

DOUGLAS E. LATCH

Professor
Seattle University

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CURRENT APPOINTMENT

2018- **Professor of Chemistry**, Seattle University

Affiliate Professor of Civil and Environmental Engineering, University of Washington

EDUCATION AND PROFESSIONAL EXPERIENCE

2015-16 **Guest Professor**, Environmental Chemistry Group, Department of Environmental Systems Science, Institute of Biogeochemistry and Pollutant Dynamics, ETH-Zürich (Swiss Federal Institute of Technology)

2013-18 **Associate Professor of Chemistry**, Seattle University

2007-13 **Assistant Professor of Chemistry**, Seattle University

2005-07 **Postdoctoral Associate**, United States Geological Survey
• Proposal title: The role of photochemistry and dissolved natural organic matter in the cycling of mercury in aquatic systems
• Advisor: Dr. George R. Aiken, Project Chief: Organic Carbon Migration

1999-2005 **Ph.D. Chemistry**, University of Minnesota, Minneapolis, MN
• Dissertation title: Environmental photochemistry: studies on the degradation of pharmaceutical pollutants and the microheterogeneous distribution of singlet oxygen
• Advisor: Professor Kristopher McNeill

1998-99 **Analytical Chemist**, Part Three Corporation, Oakdale, MN
• Performed quality assurance/quality control testing on pharmaceutical products

1994-98 **B.A. Chemistry and Psychology**, Gustavus Adolphus College, St. Peter, MN
• Project title: Construction of a calorimeter for measuring enthalpies of reactions

PEER-REVIEWED PUBLICATIONS (UNDERGRADUATE STUDENTS UNDERLINED; * = CORRESPONDING AUTHOR)

24. J. M. Buth*, R. Ossola, S. B. Partanen, K. McNeill, W. A. Arnold, M. O. O'Connor, D. E. Latch*. The Kinetics and Pathways of the Aqueous Photolysis of Pharmaceutical Pollutants: A Versatile Laboratory or Remote Learning Investigation. *Journal of Chemical Education*. **2021**, 98 (7), 2411-2418. (<https://doi.org/10.1021/acs.jchemed.0c01398>)
23. S. B. Partanen, P. R. Erickson, D. E. Latch, K. J. Moor*, and K. McNeill*. Dissolved organic matter singlet oxygen quantum yields: Evaluation using time-resolved singlet oxygen phosphorescence. *Environmental Science and Technology*. **2020**, 54, 3316-3324. (<https://doi.org/10.1021/acs.est.9b07246>)
22. M. O. O'Connor, S. R. Helal, D. E. Latch, and W. A. Arnold*. Quantifying photo-production of triplet excited states and singlet oxygen from effluent organic matter. *Water Research*. **2019**, 156, 23-33. (<https://doi.org/10.1016/j.watres.2019.03.002>)
21. P. R. Erickson, K. J. Moor, J. J. Werner, D. E. Latch, W. A. Arnold, and K. McNeill*. Singlet oxygen phosphorescence as a probe for triplet-state dissolved organic matter reactivity. *Environmental Science and Technology*. **2018**, 52, 9170-9178. (<http://dx.doi.org/10.1021/acs.est.8b02379>)
20. G. McKay, J. A. Korak, P. R. Erickson, D. E. Latch, K. McNeill*, and F. L. Rosario-Ortiz*. The case against charge transfer interactions in dissolved organic matter photophysics. *Environmental Science and Technology*. **2018**, 52, 406-414. (<http://dx.doi.org/10.1021/acs.est.7b03589>)

19. D. E. Latch*. The role of photochemistry in the transformation of pollutants in surface waters. In *Advanced Oxidation Processes for Water Treatment: Fundamentals and Applications*. IWA Publishing. **2017**, 535-580.
18. E. Appiani, R. Ossola, D. E. Latch, P. R. Erickson*, and K. McNeill*. Aqueous singlet oxygen reaction kinetics of furfuryl alcohol: Effect of temperature, pH, and salt content. *Environmental Science: Processes & Impacts*. **2017**, *19*, 507-516. (<http://dx.doi.org/10.1039/c6em00646a>)
17. W. A. Arnold*, Y. Oueis, M. O'Connor, J. E. Rinaman, M. G. Taggart, R. E. McCarthy, K. A. Foster, and D. E. Latch*. QSARs for phenols and phenolates: Oxidation potential as a predictor of reaction rate constants with photochemically produced oxidants. *Environmental Science: Processes & Impacts*. **2017**, *19*, 324-338. (<http://dx.doi.org/10.1039/C6EM00580B>)
16. C. Chu, P. R. Erickson, R. A. Lundeen, D. Stamatelatos, P. J. Alaimo, D. E. Latch, and K. McNeill*. Photochemical and non-photochemical transformations of cysteine with dissolved organic matter: Kinetics, pathways and products. *Environmental Science and Technology*. **2016**, *50*, 6363-6373. (<http://dx.doi.org/10.1021/acs.est.6b01291>)
15. D. E. Latch*. The role of singlet oxygen in surface water photochemistry. In *Surface Water Photochemistry*. RSC Publishing. **2016**, 139-165. (<http://dx.doi.org/10.1039/9781782622154-00139>)
14. D. B. King, J. E. Lewis, K. Anderson, D. E. Latch, R. Moog, S. Sutheimer, and G. Webster. Choosing appropriate models – incorporating climate change into general chemistry. In *Chemistry and the Environment: Pedagogical Models and Practices*. ACS Symposium Series, volume 1214, **2015**, 1-15. (<http://dx.doi.org/10.1021/bk-2015-1214.ch001>)
13. J. D. Jeremiason*, J. C. Portner, G. R. Aiken, A. J. Hiranaka, M. T. Dvorak, K. T. Tran, and D. E. Latch*. Photoreduction of Hg(II) and photodemethylation of methylmercury: The key role of thiol sites on dissolved organic matter. *Environmental Science: Processes & Impacts*. **2015**, *17*, 1892-1903. (<http://dx.doi.org/10.1039/C5EM00305A>)
12. D. E. Latch*. Instrumental Analysis at Seattle University: Incorporating environmental chemistry and service learning into an upper-division laboratory course. In *Service Learning and Environmental Chemistry*. ACS Symposium Series, volume 1177, **2014**, 193-207. (<http://dx.doi.org/10.1021/bk-2014-1177.ch011>)
11. R. B. Young, D. E. Latch, D. B. Mawhinney, T. H. Nguyen, J. C. C. Davis, and T. Borch*. Direct photodegradation of androstenedione and testosterone in natural sunlight and its effect on endocrine disrupting potential. *Environmental Science and Technology*. **2013**, *47*, 8416-8424. (<http://dx.doi.org/10.1021/es401689j>)
10. D. E. Latch*, W. L. Whitlow*, and P. J. Alaimo. Incorporating an environmental research project across three STEM courses: A collaboration between ecology, organic chemistry, and analytical chemistry students. In *Science Education and Civic Engagement: The Next Level*. ACS Symposium Series, volume 1121, **2012**, 17-30. (<http://dx.doi.org/10.1021/bk-2012-1121.ch002>)
9. C. M. Whidbey, K. E. Daumit, T. H. Nguyen, D. D. Ashworth, J. C. C. Davis, and D. E. Latch*. Photochemical induced changes of *in vitro* estrogenic activity of steroid hormones. *Water Research*. **2012**, *46*, 5287-5296. (<http://dx.doi.org/10.1016/j.watres.2012.07.016>)
8. J. R. Felcyn, J. C. C. Davis, L. H. Tran, J. C. Berude, and D. E. Latch*. Aquatic photochemistry of isoflavone phytoestrogens: Degradation kinetics and pathways. *Environmental Science and Technology*. **2012**, *46*, 6698-6704. (<http://dx.doi.org/10.1021/es301205a>)
7. M. Grandbois, D. E. Latch, and K. McNeill*. Microheterogeneous concentrations of singlet oxygen in natural organic matter isolate solutions. *Environmental Science and Technology*. **2008**, *42*, 9184-9190. (<http://dx.doi.org/10.1021/es8017094>)
6. D. E. Latch and K. McNeill*. Microheterogeneity of singlet oxygen distributions in irradiated humic acid solutions. *Science*. **2006**, *311*, 1743-1747. (<http://dx.doi.org/10.1126/science.1121636>)
5. L. A. MacManus-Spencer, D. E. Latch, K. M. Kroncke, K. McNeill*. Stable dioxetane precursors as selective trap-and-trigger chemiluminescent probes for singlet oxygen. *Analytical Chemistry*. **2005**, *77*, 1200-1205. (<http://dx.doi.org/10.1021/ac048293s>)
4. D. E. Latch, J. L. Packer, B. L. Stender, J. VanOverbeke, W. A. Arnold*, K. McNeill*. Aqueous photochemistry of triclosan: formation of 2,4-dichlorophenol, 2,8-dichlorodibenzo-*p*-dioxin and oligomerization products. *Environmental Toxicology and Chemistry*. **2005**, *24*, 517-525. (<http://dx.doi.org/10.1897/04-243R.1>)

3. J. L. Packer, J. J. Werner, D. E. Latch, K. McNeill*, W. A. Arnold*. Photochemical fate of pharmaceuticals in the environment: naproxen, diclofenac, clofibrac acid, and ibuprofen. *Aquatic Sciences*. **2003**, 65, 1-10. *Special Issue on Photochemical Processes in the Hydrosphere*. (<http://dx.doi.org/10.1007/s00027-003-0671-8>)
2. D. E. Latch, B. L. Stender, J. L. Packer, W. A. Arnold*, K. McNeill*. Photochemical fate of pharmaceuticals in the environment: cimetidine and ranitidine. *Environmental Science and Technology*. **2003**, 37, 3342-3350. (<http://dx.doi.org/10.1021/es0340782>)
1. D. E. Latch, J. L. Packer, W. A. Arnold, K. McNeill*. Photochemical conversion of triclosan to 2,8-dichlorodibenzo-*p*-dioxin in aqueous solution. *Journal of Photochemistry and Photobiology, A: Chemistry*. **2003**, 158, 63-66. ([http://dx.doi.org/10.1016/S1010-6030\(03\)00103-5](http://dx.doi.org/10.1016/S1010-6030(03)00103-5))

NON-REFEREED PUBLICATIONS (UNDERGRADUATE STUDENTS UNDERLINED)

1. D. E. Latch*, L. H. Tran, J. R. Felcyn, P. Friel, A. E. Mack. Sensitive ESI-LC/MS/MS analysis of dansyl derivatized phytoestrogens on an Agilent ZORBAX Eclipse Plus C₁₈ 1.8 μm column. *Agilent Technologies Application Note*. **2010**. (<http://www.chem.agilent.com/Library/applications/5990-6372EN.pdf>)

RESEARCH GRANTS AND FUNDING

External Research Grants

National Science Foundation: Collaborative Research Grant with W. A. Arnold (Univ. Minnesota)	Latch portion: \$154,793 summer 2014-summer 2018
<i>Collaborative Research: Experimental and computational studies of the role of effluent organic matter in the sensitized transformation of organic contaminants</i>	
Minnesota Department of Natural Resources Grant	\$5,000
<i>For the dissemination of methylmercury photochemistry data</i>	
Minnesota Department of Natural Resources Grant with J. Jeremiason (PI, Gustavus Adolphus College) and G. R. Aiken (USGS)	~\$90,000 (Latch portion: ~\$45,000) February 2012
<i>For the study of methylmercury in northern Minnesota lakes and wetlands</i>	
Summer Internship for Science Educators (summer 2010)	\$21,000
Environmental Health Research Experiences Program (through the University of Washington) with W. L. Whitlow (PI)	
<i>Urban aquatic chemistry, ecology & health: Comparing pyrethroid concentrations, aquatic conditions, benthic invertebrates and human health risks across a Superfund site</i>	
Research Corporation: Cottrell College Science Awards (2008-10)	\$43,218
<i>Exploring the persistence of estrogenic pollutants: the role of photochemical degradation mechanisms</i>	
National Research Council Postdoctoral Associateship (2005-07)	\$110,000 + benefits
<i>The role of photochemistry and dissolved natural organic matter in the cycling of mercury in aquatic systems</i>	

Internal Awards

Numerous internal awards supporting scholarship and undergraduate student collaborators.

Other Financial Support Obtained

ETH-Zürich, Sabbatical Funding (2015-16)	\$27,540
Gordon Research Conference Chair's Fund (summer 2008)	\$543
<i>Travel funds awarded to young investigators at primarily undergraduate institutions</i>	

PRESENTATIONS (BY DEL)

At least *forty-six* presentations, many of which were invited, at regional, national, or international meetings or other universities/scientific organizations.

PRESENTATIONS BY COLLABORATORS

At least *thirty* presentations at regional, national, or international meetings or other universities/scientific organizations.

EXTERNAL PRESENTATIONS BY UNDERGRADUATE RESEARCH STUDENTS

At least *thirty-five* presentations at regional and national meetings.

HONORS AND AWARDS

Outstanding Reviewer Award, *Environmental Science: Processes & Impacts* (Royal Society of Chemistry), 2017

Top Ten Reviewer Award, *Environmental Science: Processes & Impacts* (Royal Society of Chemistry), 2016

Seattle University Center for Environmental Justice and Sustainability Faculty Fellow, 2014-15

Seattle University Justice Faculty Fellow, 2010-11

Seattle University Academic Service-learning Faculty Fellow, 2009-10

Doctoral Dissertation Fellowship (2004-05), University of Minnesota Graduate School. Competitive award for outstanding achievement in graduate school

PROFESSIONAL MEMBERSHIPS

American Chemical Society (2001-)