Aqueous Interfaces: Lipids, Salts, Acids, and Water

43. 2007 Georgia Tech, Earth & Atmospheric Sciences (EAS) (host: P. Wine), 10/26/07

Atmospheric Aerosol Chemistry and Interfacial Science

44. 2008 Ohio Wesleyan University, Dept. of Chemistry, Delaware, OH,

Physical Chemistry of Atmospheric Particles: Understanding Aqueous Surfaces

45. 2008 Environmental Science Graduate Program Seminar Series, Kottman Hall, Ohio State;

Atmospheric Chemistry and its Role in the Earth System

46. 2008 University of California Santa Cruz, Santa Cruz, CA ;

Structure & Chemistry at Air-Aqueous Interfaces: Lipids, Salts, Acids, and Water

47. 2008 Denison University, Granville, OH; *Biophysical Chemistry and Beyond: Understanding Aqueous Surfaces*

48. 2009 Northwestern University, Chicago, IL ; *Shedding light on air-aqueous interfaces*

49. 2009 Howard University, Washington D.C.; *Molecular Organization within the Lung Lining*

50. 2010 Northern Kentucky University, Newport, KY; *Molecular Organization at Aqueous Interfaces: Lipids, Fatty Acids, Salts, and Acids*

51. 2010 University of North Carolina, Chapel Hill, NC;

Molecular Organization at Aqueous Interfaces: Lipids, Fatty Acids, Salts, and Acids

52. 2011 University of Delaware, Newark, DE (March 9th, 2011)

Molecular Organization at Aqueous Interfaces: A Global View

53. 2012 University of Cincinnati, Pulmonary Biology Division of Children's Hospital, OH, March 15, 2012, (Invited by Jeff Whittsett)

Biophysics and Organization of Lipids and Water at the Air/Aqueous Interface: Application to Lung Surfactant

54. 2013 University of California Irvine, Irvine, CA (January 29, 2013)

Sum Frequency & Brewster Angle: Atmospheric Aerosols and Lung Surfactant

55. 2013 Czech Institute of Chemistry, Prague, Jungwirth/Roesolova (February 28, 2013)

Ions, Water, and Electric Fields: Aerosols and Flat Aqueous Surfaces

56. 2013 Czech Institute of Organic Chemistry, Prague Bio Seminar (March 4, 2013)

Lipid, Fatty Acid, and Water Organization: Lung Surfactant and Biomembrane Mimics

57. 2013 Penn State, State College, PA, **Department of Chemistry Colloquium** (March 28, 2013)

Ions, Lipids, Water, Electric Fields: From the oceans to the Surface of Aerosol

58. 2013 Temple University, Philadelphia, PA, Department of Chemistry (April 26, 2013)

Air/Aqueous Interfaces: Interfacial Ion Distributions and Lipid Organization by Sum Frequency Spectroscopy and Brewster Angle Microscopy

59. 2013 University of Chicago, **James Franck Institute Colloquium** (May 7, 2013)

Lipid and Ion Organization at the Air-Aqueous Interface by Vibrational Sum Frequency Spectroscopy and Brewster Angle Microscopy

60. 2013 University of California San Diego, San Diego, CA, Department of Chemistry (May 14, 2013)

Ions, Lipid, and Water Organization at the Air-Aqueous Interface by Vibrational Sum Frequency Spectroscopy and Brewster Angle Microscopy

61. 2013 Pacific Northwest National Laboratory, Richland, WA, **EMSL Director's Distinguished Scientist Seminar** (July 10, 2013) *Ions, Lipid, and Water at the Air-Aqueous Interface: Organization and Electric Fields*
62. 2013 University of Toronto, Department of Chemistry, Toronto, Canada (July 17, 2013)
Water Surfaces and Impact on Atmospheric Aerosol: Nitrate, Sulfate, Carbonate, Magnesium and Lipids
63. 2013 H.C. Allen, "I. Understanding Aqueous Surfaces, Atmospheric Chemistry and Biophysics of Lung Connecting as a Mentor – Gender Neutral & Encouraging Women into Science Careers, AWIS EMINENT SCHOLAR SERIES, Biological Research Tower, OSU, Columbus, OH, September 6, 2013, [Invited PUBLIC LECTURE]
64. 2013 H.C. Allen, "Atmospheric aerosols and the lung: Basic Science" Columbus Science Pubs, @ the Shrunken Head Pub, Columbus, OH, September 17, 2013 [Invited PUBLIC LECTURE]
65. 2013 Michigan State University, Department of Chemistry, **Science at the EDGE seminar** (September 25, 2013)
Ions, Lipid, and Water at the Air-Aqueous Interface: Organization and Electric Fields
66. 2013 H.C. Allen, "Atmospheric aerosols and the lung: Basic Science" Prometheus Intellectual Leaders, @ Downtown Columbus business: Traycer THz, Columbus, OH, October 22, 2013, Organizer: Lee Mosbacker [Invited PUBLIC LECTURE]
67. 2013 H.C. Allen, "Molecular Organization at the Air/Aqueous Interface" University of Iowa, Iowa City, IA, November 14, 2013, Organizer: Grassian [Invited Dept. of Chemistry **Colloquium** Speaker]
68. 2013 University of Colorado, Boulder, **Physical Chemistry/Chemical Physics Colloquium** (November 1, 2013)
Ions, Lipid, and Water at the Air-Aqueous Interface: Organization and Electric Fields
69. 2013 H.C. Allen, "Ions, Lipids, Water and Solvation at the Air-Water Interface" Ruhr-Universität, Bochum, Germany, December 3, 2013, Organizer: Havenith [Invited **Colloquium** Speaker]
70. 2014 Jan 17 UCSD Chemistry Department, Phys/Anal/Atm division Seminar, "Organization of Ions & Lipids at Aqueous Surfaces: Atmospheric Aerosols to Lung Surfactant"
71. 2014 Feb 25 Cal Tech **Colloquium**, Chemistry Department, "Organization at the Air-Aqueous Interface Ions, Lipids, Water, Electric Fields; Lung Lining and Atmospheric Aerosols"
72. 2014 Mar 3, University of Victoria, BC Canada, Department of Chemistry Seminar, "Organization at the Air-Aqueous Interface Ions, Lipids, Water, Electric Fields; Lung Lining and Atmospheric Aerosols"
73. 2014 Mar 4, University of British Columbia, BC Canada. Lectures in Modern Chemistry **Colloquium**, "Organization at the Air-Aqueous Interface Ions, Lipids, Water, Electric Fields; Lung Lining and Atmospheric Aerosols"
74. 2014 Mar 5, Simon Fraser University, BC, Canada, **Colloquium**, "Organization at the Air-Aqueous Interface Ions, Lipids, Water, Electric Fields; Lung Lining and Atmospheric Aerosols"
75. 2014 May 1, University of Connecticut, Conn., **Colloquium**, "The Air-Aqueous Interface from Biophysics to the Atmosphere: Ions, Lipids, Water, and Electric Fields"
76. 2014, May 27, EPFL, Lausanne, Switzerland, **Colloquium**, "Surface Propensity and Electric Fields at the Air/Water Interface: Water, Ions, and Lipids"
77. 2015, January 5, University of California, Irvine, Department of Chemistry **Colloquium** "Organization at the Air-Water Interface: Atmospheric Aerosols to Biomembranes"
78. 2015, January 27, Marshall University, Science **Colloquium** "Ions and Lipids at the Air-Water Interface: Electric Fields Induced by Organization"

79. 2015, February 17th, University of Georgia Department Seminar, "Solvation and Organization of Ions at the Air-Water Interface"
80. 2015, March 16th, Ohio University Department of Chemistry and Biochemistry **Colloquium**; "Electric Fields and Organization at the Air-Water Interface"
81. 2015, Dec 4th, SUNY Buffalo **KeyNote** Speaker for the 32nd Graduate Student Symposium (GSS); **Colloquium**, "Electric Fields, Organization and Water Surfaces" (students invitee)
82. 2016 University of Wisconsin Student invited: **Distinguished McElvain Lecture** in Physical Chemistry; Organization and Electric Fields @ Aqueous Surfaces – Ions and Lipids" 01.19.16
83. 2016 Colorado State University Mar 16 **Colloquium**, "Organization and Electric Fields: Understanding Ions and Lipids at the Aqueous Surfaces" 04.27.16
84. 2016 S. Dexter Squibb **Distinguished Lecture Series** (2 invited **Keynote** lectures) - **Public Lecture**; UNC, Asheville Public Lecture 1: Our Lungs and the Atmosphere; 9.26.16
85. 2016 S. Dexter **Squibb Distinguished Lecture Series** (2 invited **Keynote** lectures) Speaker; UNC, Asheville Lecture 2: "Organization, Solvation, and Interactions at Complex Air-Aqueous Interfaces: Water, Lipids, Fatty Acids, and Ions 9.27.16.
86. 2017 Cleveland State University, "Our Lungs and the Atmosphere: Understanding Molecular Organization at Interfaces", 1.20.17 [Invited Talk]
87. 2017 Max Born Institut, (Director T. Elsaesser) Berlin, Germany, February 23, "Organization, Hydration, Ion Binding, and Electric Fields AT AQUEOUS SURFACES" [Invited Talk]
88. 2017 University of Leipzig, Leipzig, Germany, March 16, "Organization, Hydration, Ion Binding, & Electric Fields AT AQUEOUS SURFACES [Invited Talk]
89. 2017 TROPOS Institut (Director H. Hermann), Leipzig, Germany, March 17, "Organization, Hydration, Ion Binding, & Electric Fields at Aqueous Surface: Atmospheric Aerosol and Ocean Surfaces" [Invited **Colloquia**]
90. 2017 "Molecular Assembly and Stabilization: Evolution of SSML and Aerosol Surfaces" CAICE Presentation, NSF Site Visit Review, May 19th, 2017 San Diego, CA. [Invited Talk]
91. 2017 "Aqueous Surfaces", Herbei University, July 29th, 2017, Boading, China [Invited Seminar]
92. 2017 "Aqueous Surface Self Assembly: The Sea Surface Microlayer and Marine Aerosols", College of Wooster, September 26th, 2017, Wooster, OH. [Invited Seminar]
93. 2017 "Clouds and Smoke", STEAM Factory **public** seminar, November 30th, 2017, Columbus, OH. [Invited Talk]
94. 2018 University of California Berkeley, **COLLOQUIUM**; Organization, Hydration, Ion Speciation, and Electric Fields at Water Surfaces. Jan 23, 2018,
95. 2018 Creighton University, Seminar: Organization, Hydration, Ion Speciation, and Electric Fields at Water Surfaces, January 25, 2018

96. 2018 Kent State University **COLLOQUIUM**, invited by student affiliate chapter, From the Ocean to the Atmosphere: Aqueous Surfaces and Molecular Organization April 16, 2018
97. 2018 University of Duisburg-Essen, Duisburg, Germany, Seminar **Keynote** speaker: Organization, Hydration, Ion Speciation, and Inherent Electric Fields at Water Surfaces; May 8th, 2018
98. 2018 Tohoku University (Akihiro Morita Host), Sendai, Japan, Seminar: Water Mediated Ion Pairing @ Aqueous Surfaces, October 16th, 2018
99. 2018 Tokyo Institute of Technology (Yukio Ouchi Host), Tokyo, Japan, **COLLOQUIUM** Keynote: Water Mediated Ion Pairing @ Aqueous Surfaces, October 24th, 2018
100. 2018 Riken, Tokyo (Tahei Tahara Host), Japan, Seminar: Water Mediated Ion Pairing at Aqueous Surfaces, October 25th, 2018
101. 2019 Invited Seminar, University of Akron, Integrated Bioscience Program (grad student seminar program), 'Lipids, Electric Fields, and Ion Pairing: Organization of Membranous Aqueous Surfaces', March 22nd, 2019.
102. 2019 Invited Seminar, University of Tennessee, Knoxville, TN 'Electric Fields, Ion Pairing, and Salty Aqueous Surfaces', March 26th, 2019
103. 2019 Invited **Richard Olsen Lecture** Colloquium, University of Utah, Olsen Lecture Colloquium, 'Electric Fields, Ion Pairing, and Salty Aqueous Surfaces', April 3rd, 2019
104. 2019 Invited **Colloquium** Seminar, Argonne National Laboratory, CSE Colloquium, 'Electric Fields, Ion Pairing, and Salty Aqueous Surfaces', April 30th, 2019
105. 2019 Invited Seminar, Purdue University, Seminar, 'Inherent Electric Fields, Hydration and Ion Pairing at the Air/Water Interface: Ocean and Aerosol Surfaces', October 14th, 2019.
106. 2019 Invited **IMPACT Lecture** speaker, Notre Dame University IMPACT Lecture, Graduate Student run lecture series, Notre Dame, IN, 'Inherent Electric Fields, Hydration and Ion Pairing @ the Air/Water Interface - Ocean and Aerosol Proxy Surfaces', November 20th, 2019.
107. 2020 Invited Seminar, University of Georgia, 'Inherent Electric Fields, Hydration and Ion Pairing @ the Air/Water Interface- *Ocean and Aerosol Proxy Surfaces*', Athens, Georgia January 8, 2020.
108. 2020 Invited Seminar, Worcester Polytech Institute, 'Inherent Electric Fields, Hydration and Ion Pairing @ the Air/Water Interface - *Ocean and Aerosol Proxy Surfaces*', Boston, MA January 29, 2020.
109. 2021 Invited Seminar Interfacial Aqueous Organization and Electric Fields Generated from Chemical Composition, University of Minnesota, Dept. of Chemistry Seminar, April 1st, 2021.
110. 2021 Invited Seminar Hydration, Ions, Lipid Binding, and Inherent Electric Fields at the Air/Water Interface: Ocean and Aerosol Surfaces, Michigan Tech., Earth, Planetary, and Space Sciences Institute Seminar, September 27, 2021.
111. 2022 Invited Seminar Conversation about Career Path: interviewing for academic positions, tenure and promotion, and applying, interviewing, and navigating academic positions. Fannie and John Hertz Foundation – Virtual workshop March 2, 2022.
112. 2022 Invited Seminar Shedding light on molecular organization of lung surfactant proxy systems, Cleveland State Chemistry Seminar, April 15th, 2022.
113. 2023 Invited Seminar Molecular Surface Properties of Beverages, Ohio State Department of Food Science and Technology, November 8, 2023

114. 2023 **King Memorial Lecture** Invited Speaker, Informing Ocean and Atmospheric Aerosol Chemistry Interfacial Organization, Hydration, Binding, and Electric Fields at Aqueous Surfaces, Kansas State King Memorial Lecture, April 6, 2023

115. 2023 **Calvin Giddings Lecture** Invited Speaker, Lecture #1 Informing Ocean and Atmospheric Aerosol Chemistry: Interfacial Organization and Electric Fields at Aqueous Surfaces, University of Utah, May 1, 2023

116. 2023 **Calvin Giddings Lecture** Invited Speaker, Lecture #2 Binding, Hydration, and Structure at the Aqueous Surface: Surface Sensitive Analytical Instrumentation, University of Utah, May 2, 2023

SERVICE

University and College Service

2000-2002 Academic/minority program; OSU minority mentoring program

2001-2003 Environmental Science Graduate Program, Interdisciplinary University Program, Recruiting committee member, K. Mancl, chair

2002-2008 Annual speaker on behalf of OSU/MPS; Young Women's Empowerment Conference, Columbus City School District. Organized to encourage young women into science and math careers/education (2002, 2003, 2004, 2005, 2006, 2007, 2008)

2005 OSU Honors recruitment seminars (2 open lectures; parents and prospective students); Honors and Scholars, "Atmospheric Chemistry: The Good, The Bad, And the Ugly"

2005 Columbus School District: Columbus District School Board Meeting; scholarship recognition; Gene Harris

2005 Young Women's Empowerment Conference (YWEC), College of Biological Sciences Scholarship Fundraising; \$2000

2005-2008 University Interdisciplinary program service: Environmental Science Graduate Program Graduate Studies Committee Member

2006-2007 OSU Welcome Speaker, new undergraduate student orientation

2007 President's Undergraduate Salute to Achievement; Speaker, "Energy and Environment and Undergraduates", 5/2

2007 OSU NSF funding panel participant, Project GRO (C. Anderson organizer), Ohio State

2007-2010 Ohio State University College of Math and Physical Sciences Senator

2007-2008 Ohio State University Senate Steering Committee member, committee oversight & university affairs

2008 Maximus Scholars Selection Committee Member– University Honors and Scholars undergraduate awards

2008 University Faculty recruitment activities for OSU Mech. Engineering; B. Cola and J. Greene; developed position for JG.

2008-2009 Climate, Water, Carbon (CWC) Advisory Board Member

2008-2009; OSU Faculty Leadership Group (group of 4: Steering Chair, Faculty Council Chair and Chair-elect, Senate Secretary)

2008-2009, Faculty Representative (with R. Gunther & T. Gerber) and Advisor to President Gee

2008-2009, Faculty Representative (with R. Gunther & T. Gerber) and Advisor to Provost Alutto

2008-2009, Faculty Cabinet member, University Senate

2008-2009, Chair, Ohio State University Senate Steering Committee; committee oversight & university affairs

2008-2009, Arts & Sciences Executive Dean and Vice Provost Search Committee member

2009, Ohio State Scholarship YWEC Fundraising, \$2000, University Outreach and Engagement

2009, Chair, Arts and Sciences Environmental Studies Undergraduate Degree recommendation committee

2009-2010, University Committee on Enrollment and Student Progress, committee member

2008-2010, Faculty Council member, University Senate

2005-2013; Young Women's Empowerment Conference (YWEC), MPS Scholarship Presenter and annual Fundraising, \$2,500 – 3,500 annually; *Annual presentations of scholarships.*

2012-2013, University Faculty Fellow, Discovery Themes Initiative, Office of Academic Affairs, VP Mike Boehm

2012-2015, Committee on Academic Affairs (CAA), committee member, 3 year commitment

2014-2018, University Level Advisory Committee (ULAC) for the General Education Program, committee member

2016 – Ohio State Distinguished Scholar Award Committee member

2016 – ASC College Advisory Board (10/2016 appointed)

Departmental Service

2000-2001, 2010-2012 Graduate Admissions Committee 3 years

2000-2006 Physical Chemistry Seminar Chair & Coordinator, 6 years

2003 **Organizer**, Second Annual Ohio Analytical Consortium Meeting held at Ohio State; October 31st, intercollegiate analytical chemistry consortium

2003-2006 Carnegie Initiative on the Doctorate Committee Member

2003-2004 Departmental Structure Committee Member; T. Miller, chair

2003 Department machinist hiring committee

2004-2005 Graduate Chemistry Curriculum Committee

2004-2006, **Organizer**, Faculty Careers Experience Graduate Student Gatherings, sponsors: dept & CID

2005-2006 **Chair**, Departmental Junior **Faculty Search** Committee – 380 applicants, 17 interviewees

2006 Assessment Plan committee member for Chemistry 121 and 122; J Parson, chair

2006-2007 Analytical junior faculty search committee member

2006 Chemistry appointments committee

2006-2012 Honors Academic Advisor MPS – Chemistry
2007-2009 Department Diversity committee member
2009-2010 **Chair**, Department Colloquium Committee
2012-2014 **Chair**, Department Diversity Committee
2013-2017 Committee for Department Services, committee member
2013-2022 **Chair**, Assistant Professor Mentoring Committee
2014 –2022, Assistant Professor Mentoring committees
2016 – **Chair** Department Awards Committee (9/2015~8/2019)
2017- 2022 FACS Departmental Advisory Member
2020-current Department Awards Committee Member
2020-2021 Department STEM Committee Member

National Chemistry Community Service

2001 NSF: National Science Foundation AINM Workshop; March 2-3rd,
'Analytical Instrumentation for the New Millennium – Materials'; panel member
Prof. Tom Mallouk-organizer

2001 ACS: American Chemical Society National Meeting, Chicago Illinois,
Session Chair of 'Nucleation, Theory, and Experiment'
in the Physical Chemistry Symposium titled, 'Physical Chemistry of Gas-Particle Interactions', at the ACS National Meeting,
Chicago, Illinois, August 29th, 2001.

2002 International Symposium on Frontiers in Molecular Science,
Session Chair of Environmental Chemistry, Qingdao, China

2002 ACS: American Chemical Society National Meeting, 8/2002
Symposium Organizer with Dr. Douglas Worsnop (3 ½ day symposium) 'Frontiers in Atmospheric Chemistry', physical chemistry
division (cosponsored by the colloids and environmental chemistry divisions)

2002 NRC: National Research Council Workshop on the Environment,
'Challenges for the Chemical Sciences in the 21st Century: The Environment', being convened by the Board on Chemical
Sciences and Technology (BCST) of the National Research Council; National Academy of Sciences; participant

2002 State Science Fair Judge on behalf of local ACS section,

2003 CRC workshop, University of California, Irvine, Beckman Center,
Participant, "Workshop on Chemistry at Interfaces"

2004 ACS: American Chemical Society National Meeting, Anaheim, CA,
Co-organizer, 4-day symposium, "Vibrational analyses of dry and wet surfaces", Surface and Colloids Division

2004 NSF: NSF Chemical Education Division; 2-days, panel member

2004 ACS Fall National Meeting, Philadelphia, Penn, Fall meeting
Session Chair - Chemical Physics in Atmospheric Science, session on Atmospheric Aerosol Chemistry (Physical Division)

2005 International Molecular Spectroscopy Conference, Ohio State
Session Chair – (T.A., Miller, organizer)

2005 Gordon Conference: Dynamics at Surfaces,
Session Chair - (G. Nathanson organizer)

2005 NSF-Chemistry: “National Science Foundation Workshop on Chemistry and Sustainability”, PNNL, November 2005
Organizer with Geoffrey Coates (Cornell); NSF-Chemistry Division; workshop on chemistry and sustainability to guide NSF-CHE in its funding endeavors with respect to environmental chemistry (water, energy, air, and green chemistry). Pacific Northwest National Laboratory, November 3rd and 4th, 2005. (Program Officer: Kathy Covert, NSF-CHE)

2006 International Molecular Spectroscopy Conference, OSU
Session Chair of “Electronic” session

2006 NSF-Chemistry: CRIF-ID instrumentation panel, 5/2006

2006 ACS: American Chemical Society National Meeting, Spring 2006, Atlanta Georgia
Symposium Organizer. 4-day symposium, “Spectroscopy of Interfaces”, co-organizer Mary Jane Shultz. Atmospheric, geochemistry, electrochemical, and biological sub areas

2006 Pacific Northwest National Laboratory: Environmental Molecular Science Laboratory (EMSL), nonlinear optical tools recommendations

2006 PNNL EMSL Peer Review Committee

2007 OSU International Symposium on Molecular Spectroscopy, June, Columbus, Ohio
Organizer. sum frequency generation symposium; 2 days

2008 ACS: American Chemical Society National Meeting, Spring, New Orleans, LA
Symposium Co-Organizer. 4-day symposium; Geochemistry division, Organizer: L. Criscenti (Sandia) and L. Katz (UT Austin)

2008 Tufts University; PhD defense committee member, Shultz group, M. Kuo PhD

2010 NSF-Chemistry: CRIF-ID instrumentation panel member

2010 Gordon Conference: Water and Aqueous Solutions,
Session Chair - (P. Jungwirth organizer)

2011 Fall 2011 ACS National Meeting, Denver, CO, Physical Chemistry Division 4-day symposium organizer:
Organizer with Martina Roeselova, Atmospheric Aerosol Chemistry

2010- 2013 Journal of Physical Chemistry Advisory Board member

2011 NSF Panel member, CHE-ECS

2012 ACS Physical Division Award Committee Member

2012 DOE-BES GEOSCIENCES SITE REVIEW, Oakridge National Laboratory Geo Renewal

2013 APS Plyler Award Committee CoChair

2014-2016 ACS PHYS Division elected Member at Large, Executive Committee

2014 APS Plyler Award Committee Chair

2014-2016 ACS Award for Creative Advances in Environmental Science and Technology, Chair, 2015, Committee member

2014 Gordon Conference: Water and Aqueous Solutions, Holderness, NH
Session Chair - (D. Tobias organizer)

2014 Co Editor with Matthew Brown, Hendrik Bluhm, Barbara Finlayson-Pitts, Journal of Physical Chemistry, Prof. John C. Hemminger Festschrift Issue

2015 INFEWS NSF Workshop invitee/participant: Accelerating our Understanding of Supramolecular Chemistry in Aqueous Solutions May 31-June 4 2015

2015-2019 Mabel and Arnold Beckman Award Committee member and finalist interviewer, Beckman Young Investigator Awards

2015-2017 APS Division of Chemical Physics, Elected as Member at Large, Executive Committee

2016-2018 ACS PHYS Division, Elected as Councilor, Executive Committee

2018 Guest Editor of Special Issue on Ions in Solution with D. Tobias, Journal of Chemical Physics

2019 Gordon Research Conference, GRC, Chemistry and Physics of Liquids session chair

2019 DOE BES CPIMS program, PNNL National Laboratory Onsite Review committee

2020 NSF Panel Review Team

2023 NSF Panel Review Team

2023-2026 Arnold and Mabel Beckman Institute Executive Committee member; 2023 BYI Leadership

2000- present, Reviewer for journals and grant awarding agencies:

Journals for which review has been completed: JACS, Journal of the American Chemical Society; JPC, Journal of Physical Chemistry; GRL, Geophysical Research Letters; Geoc, Geochemica et Cosmochimica Acta; AC, Analytical Chemistry; ACA, Analytica Chimica Acta; Angewandte Chemie ; AS, Applied Spectroscopy; BBA, BBA Biomembranes; BJ, Biophysical Journal; BP, Biotechnology Progress; CEur, Central European Journal of Science; COLL, Colloids and Surfaces; CPL, Chemical Physics Letters; CR, Chemical Reviews; EST, Environmental Science & Technology; ACS Earth and Space Chemistry; JAerS, Journal of Aerosol Science; JCP, Journal of Chemical Physics; JCC, Journal of Computational Chemistry; JGR Journal of Geophysical Research ; Langmuir; Nature; Nature Communications, PCCP- Physical Chemistry Chemical Physics; Pol, Polymer; RScil, Review of Scientific Instruments; Science; TSF, Thin Solid Films; WR, Water Research

Grant awarding agencies: ACS/PRF, American Chemical Society Petroleum Research Fund; ARO, Army Research Office; BR, Book Reviews (JACS); BSF, US-Israel Binational Science Foundation; CRDF, STCU, U.S. Civilian Research and Development Foundation; CWC Grants, Climate, Water, Carbon Program at OSU; DOE, Department of Energy; NCBP, North Carolina Biotechnology Center Grants; NIH, National Institute of Health; NSERC, Canadian National funding ;NSF, National Science Foundation CHE (several subdivisions as reviewer off and on-site), GEO, ATM; OSC, Ohio State University OSC Computing Center; PNNL/EMSL, Pacific Northwest Lab / Environmental Molecular Science Laboratory; Research Corporation; UK, EHH ; WG, Westgec, NIGEC Nat'l Inst. For Global Environmental Chang

International Service

2010-2012 KTH Stockholm, committee member, Promotion and Hiring

2013-2024 Science Advisory Board Member: RESOLV Cluster of Excellence, Ruhr University, Bochum, Germany
<http://www.ruhr-uni-bochum.de/solvation/>

2018 Duisburg, Germany, international W3 physics faculty member hire committee

2023-2024 Kiel, Germany, BASS Advisory Board Member