

CHRISTINE KELLY

Electronic mail address: christine.kelly@oregonstate.edu

(a) Professional Preparation

University of Arizona	Chemical Engineering	B.S	1989
University of Tennessee	Chemical Engineering	Ph.D	1997
University of Tennessee	Environmental Biotechnology	Post-doc	1998

(b) Appointments

Associate Professor *2004 - present*

School of Chemical, Biological and Environmental Engineering, Oregon State University, Corvallis, OR. Research efforts in the area of biotechnology, including the production of fuels and bioproducts via biological processes. Current courses include Bioengineering Design, Bioengineering Laboratory, and Cell Culture and Tissue Engineering

Assistant Professor *1998 – August 2004*

Department of Chemical Engineering and Mater. Science, Syracuse University, Syracuse NY

Research Scientist *Summer 2000*

Kodak, Rochester, NY. Designed and performed experiments to characterize environmentally significant metal fate and transport through silver recovery process.

Process Engineer *1991 - 1992*

A. E. Staley Corporation, Loudon TN. Member of team that designed, procured, oversaw the construction of, and started up a \$36 million crystalline fructose plant addition.

(c) Publications

1. Goby J., Penner M., Lajoie C., and Kelly C. 2011. Recombinant manganese peroxidase degradation of methylene blue. *Enzyme and Microbial Technology*. In preparation.
2. Yee K, Jiang F, Stewart R, Backlund C, Lajoie C, Kelly C. 2011. Effect of temperature and air flow rate on the production of recombinant manganese peroxidase. *Enzyme and Microbial Technology*. In preparation.
3. Yee K., Jansen L., Varin S., Lajoie C. and Kelly C. 2011. Furfural and 5-Hydroxymethyl-Furfural Detoxification using Recombinant Manganese Peroxidase. *Biotechnology Progress*. In review.
4. Koretsky, M., Kelly C., and Gummer E. 2011. Student Perceptions of Learning in the Laboratory: Comparison of Industrially Situated Virtual Laboratories to Capstone Physical Laboratories. *Journal of Engineering Education*. In press.
5. Koretsky M., Kelly C. and Gummer E. 2011. Virtual Laboratories. *Chemical Engineering Education*. In press.
6. Schilke K, Wilson K., Cantrell T, Corti G., McIlroy D. and Kelly C. 2010. A Novel Enzymatic Microreactor with *Aspergillus Oryzae* b-Galactosidase Immobilized on Silicon Dioxide Nanosprings. *Biotechnology Progress*. 26(6):1597-1605.

7. Seniow K., Nefcy E., Kelly C., and Koretsky M. 2010. Representations of Student Model Development in virtual Laboratories based on a cognitive Apprenticeship Instructional Design. *Proceedings of the 2010 American Society for Engineering Education Annual Conference & Exposition*.
8. Koretsky, Milo and Kelly, Christine. 2009. Enhancement of Student Learning in Experimental Design using Virtual Laboratories. *Proceedings of the 2009 American Society for Engineering Education Annual Conference & Exposition*.
9. Koretsky, Milo; Kelly, Christine; Harding, Philip; Gummer, Edith. 2009. Comparison of Student Perceptions of Virtual and Physical Laboratories. *Proceedings of the 2009 American Society for Engineering Education Annual Conference & Exposition*.
10. Jiang, Fei; Kongsaree, Puapong; Schilke, Karl; Lajoie, Curtis; Kelly, Christine. 2008. Effects of pH and Temperature on Recombinant Manganese Peroxidase Production and Stability. *Applied Biochemistry and Biotechnology*. 146(1-3):15-27.
11. Jiang, Fei; Kongsaree, Puapong, Charron, Rose; Lajoie, Curtis; Xu, Haowen; Scott, Gary; Kelly, Christine. 2008. Production and Separation of Manganese Peroxidase from Heme Amended Yeast Cultures. *Biotechnology and Bioengineering* 99(3):540-549.
12. Kelly, Christine; Jones, Opal, Barnhart, Christopher, Lajoie, Curtis. 2008. Effect of Furfural, Vanillin and Syringaldehyde on *Candida guilliermondii* Growth and Xylitol Biosynthesis. *Applied Biochemistry and Biotechnology*. 148(1-3):97-108.
13. Schilke, Karl and Kelly, Christine. 2008. Activation of Immobilized Lipase in Non-Aqueous Systems by Hydrophobic Poly-DL-Tryptophan Tethers. *Biotechnology and Bioengineering*. 101(1):9-18
14. Kelly, C; Gummer, E; Harding, P; and Koretsky, M. 2008. Teaching Experimental Design using Virtual Laboratories: Development, Implementation and Assessment of the Virtual Bioreactor Laboratory. *Proceedings of the American Society for Engineering Education Annual Meeting*.
15. Kelly, Christine J. 2005. An Emerging Course Topic: The Regulation of Pharmaceuticals and Medical Devices. ASEE Annual Conference Proceedings.
16. Gu, Lina; Lajoie, Curtis A.; Kelly, Christine J. 2003. Expression of a *Phanerochaete chrysosporium* manganese peroxidase gene in the yeast *Pichia pastoris*. *Biotechnology Progress*. 19(5):1403-1409.
17. Kelly, Christine J.; Tumsaroj, Nattapong; and Lajoie, Curtis A. 2003. Assessing metal toxicity with bacterial bioluminescence in a bench scale wastewater treatment plant. *Water Environment Research*. 38:423-431.
18. Lajoie, Curtis A.; Lin, Shu-Chin; Kelly, Christine J. 2003. Comparison of bacterial bioluminescence with activated sludge oxygen uptake rates during zinc toxic shock loads in a wastewater treatment system. *Journal of Environmental Engineering*. 129(9):879-883.
19. Lajoie, Curtis A.; Sayler, Gary S.; and Kelly, Christine J. 2002. The activated sludge biomolecular database. *Water Environment Research*. 74(5):480-487.
20. Kelly, Christine J.; Hsiung, Chia-Joung; and Lajoie, Curtis A. 2002. Kinetic analysis of bacterial bioluminescence. *Biotechnology and Bioengineering*. 81(3):370-378.
21. Lajoie, Curtis A.; Lin, Shu-Chin; Nguyen, Hai; and Kelly, Christine J. 2002. A toxicity testing protocol using a bioluminescent reporter bacterium from activated sludge. *Journal of Microbiological Methods*. 50(3): 273-282.

22. Kelly, Christine J.; Bienkowski, Paul R.; and Sayler, Gary S. 2000. Kinetic study of a bioluminescent reporter for trichloroethylene cometabolism. *Biotechnology and Bioengineering*. 69(3):256-265.
23. Kelly, Christine J.; Lajoie, Curtis A.; Layton, Alice C.; and Sayler, Gary S. 1999. Bioluminescent reporter bacterium for toxicity monitoring in biological wastewater treatment systems. *Water Environment Research*. 71:31-35.
24. Kelly, Christine J. 2005. An Emerging Course Topic: The Regulation of Pharmaceuticals and Medical Devices. ASEE Annual Conference Proceedings.
25. Frymier, Paul D.; Lajoie, Curtis A.; Kelly, Christine J.; Ren, Shijin; Lin, Shu-Chin; Tumsaroj, Nattapong; Byl, Tom; and Sarfo, Robert. 2002. Toxicity screening of influents using bioluminescent reporter technology: *Research Digest. WERF Report Collection and Treatment (Project 98CTS6RD)*.
26. Frymier P., Lajoie C. and Kelly C. 2002. Sensor technology development for water quality monitoring. *Proceedings of the 8th Annual Industrial Wastes Technical and Regulatory Conference*. Atlantic City, NJ.
27. Gu L., Kelly C. and Lajoie C.. 2000. Expression of white-rot fungi manganese peroxidase (MnP) in the yeast *Pichia pastoris*. *Wood and Cellulose: Building Blocks for Chemicals, Fuels and Advanced Materials. Conference Proceedings*. State University of New York, Syracuse, N.Y.
28. Kelly C. and Birtwistle J. 1999. The Hazards of Hydroxylamine: A Case Study of the Explosion at Concept Sciences. A Product of the Center for Chemical Process Safety.
29. Sayler G., Matrubutham U., Palmer R. and Kelly C. 1995. Application of molecular biology to real time monitoring in bioremediation. *Proceedings for the OECD Workshop Amsterdam 1995 on Wider Applications and Diffusion of Bioremediation Technologies*.

(d) Patents

Lajoie, Curtis A.; Kelly, Christine J.; Layton, Alice C.; and Sayler, Gary S. 2000. Bioluminescent reporter bacterium. United States Patent #6,110,661.

(e) History or Research Support

1. Development of a Fermentation Compatible Xylose Isomerase Enzyme. Christine Kelly and Christopher Beatty. Built Environment and Sustainable Technologies (BEST). \$74,343. 8 months. 5/11-12/11.
2. OMI Project: Nitric acid pickling wastewater: Nitrate removal in constructed wetlands. Christine Kelly, Mark Dolan, and Lew Semprini. Oregon Metals Initiative and Wah Chang ATI. \$140,000. 1 year. 10/10-9/11.
3. Life cycle, sustainability and economic analysis of cellulosic ethanol from grass straw in Pacific Northwest US. PI Ganti Murthy. coPIs Christine Kelly, Mike Penner. Western Sun Grant, Department of Transportation. \$200,000. 2 years. 9/08-8/11.
4. Biomass Processing Equipment. PI Mike Penner, coPIs Christine Kelly, Curtis Lajoie, Ganti Murthy. Built Environment and Sustainable Technologies (BEST). \$41,600. 1.5 year. 9/08-12/09.
5. Enzyme Technologies for Green Manufacturing. PIs Christine Kelly and Greg Rorrer. coPIs Mike Penner, Curtis Lajoie, Ganti Murthy. Built Environment and Sustainable Technologies (BEST). \$75,000. 1.5 year. 9/08-12/09.

6. High-Through-Put Kinetic Discovery and Analysis of Enzyme Synergies for Bioconversions of Lignocellulosic Feedstocks to Biofuels. PI Christine Kelly, coPIs Cutis Lajoie and Mike Penner. \$200,000. Western Sun Grant, Department of Transportation.
7. Enhancement of Student Learning in Experimental Design using Virtual Laboratories. PI Milo Koretsky, co-PIs Christine Kelly and Shoichi Kimura. National Science Foundation. \$500,000. Three years. 9/07-8/10.
8. Collaborative Research: Production and Use of a Ligninolytic Enzyme for Environmentally Benign Paper Manufacturing. Christine Kelly and Curtis Lajoie. National Science Foundation. \$375,000. Four years. 11/03-11/07.
9. Production of Lignin Peroxidase in Yeast. Christine Kelly and Curtis Lajoie. New York State Research and Development Authority. \$40,000. One year. 2/2004 – 9/2004.
10. Effect of Inhibitors and pH on Microbiological Xylitol Production. Christine Kelly and Curtis Lajoie. United States Department of Agriculture. \$132,548. Two years. 8/02-8/04.
11. Multisensor Toxicity Screening Using Bioluminescent Sensor Microorganisms. Christine Kelly. Subcontract to University of Tennessee. Prime funding agency Water Environment Research Foundation. \$26,000. Two years. 2/02-2/04.
12. Toxicity Screening using Bioluminescent Reporter Technology: Protocol for screening industrial discharges to POTWs for toxicity and other impacts. Paul Frymier, Christine Kelly, Curtis Lajoie, and Gary Sayler. Water Environment Research Foundation. \$295,334. Two years: 12/98-11/00.