

# Lucille A. Benedict

**Address:** University of Southern Maine  
Department of Chemistry  
70 Falmouth St.  
Portland, Maine, 04101

**Email:** lucille.benedict@maine.edu  
**Phone:** (207) 370-1619

---

## Education

### PhD, Analytical Chemistry, 2007

Rensselaer Polytechnic Institute

Troy, NY

Thesis: "*Recent trends of polychlorinated biphenyls and polybrominated diphenyl ethers in the Hudson River Basin*"

Advisor: Dr. Richard Bopp

### B.S. in Chemistry, 2002

State University of New York College at Oneonta

Oneonta, NY

---

## Teaching and Research Interests

- General Chemistry
- Analytical and Instrumental Analysis
- Environmental Chemistry
- Fermentation Science
- Quality Control in Brewing
- Food Chemistry

---

## Current Positions

### Associate Professor

2007-Present

Chemistry Department,  
University of Southern Maine

- Teaching general chemistry, analytical chemistry and fermentation science.
- Developing a learning assistant program in the 100- and 200-level chemistry courses.
- Established outreach programs in local Maine high schools

### Director of QC<sup>2</sup> Lab

2016-Present

Quality Control Collaboratory (QC<sup>2</sup> Lab),  
University of Southern Maine

- Established a quality control lab that is partnered with the Maine Brewers' Guild to support quality control testing, education and research while creating educational experiences for undergraduates.
- Supervise student research projects and testing services.

## Professional Affiliations and Activities

- Member of the Master Brewer's Association 2016 - Present
- Director, Center for Collaboration and Development 2015 - 2016
- Casco Bay Estuary Partnerships Technical Advisory Committee Member 2012 - 2014

- Center of Technology Enhanced Learning Faculty Ambassador 2011 - 2012
- Coordinator for the faculty development program for the Eastern Alliance For Students with Disabilities in Science, Technology, Engineering and Mathematics 2011 - 2013
- Long Creek Technical Advisory Committee Member 2011 - 2015
- USM ACS Affiliated Chemistry Club Co-Advisor 2007 - 2011
- Member for the American Chemical Society 2006 - Present

## Publications

Benedict, L.A.; Ford, J. R Flipping Crazy: The Large Lecture Flipped Classroom Model at the University of Southern Maine. In *Addressing the Millennial Student in Undergraduate Chemistry*; Potts, G.E.; Dockery, C. R. Eds.; American Chemical Society Symposium series, 2014, vol. 1180, pp 59-70.

Benedict, L. A., Champlin, D., Pence H. E., 2013. Exploring Transmedia: The Rip-Mix-Learn Classroom. *Journal of Chemical Education*, 90, 1172-1176. DOI: 10.1021/ed300853g

Savery, L. C., Evers, D., Kerr, I., Payne, R., Thompson, W. D., Perkins, C., Zheng, T., Zhu, C., Benedict, L., Wise, J. P., 2013. Global Mercury and Selenium Levels in Skin from Free-Ranging Sperm Whales (*Physeter macrocephalus*). *Science of the Total Environment*, 450, 59-71.

Benedict, L. A., Pence, H. E., 2012. Teaching Chemistry Using Student-Created Videos and Photo Blogs Accessed with Smartphones and Two-Dimensional Barcodes. *Journal of Chemical Education*, 89, 492-496.

Wise, Sr., J.P., Thompson, W. D., Wise, S. S., LaCerte, C., Wise, J., Gianios, Jr., C., Perkins, C., Zheng, T., Benedict, L., Mason, M. D., Payne, R., Kerr, I., 2011. A global assessment of gold, titanium, strontium and barium pollution using sperm whales (*Physeter macrocephalus*) as an Indicator Species. *Journal of Ecosystem and Ecography*, 1, doi:10.4172/2157-7625.1000101

Wise, J. P., Payne, R., Wise, S. S., Lacerte, C., Wise, J., Gianios C., Thompson, W. D., Perkins, C., Zheng, T., Zhu, C., Benedict, L., Kerr, I., 2009. A global assessment of chromium pollution using sperm whales (*Physeter macrocephalus*) as an indicator species. *Chemosphere*, 75, 1461-1467.

Ocean Alliance, Inc. (co-authored), 2009. The Voyage of the Odyssey: The First Expedition March 2000-August 2005. Ocean Alliance, Lincoln MA; 175 pgs.

Yan, B., Abrajano, T. A., Bopp, R. F., Benedict, L. A., Chaky, D. A., Perry, E., Song, J., Keane, D. P., 2006. Combined application of  $\delta^{13}\text{C}$  and molecular ratios in sediment cores for PAH source apportionment in the New York/New Jersey harbor complex. *Organic Geochemistry*, 37, 674-687.

Yan, B., Abrajano, T. A., Bopp, R. F., Chaky, D. A., Benedict, L., A., Chillrud, S. N. Molecular tracers of saturated and polycyclic aromatic hydrocarbon inputs into Central Park Lake, New York City. *Environmental Science and Technology*, 2005, ASAP article.

Yan, B.; Benedict, L.; Chaky, D. A.; Bopp, R. F.; Abrajano, T. A. Levels and patterns of PAH distribution in sediments from New York/New Jersey Harbor Complex. *Northeast. Geol. Environ. Sci.* 2004, 26, 113-122.

## Funded Grants

USM-MEIF, January 2016. **\$488,514** L.A. Benedict. *Development of a Collaborative Quality Control and Research Laboratory between USM and the Maine Brewing Industry.*

Maine Water Resources Research Institute, September 9, 2011. **\$39,237**. L. A. Benedict, K., McDonald. *Investigating the Impact of Pollutants in Street Dust on the Long Creek Watershed, South Portland, ME: Collaborative Research Between USM, CCSWCD, and LCWMD.*

USM-MEIF, November 2010. **\$99,809**. L. A. Benedict, P. Woodruff, *Characterization and bioremediation of polycyclic aromatic hydrocarbons (PAHs).*

USM-MEIF, November 2010. **\$50,000**. K. Wilson, T. Willis, J. Staples, L. A. Benedict, *Lateral and longitudinal transport of urban contaminants.*

NSF-MRI (# 0922991). September 2009. **\$231,738**. L. A. Benedict, S. Langley-Turnbaugh, *MRI: Acquisition of XRF and Hg analysis instrumentation for collaborative faculty and student environmental research at USM,*

Faculty Senate Research Grant. January, 2008. **\$3,000**. L. A. Benedict, *Levels and trends of environmental contaminants in cigarette wastes.*

### **Awards and Recognitions**

Faculty Senate Teaching Award

May 2011

Member of the honor society Phi Kappa Phi

April 2009 - Present

### **PRESENTATIONS**

Z. Huang, L. A. Benedict. Determination and variation of organic acids, caffeine and ethanol during green tea kombucha fermentation by high-performance liquid chromatography. Spring 251st ACS Meeting, SAN Diego, CA, March 13-17th, 2016. Poster.

R. Michaud, L. A. Benedict. Evaluation of the concentration of iso- $\alpha$ -acids as Bitterness Units, at different profiles throughout the liquid column of beer samples. Spring 251st ACS Meeting, SAN Diego, CA, March 13-17th, 2016. Poster.

L. A. Benedict. Active learning in chemistry: Steps towards universal implementation of strategies across curriculum. Fall 250th ACS Meeting, Boston, MA, August 16-20, 2015. Talk

L. A. Benedict. Fermentation: It's more than just beer. MU Convocation Lightning Talks, USM. March 4, 2015. Talk.

R. Sanford, L. A. Benedict. College Science, Writing, and Mathematics Expectations for Entering Freshman. Best Practices in Science and Engineering MSTA Annual Conference. Gardiner, ME, October 11, 2014. Talk.

L. A. Benedict, J. Ziffer. Flipped Classroom tech: What it looks like and how it compares to tech in a traditional classroom. Spring 247th ACS Meeting, Dallas, TX, March 16-20, 2014. Talk.

L. A. Benedict, J. R. Ford. We're flipping crazy: The USM flipped classroom experience. Spring 247th ACS Meeting, Dallas, TX, March 16-20, 2014. Talk.

C. Olsen, D. Finocchietti, R. Borg, B. Auspland, K. Haislop, E. Basile, B. Morgan, C. Slocum, M. Wilkinson, L. Percy, M. Hussein, R. Ditano, D. Szlosek, M. Braun, L. Benedict. University of Southern Maine Chemistry Club film informs the public about the research and outreach done by students at USM. Spring 247th ACS Meeting, Dallas, TX, March 16-20, 2014. Poster.

B. R. Auspland, L. A. Benedict. Analysis of PAH concentrations in street dust of the Long Creek watershed. Spring 247th ACS Meeting, Dallas, TX, March 16-20, 2014. Poster.

L. A. Benedict, J. R. Ford. We're Flipping Crazy: The Chemistry Flipped Classroom Experience. CTCL Speaker Series, USM. February 20, 2014. Invited Speaker.

D. Finocchietti, S. McClain, M. Stein, L. A. Benedict, K. McDonald. Analysis of heavy metal concentrations within street dust of the Long Creek watershed. Spring 245th ACS Meeting, New Orleans, LA, April 7-11, 2013. Poster.

L. A. Benedict, H. E. Pence. Integrating student-created videos into research papers. Fall 244th ACS Meeting, Philadelphia, PA, August 19-23, 2012. Talk.

J. Barilone, N. Chouinard, K. McDonald, L. A. Benedict. Investigating of the levels, trends, and fate of pollutants in street dust in the Long Creek Watershed, South Portland ME. Fall 244th ACS Meeting, Philadelphia, PA, August 19-23, 2012. Poster.

J. Barilone, N. M. Chouinard, L. A. Benedict. Levels and trends of mercury in street dust and sediment cores from Portland and South Portland, Maine. Spring 243st ACS Meeting, San Diego CA, March 25-28, 2012.

J. Barilone, N. M. Chouinard, L. A. Benedict. Levels and trends of mercury in street dust and sediment cores from Portland and South Portland, Maine. State House Undergraduate Research Day. Augusta, ME, March 23, 2012.

J. Barilone, N. M. Chouinard, L. A. Benedict. Levels and trends of mercury in street dust and sediment cores from Portland and South Portland, Maine. 4<sup>th</sup> Annual Northeast Undergraduate Research and Development Symposium. University of New England, Biddeford, ME, March 10-11, 2012.

L.A. Benedict, H.E. Pence. Student created videos: Assignments that can be used by future students. Presentation for USM Eye on Technology Showcase, Portland ME, October 26, 2011.

L. A. Benedict, S. O'Hara, Googlios: Creating ePortfolios through the use of Google Sites. Presentation for USM Eye on Technology Showcase, Portland, ME, October 26, 2011.

D. Lane, L.A. Benedict. Comparison of traditional and "green" methods for the synthesis of porphyrin-type organometallic compounds. Poster for USM Thinking Matter Symposium, Portland, ME, April 29, 2011.

J. Barilone, L. A. Benedict, Qualitative Comparative Analysis of Sustainable and Traditional Methods for the Synthesis of Acetylsalicylic Acid (Aspirin). Poster for USM Thinking Matter Symposium, Portland, ME, April 29, 2011.

M. Popescu, N. Mahoney, L. Venturini, D. Lane, O. Diomede, S. Burrell, L. A. Benedict, P.J. Woodruff. University of Southern Maine Chemistry Club creates instructional vodcasts: Applications to provide insight into natural resource issues and educate students of all ages, Spring 241st ACS Meeting, Anaheim CA, March 27-30, 2011.

M. Miville, L. Redmond, D. Ambrose, M. Neidig, P.J. Woodruff, L.A. Benedict. USM Chemistry Club helps establish a chemistry club for a local high school. Spring 241st ACS Meeting, Anaheim CA, March 27-30, 2011.

L. A. Benedict, L. J. Benedict, N. Chouinard, M. Barnett, J. Barilone. Levels, trends and fate of PAHs in dirt and dust from roads in the Long Creek Watershed, South Portland ME. Northeastern (46th Annual) and North-Central (45th annual) GSA Meeting, Pittsburgh PA.

M. Neidig, L. A. Benedict, Levels and trends of metals in Long Creek, South Portland, ME. Spring 241st ACS Meeting, Anaheim CA.

L. A. Benedict, H. E. Pence, Rip-Mix-Learn (RML): Using Google Docs to create collaborative multimodal class notes. Presentation for 240<sup>th</sup> ACS National Meeting, Boston, MA, August 22–26, 2010.

J. D. Crumrine, L. P. Redmond, J. Wise, O. Diomede, L. A. Benedict, J. R. Ford, USM chemistry club expands the knowledge of chemistry using informational videos. Presentation for 239<sup>th</sup> ACS National Meeting, San Francisco, CA, March 21–25, 2010.

M. Miville, T. Vetrone, V. Smith, E. Radigan, L. Benedict, J. Ford, USM Chemistry Club opens the doorway into science for high school students. Presentation for 239<sup>th</sup> ACS National Meeting, San Francisco, CA, March 21–25, 2010.

L. A. Benedict, D. J. Stasko, High Tech Low Tech: a Look at Digital Version of Chalk Talks for the General Chemistry Classroom. Presentation for the 36<sup>th</sup> Northeast Regional ACS Meeting, Hartford, CT, October 7-9, 2009.

J. Fournier, D. Fox, N. Geller, L. A. Benedict, Fatty Acid Analysis of Grass fed vs. Corn fed Beef. Poster for USM Thinking Matter Symposium, Portland, ME, April 17, 2009.

S. Agopian, J. Dutremble, J. Mangano, L. A. Benedict, Fatty Acid Analysis of Farm Raised vs. Wild Caught Fish. Poster for USM Thinking Matter Symposium, Portland, ME, April 17, 2009.

J. Barilone, E. Favreau, E. Gjika, L. A. Benedict, Levels and Characterization of Polycyclic Aromatic Hydrocarbons in Street Dust. Poster for USM Thinking Matter Symposium, Portland, ME, April 17, 2009.

S. Hayes, J. Kilch, R. Mankowski, L. A. Benedict, Evaluation of Photocatalytic Degradation of Chlorinated Hydrocarbons in Wastewater Using Titanium Oxide. Poster for USM Thinking Matter Symposium, Portland, ME, April 17, 2009.

K. Horn, A. Lam, D. Shellenbarger, L. A. Benedict, Evaluation of photocatalytic degradation of polycyclic aromatic hydrocarbons in wastewater using titanium oxide. Poster for USM Thinking Matter Symposium, Portland, ME, April 17, 2009.

L. Andrews, M. Beaubien, A. Roy, C. Sawyer, L. A. Benedict, Assessing the Impacts of Residential Developments on Surface Water Quality of Local Watersheds. USM Thinking Matter Symposium, Portland, ME, April 17, 2009.

L. A. Benedict, Greening up Analytical Chemistry at USM: Preparing Students for a Greener Graduate School or Industrial Career. Presentation for 237<sup>th</sup> ACS National Meeting, Salt Lake City, UT, March 22–26, 2009.

E. Gjika, M. Vittorioso, L. A. Benedict, Levels fate, and toxicity of environmental contaminants in cigarette wastes. Poster for 237<sup>th</sup> ACS National Meeting, Salt Lake City, UT, March 22-26, 2009.

E. Gjika, R. Griffin, E. Lopez, K. M. Fecteau, L. A. Benedict, J. Ford, D. Crockett, USM bridges the gap between high school and college chemistry. Poster for 237<sup>th</sup> ACS National Meeting, Salt Lake City, UT, March 22-26, 2009.

E. Gjika, R. L. Griffin, S. M. Cote, L. A. Benedict, Chemistry laboratory research curriculum: Environmental contaminant analysis of solid cigarette wastes. Poster for USM Thinking Matter Symposium, Portland, ME, April 18, 2008.

A. Oliver, B. Kingsbury, L. A. Benedict, Chemistry laboratory research curriculum: Levels and fate of polycyclic aromatic hydrocarbons from solid cigarette waste. Poster for USM Thinking Matter Symposium, Portland, ME, April 18, 2008.

C. Bilodeau, V. Dickinson, L. A. Benedict, Chemistry laboratory research curriculum: Nutrient cycling in the Presumpscot River Basin. Poster for USM Thinking Matter Symposium, Portland, ME, April 18, 2008.

D. Lane, S. Kim, L. A. Benedict, Chemistry laboratory research curriculum: Chemical oxygen demand in impacted areas of the Presumpscot River Basin. Poster for USM Thinking Matter Symposium, Portland, ME, April 18, 2008.

L. A. Benedict, R. F. Bopp, D. A. Chaky, S. N. Chillrud, Levels, trends, and sources of polybrominated diphenyl ethers in Hudson River basin sediments. Poster for 235<sup>th</sup> ACS National Meeting, New Orleans, LA, April 6-10, 2008.

L. A. Benedict, D. Hanifi, S. Shuttle, K. M. Fecteau, J. Ford, and C. Prudente, USM Chemistry Club: Sharing the excitement of chemistry locally and worldwide through podcasting. Poster for 235<sup>th</sup> ACS National Meeting, New Orleans, LA, April 6-10, 2008.

K. M. Fecteau, E. R. Fitch, S. Cote, S. Dhyana, L. A. Benedict, J. Ford, Strengthening the student scientific community at the University of Southern Maine. Poster for 235<sup>th</sup> ACS National Meeting, New Orleans, LA, April 6-10, 2008.

J. Ford, S. Dhyana, R. Griffin, K. Spruce, D. Crockett, C. K. Prudenté, L. A. Benedict, Targeted outreach modules: The USM Chemistry Club takes aim at the Maine State learning results. Poster for 235<sup>th</sup> ACS National Meeting, New Orleans, LA, April 6-10, 2008.

\* Student authors are underlined

