

Soren N. Eustis, Ph.D.

Institute for Biogeochemistry and Pollutant Dynamics • ETH-Zürich

Universitätstrasse 16 • 8050 Zürich • Switzerland

+41 44 632 93 48 • soren@env.ethz.ch

Background

Born in Edina, MN July 29, 1974

U.S. Citizen

Permanent residence: Frontenac, MN 55026

Married, no children

Education

Postdoctoral Associate, Swiss Federal Institute of Technology (ETH). Advisor: Dr. Kristopher McNeill
Aquatic Photochemistry: Femtosecond Spectroscopy, Field Studies, and Computational Chemistry 2009-present

Ph.D. Physical Chemistry, Johns Hopkins University 2009
Advisor: Dr. Kit H. Bowen, Jr. Thesis: *Gas Phase Anion Photoelectron Spectroscopy of Acid-Base Systems, Solvated Molecules and MALDI Matrix Molecules*

M.A. Physical Chemistry, Johns Hopkins University 2006

B.A. Chemistry, Grinnell College 2003
Advisor: Dr. T. Andrew Mobley
Senior Project: *Analysis of the Removal and Transformation of Naproxen During Drinking Water Treatment*

Research Interests

- Solvation dynamics (atomic and molecular, clusters, and bulk aqueous solutions)
- Chemical physics of aqueous environmental systems
- Gas phase environmental chemistry
 - Photochemistry, atmospheric chemistry, cluster modeling of environmental systems
- Nutrient pollution and abatement
- Predictive computational chemistry (excited state species, thermodynamics, reaction pathways)
- Enhancing public understanding of environmental issues and science as a whole

Research Experience

Photochemical conversion of environmental pollutants. ETH-Zürich (Dr. Kristopher McNeill) 2009-present

Solvation, dissociation, and acid-base chemistry in molecular beams. Johns Hopkins University (Dr. Kit H. Bowen, Jr.) 2003-2009

Removal and fate of naproxen during drinking water treatment. Tulane University (Dr. Glen R. Boyd, Ph.D.,P.E.). Grinnell College (Dr. T. Andrew Mobley) 2002-2003

Reducing algal blooms in urban ponds by removing bioavailable phosphorus using alum. NSF REU, University of Minnesota (Dr. Patrick Brezonik) 2000

Teaching Experience Teaching / Research Assistant, Johns Hopkins University 2003-2009

- Physical Chemistry III Laboratory
- General Chemistry II (Recitation TA)
- Guest lecturer:
 - Chemical Kinetics (graduate level)
 - General Chemistry II

Adjunct Professor of Chemistry, Stevenson University 2006-2009

- General Chemistry II

Awards and Grants Langmuir-Cresap Award for excellence in physical chemistry research 2008

Ernest M. Marks Fellowship 2003

Research grant to study fate and transformation of naproxen in drinking water treatment facilities. (Tulane University Center for Bioenvironmental Studies) 2002

Professional Service and Development Mentor of local high school student through the WISE (Women in Science and Engineering) program 2008

Participant, National Council for Science and the Environment National Conference on Science, Policy and the Environment, *Education for a Sustainable and Secure Future* 2003

Memberships American Chemical Society (ACS)
Royal Society of Chemistry (AMRSC)
American Physical Society (APS)
Union of Concerned Scientists (UCS)
American Association for the Advancement of Science (AAAS)
Association of Environmental Engineers and Science Professors (AEESP)

Peer-Reviewed Publications

Eustis, S. N.; Whiteside, A.; Wang, D.; Gutowski, M.; Bowen, K. H. "Ammonia-Hydrogen Bromide and Ammonia-Hydrogen Iodide Complexes: Anion Photoelectron and Ab Initio Studies." *Journal of Physical Chemistry* **114** 1357 (2010)

Eustis, S. N., Radisic, D., Bowen, K. H., Bachorz, R. A., Haranczyk, M., Schenter, G. K., Gutowski, M., "Electron-Driven Acid-Base Chemistry: Proton Transfer from Hydrogen Chloride to Ammonia." *Science* **319**, 936 (2008) (Cover Article).

Eustis, S., Wang, D., Bowen, K. H., Patwari, G.N., "Photoelectron Spectroscopy of Hydrated Hexafluorobenzene Anions." *Journal of Chemical Physics* **127**, 114312 (2007).

Eustis, S., Wang, D., Bowen, K. H., "Photoelectron Spectroscopy of Hydrated Adenine Anions." *Journal of Chemical Physics* **127**, 224309/1 (2007).

Ko, Y.-J., Wang H., Cao, R., Radisic, D., Eustis, S. N., Stokes, S. T., Lyapustina, S., Tian, S. X., Bowen, K. H., "Photoelectron Spectroscopy of Homogeneous Nucleic Acid Base Dimer Anions." *Physical Chemistry Chemical Physics*, **12**, 3535 (2010).

Li, X., Grubisic, A., Eustis, S., Wang, D., Lectka, T., Ganteför, G.F., Bowen, K.H., Burgert, R., Schnöckel H., "The Reaction of Aluminum Cluster Anions with Tetrakis(dimethylamino)ethylene (TDMAE): Insertion of an Aluminum Anion into a C–N Bond" *Chemical Physics Letters* **481**, 190 (2009).

Kandalam, A. K.; Jena, P.; Li, X.; Eustis, S.; Bowen, K. H., "Photoelectron Spectroscopy and Theoretical Studies of $[\text{Co}_m(\text{pyrene})_n]^-$ ($m=1,2$ and $n=1,2$) complexes." *Journal of Chemical Physics* **129**, 134308 (2008).

Li, X.; Eustis, S.; Bowen, K. H.; Kandalam, A. K., "Photoelectron Spectroscopic Study of the Anionic Transition Metal-Organic Complexes $[\text{Fe}_{1,2}(\text{COT})]^-$ and $[\text{Co}(\text{COT})]^-$." *Journal of Chemical Physics* **129**, 124312 (2008).

Zheng, W., Eustis S., Li, X., Nilles, J. M., Thomas, O. C., Bowen, K. H. "Photoelectron Spectroscopic Study of Iron-Benzene Cluster Anions." *Chemical Physics Letters* **462**, 35 (2008).

Li, X., Eustis, S., Bowen, K. H., Kandalam, A. K., Jena, P. "Photoelectron Spectroscopic and Theoretical Studies of $\text{Fe}_m(\text{Coronene})_n$ ($m=1-2$, $n=1-2$) Complexes." *The Journal of Chemical Physics* **129**, 074313 (2008).

Zheng, W., Li, X., Eustis, S., and Bowen, K. "Anion Photoelectron Spectroscopy of TaO_n^- ($n=1-3$)." *Chemical Physics Letters* **460**, 68 (2008).

Lippa, T. P., Eustis, S. N., Wang, D., Bowen, K. H. "Electrophilic Properties of Common MALDI Matrix Molecules." *International Journal of Mass Spectrometry* **268**, 084321 (2007).

Zheng, W., Li, X., Eustis, S., Grubisic, A., Thomas, O., deClercq, H., Bowen, K. "Anion Photoelectron Spectroscopy of $\text{Au}(\text{H}_2\text{O})_{1,2}$, $\text{Au}_2(\text{D}_2\text{O})_{1-4}$, and AuOH^- ." *Chemical Physics Letters* **444**, 232 (2007).

Mazurkiewicz, K., Harańczyk, M., Gutowski, M., Rak, J., Radisic, D., Eustis, S. N., Wang, D., Bowen, K.H. Jr. "Valence Anions in Complexes of Adenine and 9-Methyladenine with Formic Acid: Stabilization by Intermolecular Proton Transfer." *Journal of the American Chemical Society* **129**, 1216 (2007).

Mazurkiewicz, K., Harańczyk, M., Storniak, P., Gutowski, M., Rak, J., Radisic, D., Eustis, S. N., Wang, D., Bowen, K. H. "Intermolecular Proton Transfer Induced by Excess Electron Attachment to Adenine(Formic Acid) $_n$ ($n=2,3$) Hydrogen Bonded Complexes." *Chemical Physics* **342**, 215 (2007).

Rak, J., Mazurkiewicz, K., Kobylecka, M., Storniak, P., Harańczyk, M., Dobkowska, I., Bachorz, R. A., Gutowski, D., Stokes, S. T., Eustis, S. N., Wang, D., Li, X., Ko, Y.-J., and Bowen, K. H. "Stable Valence Anions of Nucleic Acid Bases and DNA Strand Breaks Induced by Low Energy Electrons." *Radiation Induced Molecular Phenomena in Nucleic Acids – A Comprehensive Theoretical and Experimental Analysis (Series: Challenges and Advances in Computational Chemistry and Physics, Vol. 5, eds. Shukla, M. K., and Leszczynski, J.)* (Springer, Amsterdam, 2008).

Eustis, S., "Energy Crisis", *Chemical and Engineering News* (2003) 81(7), 6.

Eustis, S., "Unsustainable Practices", *Chemical and Engineering News* (2003) 81(17), 4.

**Abstracts and
Conference
Presentations**

Gordon Research Conference (Environmental Science: Water), Holderness NH. Time-Dependent Density Functional Theory (TD-DFT) Study of the Ground and Excited States of Several Diphenylamines: Applications to Aquatic Photochemistry. 2010

Gordon Research Conference on Molecular and Ionic Clusters, Ventura, CA. Poster: Electron Driven Proton Transfer in NH₃-HCl. 2007

Gordon Research Conference on Molecular and Ionic Clusters, Aussois, France. Poster: Barrier Free Proton Transfer in Adenine-Thymine Dimers. 2004

Pew Undergraduate Research Symposium, Washington University in St. Louis. Talk: Removal and Transformation of Naproxen During Drinking Water Treatment. 2003

Howard Hughes Medical Institute Research Symposium, Grinnell, IA. Poster: Behavior of Heavy Metals in Simulated Soil Columns: An Undergraduate Laboratory. 2003

Invited Talks

EPFL – Lausanne, Switzerland

Jan 14th, 2010

References

Dr. Kit H. Bowen
Department of Chemistry
Johns Hopkins University
3400 North Charles Street
Baltimore, MD 21218
410-516-8425 • kitbowen@jhu.edu

Dr. Kristopher McNeill
ETH - Zurich
Universitatstrasse 16
8092 Zurich, Switzerland
+41 44 632 47 45 •
kristopher.mcneill@env.ethz.ch

Dr. Howard Fairbrother
Department of Chemistry
Johns Hopkins University
3400 North Charles Street
Baltimore, MD 21218
410-516-4328 • howardf@jhu.edu

Dr. Ellen Roskes
Chair, Department of Chemistry
Stevenson University
1525 Greenspring Valley Road
Stevenson, MD 21153
443-334-2352 • eroskes@stevenson.edu

Dr. Gerald Meyer
Department of Chemistry
Johns Hopkins University
3400 North Charles Street
Baltimore, MD 21218
410-516-7319 • meyer@jhu.edu