

James (Jim) R. Kastner

Associate Professor (1999-2007), Faculty of Engineering and Dept. of Biological Engineering
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Educational and Professional Experience

- Post Doctoral Research Fellow, Idaho National Environmental and Engineering Lab, Idaho Falls, ID., 1993–1995
 - Biofiltration of VOC emissions
- Ph.D. in Applied Biology, Georgia Institute of Technology, 1993
 - Ethanol fermentation from mixtures of xylose and glucose
- M.S. in Chemical Engineering, Mississippi State University, 1987
 - Cellulose and Hemicellulose Acid Hydrolysis Kinetics
- B.S. in Chemical Engineering and Biochemistry, Mississippi State University, 1984, 1983

Industry or Other Experience in Practice

Senior Engineer, Biotechnology Group, Savannah River Technology Center, Westinghouse Savannah River Co., Aiken, SC., 1995–1998

- Bio/remediation of Hazardous Waste

Research Interests and Areas (most recent to past)

Applied

- Development of Catalytic Biomass Gasification Processes for Synthesis Gas to Liquid Fuels
- Nano-structured carbon supported catalysts from biomass for Environmental and Energy Catalysis
- Environmental Catalysts from Waste Materials
- Industrial Fermentation Design: Ethanol and Xylitol

Fundamental

- Understanding and monitoring surface based reactions to improve catalyst design
- Environmentally friendly synthesis and scale-up of nanostructured and nanoscale catalysts
- Coupling chemical and microbial (or enzymatic) systems for sustainable design
- Understanding stationary phase metabolism and its application in continuous bioreactor design

List of relevant publications

Environmental Bio/Catalysis:

Li Wang, Praveen Kolar, **James R. Kastner**, Brian Herner. 2008. Biofiltration Kinetics of a Gaseous Aldehyde Mixture Using a Synthetic Matrix. *J. Air & Waste Manage. Assoc.* *In Press.*

James R. Kastner, Rangan Ganagavaram, Praveen Kolar, Aryn Teja and Chunbao Xu. Catalytic Ozonation Kinetics of Propanal Using Wood Fly Ash and Metal Nanoparticle Impregnated Carbon, 2007. *Environ. Sci. Tech. ACS. ASAP.*

Praveen Kolar, **James R. Kastner**, and Joby Miller. 2007. Low Temperature Catalytic Oxidation of Aldehydes Using Wood Fly Ash and Molecular Oxygen, *Applied Catalysis B: Environmental* 76: 203–217.

J.R. Kastner, Q Buquoi, R Ganagavaram, K.C. Das. 2005. Catalytic Ozonation of Gaseous Reduced Sulfur Compounds Using Wood Fly Ash. *Environ. Sci. Tech.* 39(6):1835-1842.

Kastner, J.R., K.C. Das, J.Q. Buquoi, and N.D. Melear. 2003. Low temperature catalytic oxidation of hydrogen sulfide and methanethiol using wood and coal fly ash. *Environ. Sci. Tech.* 37(11): 2568-2574.

Fermentation – Ethanol and Value Added Products:

Kastner JR, MA Eiteman, SA Lee. 2003. Effect of Redox Potential on Stationary Phase Xylitol Fermentations *App. Biotechnol. Microbiol.* 63:96-100.

Kastner JR, RS Roberts, WJ Jones. 1999. Oxygen starvation induces cell death in D-xylose *Candida shehatae* fermentations, but not in glucose. *Appl. Microbiol. Biotechnol.* 51: 780-783.

Kastner JR, RS Roberts, WJ Jones. 1999. Ethanol Fermentation of Mixed Sugars Using a Two Phase, Fed-Batch Fermentation: Method to Minimize Glucose Repression of *Candida shehatae* D-Xylose Fermentations. *J Industrial Microbiology and Biotechnology*, 22: 65-70.

Kastner JR, RS Roberts, WJ Jones. 1996. The Effect of pH on the Viability and D-Xylose Metabolism of the Yeast *Candida shehatae*, *Appl Microbiol Biotechnol* 45: 224-228.

Young FK, **JR Kastner**, SW May. 1994. The Microbial Production of Poly- β -Hydroxybutyric acid (PHB) from D-Xylose and Lactose. *Appl Environ Microbiol*, 60: 4195-4198.

Selected Presentations:

James Kastner, Li Wang, Brian Herner. *Biodegradation Kinetics of Aldehyde Gas Mixtures*. Biological and Agricultural Engineering, University of Georgia, Athens, GA. 2006. Annual International Meeting of the American Society of Agricultural and Biological Engineers (ASABE). Portland Oregon, July 9th – July 12th.

Praveen Kolar#, **James Kastner**#, Chunbao Xu*, Aryn Teja*. *School of Chemical & Biomolecular Engineering, Georgia Institute of Technology, Atlanta, GA 30332 # Department of Biological & Agricultural Engineering, University of Georgia, Athens, GA 30602. *Catalytic Ozonation of Propanal using Metal Nanoparticle Impregnated Carbon*. 2006. Annual International Meeting of the American Society of Agricultural and Biological Engineers (ASABE). Portland Oregon, July 9th – July 12th.

James R. Kastner*, Praveen Kolar, and Joby Miller. *Low Temperature Catalytic Oxidation of Aldehydes Using Wood Fly Ash and Molecular Oxygen*. Department of Biological & Agricultural Engineering, University of Georgia, Athens, GA 30602. 2006. Annual International Meeting of the American Society of Agricultural and Biological Engineers (ASABE). Portland Oregon, July 9th – July 12th.