

# JOHNATHAN GORKE

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## Objective

Faculty position in chemical engineering with emphasis on green solvents and sustainable processing

## Education

2004 – present *University of Minnesota, Twin Cities*

- Ph.D. in Chemical Engineering anticipated in December 2009
- 3.91/4.00 GPA
- Dissertation: “Biopolymer synthesis in ionic liquids and deep eutectic solvents”
- Emphases in polymer chemistry, green chemistry, and biotechnology
- NIH Biotechnology Training Fellowship 2006-2008

2000 –2004 *Iowa State University of Science and Technology*

- Bachelor’s Degree in Chemical Engineering with Honors and Distinction received May 2004
- 3.89/4.00 GPA

## Work experience

2004 – present *Graduate Research Assistant, University of Minnesota*

Advisee of Profs. Friedrich Sreenc (Chemical Engineering) and Romas Kazlauskas (Biochemistry)

- Received **2009 Hancock Memorial Student Award** for outstanding contributions to green chemistry
- Authored two published first-author papers; two papers in press, and two papers in preparation
- Applied for patent on alternative solvents for enzyme reactions
- Supervised undergraduate student in work that resulted in a publication
- Worked as teaching assistant for separations, process design, and process control

2008 (Summer) *Intern, The Dow Chemical Company – Midland, MI*

Researcher in Chemistry and Catalysis (Research and Development) under Dr. Peter Nickias

- Performed research on gas separations that resulted in a **patent application filed 9/2009**

2004 (Summer) *Undergraduate researcher, Iowa State University*

Researcher under Prof. R.D. Vigil

- Developed and troubleshot C++ code for and ran Monte Carlo simulation of drug delivery

2001 – 2004 *Undergraduate researcher, Iowa State University*

Researcher under Prof. T.D. Wheelock

- Conducted research on separation processes involving coal and fly ash resulting in one publication

## Skills, research interests, and proficiencies

- Chemistry and engineering: organic synthesis, bioreactors, enzyme chemistry, polymer chemistry, separations, ionic liquids, green chemistry, protein modeling, analytical chemistry, reaction engineering, process design
- Software: OS X (advanced), Windows 3.x to 7, (advanced), Schrödinger Maestro (user), CS ChemOffice (user), Microsoft Office (advanced), iWork (advanced), Minitab (user), MATLAB (user), HYSYS (advanced), Camile (user)
- Languages: English (native), German (fluent), Mandarin Chinese (basic), C++ (basic)

## Recent activities and leadership roles

- Chapter advisor, Tau Beta Pi Engineering Honor Society, 2004-present
- Chair, Chemical Engineering and Materials Science Council of Graduate Students, 2006-2007
- Secretary/Treasurer, Chemical Engineering and Materials Science Council of Graduate Students, 2005-2006
- Initiation officer, Tau Beta Pi Engineering Honor Society, 2003-2004
- Treasurer, Omega Chi Epsilon Chemical Engineering Honor Society 2003-2004
- American Institute of Chemical Engineers Iowa State Chapter, Secretary, 2003-2004

## Awards and honors

- Kenneth G. Hancock Memorial Student Award, Am. Chem. Soc. and NIST, 2009
- NIH Biotechnology Training Fellowship, 2006-2008
- Best poster award - Life Science Alley Conference, 2006, 2008; ACS Green Chemistry & Engineering, 2009
- Visiting scholar, Nara Institute of Science and Technology, Japan, Nov. 2006
- Outstanding Senior in Chemical Engineering, 2004
- Sigma Xi Research Honor Society, 2004
- Omega Chi Epsilon Chemical Engineering Honor Society, 2003
- Tau Beta Pi Engineering Honor Society, 2002
- Iowa State College of Engineering Scholarship, 2000-2004
- National Merit Scholar, 2000

## Publications

- J. T. Gorke, Y. Jiang, R. J. Kazlauskas and F. Srienc, 2009, "Carotenoid-based polymers: electrically conducting materials from renewable sources," in preparation.
- J. T. Gorke, D. Rouse, F. Srienc, and R. J. Kazlauskas, 2009, "Polymer and biodiesel synthesis driven by formation of biodegradable deep eutectic solvents," in preparation.
- J. T. Gorke, F. Srienc and R. J. Kazlauskas, 2009, "Enzymatic catalysis in ionic liquids," *Encycl. Ind. Biotechnol.*, submitted September 2009.
- J. T. Gorke, F. Srienc and R. J. Kazlauskas, 2009, "Deep eutectic solvents for *Candida antarctica* lipase B catalyzed reactions," *ACS Symp. Series*, submitted September 2008.
- J. T. Gorke, R. J. Kazlauskas and F. Srienc, 2008, "Enzymatic processing in deep eutectic solvents," U.S. Patent Appl. No. 20090117628, submitted Sept. 28, 2008.
- J. T. Gorke, F. Srienc and R. J. Kazlauskas, 2008, "Hydrolase-catalyzed biotransformations in deep eutectic solvents," *Chem. Commun.*, 1235-1237.
- J. T. Gorke, K. Okrasa, A. Louwagie, R. J. Kazlauskas and F. Srienc, 2007, "Enzymatic synthesis of poly(hydroxyalkanoates) in ionic liquids," *J. Biotechnol.*, **132**, 306-313.
- J. Dryzmala, J. T. Gorke and T. D. Wheelock, 2005, "A flotation collector for the separation of unburned carbon from flyash," *Coal Prep.*, **25**, 67-80.

## Conference Presentations

- J. T. Gorke, F. Srienc and R. J. Kazlauskas, 2009, "Chemical and enzymatic synthesis of carotenoid-based polymers from renewable material," American Institute of Chemical Engineers National Meeting, Nashville, TN, Nov. 9 (accepted, Oral).
- J. T. Gorke, Y. Jiang, R. J. Kazlauskas and F. Srienc, 2009, "Design and synthesis of carotenoid-based polymers from renewable material," European Polymer Congress, Graz, Austria, Jul. 13 (Oral, Invited).
- J. T. Gorke, F. Srienc and R. J. Kazlauskas, 2009, "Enzymatic synthesis in deep eutectic solvents," 13<sup>th</sup> Annual Green Chemistry and Engineering Conference, College Park, MD, Jun. 23 (Oral, Poster).
- J. T. Gorke, F. Srienc and R. J. Kazlauskas, 2008, "Biocatalysis in sustainable solvents made from chicken feed and fertilizer," LifeScience Alley Conference and Expo, Minneapolis, MN, Dec. 8 (Poster).
- J. T. Gorke, F. Srienc and R. J. Kazlauskas, 2008, "Deep eutectic solvents: inexpensive, biologically-derived media for enzymatic reactions," American Institute of Chemical Engineers National Meeting, Philadelphia, PA, Nov. 17 (Oral).
- J. T. Gorke, F. Srienc and R. J. Kazlauskas, 2007, "Selective transesterification in 10 M urea or 8 M glycerol: deep eutectic solvents," ECI Enzyme Engineering XIX, Harrison Hot Springs, BC, Canada, Sept. 26 (Poster).
- J. T. Gorke, R. J. Kazlauskas and F. Srienc, 2006, "Enzymatic poly(hydroxyalkanoate) production in ionic liquids," LifeScience Alley Conference and Expo, Saint Paul, MN, Dec. 6 (Poster).
- J. T. Gorke, R. J. Kazlauskas and F. Srienc, 2006, "Synthesis of poly(hydroxyalkanoates) in ionic liquids," International Symposium on Biological Polyesters, Minneapolis, MN, Aug. 30 (Oral).
- J. T. Gorke and T. D. Wheelock, 2004, "Separation of unburned carbon from flyash," Iowa Academy of Science, Cedar Falls, IA, Apr. 24 (Oral).

## References (further details available on request)

- Prof. Friedrich Srienc (advisor)  
Email: srienc@umn.edu
- Prof. Romas Kazlauskas (coadvisor)  
Email: rjk@umn.edu
- Dr. Kenneth Valentas (associate director and past director, BioTechnology Institute)  
Email: valentas@umn.edu