Elizabeth C. Landis

College of the Holy Cross
Department of Chemistry
1 College St, Box C
Worcester, MA 01610

Phone: 508-793-2662
Fax: 508-793-3530
Email: elandis@holycross.edu

Current Position

Assistant Professor, College of the Holy Cross — September 2012-present

Education

Ph.D. Chemistry, University of Wisconsin Madison — 2005 - 2010

B. A. in Chemistry and Mathematics, Williams College — 2001 - 2005
cum laude, with honors in chemistry

Research Experience

Independent Research, College of the Holy Cross — September 2012-present
Molecular monolayers on nanoscale metallic surfaces

Henson Postdoctoral Fellow — June 2010-June 2012
Harvard University Center for the Environment
Advisor: Cynthia M. Friend
Photoreactivity and stability of TiO_2 surfaces

Doctoral Research, University of Wisconsin-Madison — July 2005 - May 2010
Advisor: Robert J. Hamers
Thesis: "*Molecular Monolayers for Attaching Electroactive Molecules to Vertically Aligned Carbon Nanofibers*"

Undergraduate Research, Williams College — June 2004 - May 2005
Advisor: Lee Y. Park
Thesis: "*Developing Templates for the Alignment of Liquid Crystalline Materials*"

Undergraduate Research, Leiden University — Summer 2003
Advisor: Jan Reedijk
Oxidation catalysts based on non-salen ligands

Teaching Experience

Assistant Professor, College of the Holy Cross
Atoms and Molecules (Lecture and Laboratory)
Equilibrium and Reactivity (Lecture and Laboratory)
Instrumental Chemistry and Analytical Methods (Lecture and Laboratory)

Teaching Assistant, University of Wisconsin Madison
Analytical Chemistry (Laboratory)

Awards and Honors

Harvard University Environmental Fellowship	July 2010
University of California Presidents Postdoctoral Fellowship Finalist	December 2009
Leah Cohodas Berk Award for Excellence in Chemistry Research (UW Madison)	May 2009
Charles & Martha Casey Excellence in Materials Research Award (UW Madison)	May 2009
Vilas Travel Fellowship (UW Madison)	January 2009
Merck Research Fellowship in Analytical/Physical Chemistry	August 2007
First Year Graduate Fellowship (UW Madison NSEC)	September 2005
Sigma Xi (Williams)	June 2005
Sam Goldberg Colloquium Prize in Mathematics (Williams)	June 2005
William W. Kleinhandler Prize for Excellence in Music (Williams)	June 2005

Grants

American Chemical Society Petroleum Research Fund 2014-2016
"Impact of molecular ligands on nanoparticle electrocatalysis," $55,000

Research Corporation Cottrell College Science Award 2014-2016
"Molecular monolayers on nanoporous gold electrodes," $45,000

Charles & Rosanna Batchelor Ford Faculty Fellowship Summer, 2013
"Self assembled monolayers on nanoporous gold electrodes," $3,800

Publications

1. Chevalier, C. L.*, **Landis, E. C.**, "Electrochemical attachment of diazonium-generated films on nanoporous gold," *Langmuir*, **2015**, 31, 8633-8641.
2. Jensen, S. C., Phillips, K. R., Baron, M., **Landis, E. C.**, Friend, C. M., "Norrish Type I surface photochemistry for butyrophenone on TiO_2(110)," *Physical Chemistry Chemical Physics*, **2013**, 15, 14, 5193-5201.
3. **Landis, E. C.**, Jensen, S. C., Phillips, K. P, Friend, C. M., "Photostability and Thermal Decomposition of Benzoic Acid on TiO_2," *Journal of Physical Chemistry C*, **2012**, 116, 40, 21508-21513.
4. **Landis, E. C.**, Phillips, K. C., Mazur, E., Friend, C. M., "Formation of nanostructured TiO_2 by femtosecond laser irradiation of titanium in O_2" *Journal of Applied Physics*, **2012**, 112, 6, 063108.
5. Ruther, R. E., Rigsby, M. L., Gerken, J. B., Hogendoorn, S. R., **Landis, E. C.**, Stahl, S. S., Hamers, R. J., "Highly Stable Redox-Active Molecular Layers by Covalent Grafting to Conductive Diamond," *Journal of the American Chemical Society*, **2011**, 133, 5692-5694.
6. Gerken, J. B., **Landis, E. C.**, Hamers, R. J., Stahl, S. S., "Fluoride-Modulated Cobalt Catalysts for Electrochemical Oxidation of Water under Non-Alkaline Conditions," *ChemSusChem*, **2010**, 10, 1176-1179.
7. Wang, X., **Landis, E. C.**, Franking, R., Hamers, R. J., "Ultrastable Molecular and Biomolecular Interfaces by Photochemical Grafting of Alkenes" *Accounts of Chemical Research.*, **2010**, 43, 1205-1215.
8. **Landis, E. C.**, Klein, K. L., Liao, A., Pop, E. Hensley, D. A., Melechko, A. V., Hamers, R. J., "Covalent functionalization and electron-transfer properties of vertically aligned carbon nanofibers: The importance of edge-plane sites" *Chemistry of Materials*, **2010**, 22, 2357-2366.

9. Hamers, R. J., Chambers, S. A., Evans, P. E., Franking, R, Gerbec, Z., Gopalan, P., Kim, H., **Landis, E. C.**, Li, B., McCoy, M. W., Ohsawa, T., Ruther, R., "Molecular and Biomolecular Interfaces to Metal Oxide Semiconductors", *Physica Status Solidi C*, **2010**, 7, 200-205.
10. Franking, R. A., **Landis, E. C.**, Hamers, R. J., "Highly Stable Molecular Layers on Nanocrystalline Anatase Through Photochemical Grafting," *Langmuir*, **2009**, 25, 10676-10684.
11. Li, B., Franking, R., **Landis, E. C.**, Kim, H., Hamers, R. J., "Photochemical Grafting and Patterning of Biomolecular Layers onto TiO_2 Thin Films," *ACS Applied Materials and Interfaces*, **2009**, 1, 5, 1013-1022.
12. **Landis E. C.**, Hamers, R. J., "Covalent Grafting of Redox-Active Molecules to Vertically Aligned Carbon Nanofiber Arrays via Click Chemistry," *Chemistry of Materials*, **2009**, 21, 4, 724-730. (Science magazine editors choice, March 2009)
13. **Landis, E. C.**, Hamers, R. J., "Covalent Grafting of Ferrocene to Vertically Aligned Carbon Nanofibers: Electron-Transfer Processes at Nanostructured Electrodes," *Journal of Physical Chemistry C.*, **2008**, 112, 16910-16918. (Cover article)
14. Metz, K. M., Tse, K. Y., Baker, S. E., **Landis, E. C.**, Hamers, R. J., "Ultrahigh-Surface-Area Metallic Electrodes by Templated Electroless Deposition on Functionalized Carbon Nanofiber Scaffolds," *Chemistry of Materials*, **2006**, 18, 23, 5398.
15. **Landis, E. C.**, Scroggins, S. T., Schofield, M. H., Park, L. Y., "Models of Coenzyme B12: An Undergraduate Chemistry Experiment Combining Synthesis of Cob(III)aloxime Complexes and Their Characterization by ^{1}H NMR and Cyclic Voltammetry" *The Chemical Educator*, **2003**, 8, 4, 248.

Patents

1. "Molecular and bimolecular functionalization of metal oxides," R. J. Hamers, Li, B., **Landis, E. C.**, Franking, R., Patent US 8093177B2, January 10, 2012.

Oral Presentations

1. E. C. Landis, R. J. Hamers, "Electron transfer on vertically aligned carbon nanofibers," American Chemical Society National Meeting, Boston, MA, August 2010
2. E. C. Landis, R. J. Hamers, "Electrochemical characterization of molecular layers on vertically aligned carbon nanofibers," American Chemical Society National Meeting, San Francisco, CA, March 2010
3. E. C. Landis, R. J. Hamers, "Organic monolayers for interfacing electrocatalytic molecules to nanostructured electrodes," AVS National Meeting, San Jose, CA, November 2009
4. E. C. Landis, R. J. Hamers, "Organic monolayers for interfacing electrocatalytic molecules to nanostructured electrodes," Merck Research Laboratories, West Point, PA, July 2008
5. E. C. Landis, R. J. Hamers, "Organic monolayers for interfacing electrocatalytic molecules to nanostructured electrodes," American Chemical Society National Meeting, New Orleans, LA, April 2008
6. E. C. Landis, R. J. Hamers, "Photochemical functionalization of nanoscale carbon materials", International Workshop on Nanostructure and Nanoelectronics, November 2007, Tohoku University, Sendai, Japan (invited talk)

Poster Presentations

1. E. C. Landis, D. A. Patel*, C. L. Chevalier*, R. B. Chevalier*, "Molecular layers on nanoporous gold electrodes," American Chemical Society National Meeting, Boston, MA, August 2015

2. C. L. Chevallier*, E. C. Landis, "Diazonium-derived nitrobenzene layers on nanoporous gold," American Chemical Society National Meeting, Denver, CO, March 2015
3. R. B. Chevallier*, D. A. Patel*, E. C. Landis, "Stability of alkane-thiol monolayers on nanoporous gold surfaces" American Chemical Society National Meeting, Denver, CO, March 2015
4. M. C. Holvey*, E. C. Landis, "Effect of dodecylamine on the electrocatalytic activity of platinum nanoparticles" American Chemical Society National Meeting, Dallas, TX, March 2014
5. D. A. Patel*, E. C. Landis, "Stability of thiol self-assembled monolayers on nanoporous gold" American Chemical Society National Meeting, Dallas, TX, March 2014
6. M. C. Holvey*, E. C. Landis, "Effect of dodecylamine on the electrocatalytic activity of platinum nanoparticles," NanoWorcester Symposium, Worcester, MA, September, 2013
7. E. C. Landis, D. A. Patel*, C. A. Karos*, "Self assembled monolayers on nanoporous gold electrodes," Gordon Research Conference on Nanoporous Materials, Holderness, NH, August 2013
8. E. C. Landis, S. C. Jensen, K. R. Phillips, C. M. Friend, "Surface mediated photochemistry: Stability of benzoic acid on TiO_2", American Chemical Society National Meeting, San Diego, CA , March, 2012
9. E. C. Landis, K. P. Phillips, E. Mazur, C. M. Friend, "Formation of nanostructured TiO_2 by femtosecond laser irradiation of titanium," Gordon Research Conference on Electrochemistry, Ventura, CA, January 2012
10. E. C. Landis, R. J. Hamers, "Molecular monolayers for interfacing electroactive molecules with vertically aligned carbon nanofibers," Gordon Research Conference on Chemical Reactions at Surfaces, Ventura, CA, February 2011
11. S. R. Hogendoorn, E. C. Landis, R. J. Hamers, "Electrocatalytic activity and stability of platinum-carbon hybrid nano materials," American Chemical Society National Meeting, San Francisco, CA, March 2010.
12. E. C. Landis, R. J. Hamers, "Molecular monolayers for interfacing electroactive molecules with vertically aligned carbon nanofibers," Gordon Research Seminar and Conference on Solar Fuels, Ventura, CA , February 2009
13. E. C. Landis, R. J. Hamers, "Molecular monolayers for interfacing electroactive molecules with vertically aligned carbon nanofibers," 7th New England Nanomanufacturing Workshop, Boston, MA, June 2009
14. E. C. Landis, S. E. Baker, K. Y. Tse, K. M. Metz, R. J. Hamers, "Electrical Characterization of Carbon Nanofibers," Gordon Research Conference on Nanostructure Fabrication, Tilton, NH, July 2006

(* = undergraduate coauthor, presenter is listed first)