



Michael Ladisch

Ph.D. Purdue University - 1977

Distinguished Professor in ABE

Director, Laboratory of Renewable Resources Engineering

Member, National Academy of Engineering
Fellow of the National Academy of Inventors – 2013
Top 100 People in Bioenergy – 2011, 2012
Fellow of the American Association for Advancement of Science – 2011
Fellow of the American Chemical Society - 2011
Inaugural recipient of Paul Dana Biotech Award – 2006

Research Areas:

Biofuels and Bioproducts, Food Safety, Microfluidic Biochips, Bioseparations

Classes Taught:

ABE 580 – Process Engineering of Renewable Resources

ABE 680 – Bioseparations Engineering

Selected Publications (last 4 years):

Book Chapters

- Cho, I-H., A. D. Radadia, K. Farrokhzad, E. Ximenes, E. Bae, A. K. Singh, H. Oliver, M. Ladisch, A. Bhunia, B. Applegate, L. Mauer, R. Bashir, and J. Irudayaraj, "Nano/Micro and Spectroscopic Approaches to Food Pathogen Detection," R. Graham Cooks and J. E. Pemberton (eds.), DOI: 10.1146/annurev-anchem-071213-020249, in *Annu. Rev. Anal. Chem.*, 7:65-88 (2014).
- Ladisch, M., E. Ximenes, Y. Kim, and N. S. Mosier, "Biomass Chemistry and Pretreatment for Biological Processing," in textbook on Biomass Conversion, NSF PIRE-FHI Summer School, in *Behrens, Malte and Abhaya Datye (eds.) Heterogeneous Catalysis for the Conversion of Biomass and Its Derivatives. Max Planck Research Library for the History and Development of Knowledge, Proceedings 2. Berlin: Edition Open Access (ISBN 978-3-8442-4282)*, 131-164, 2010, Closter Secon, Germany (2013).
- Ximenes, E., Y. Kim and M. Ladisch, "Biological Conversion of Plants to Fuels and Chemicals and the Effects of Inhibitors," Chapter 4 in *Aqueous Pretreatment of Plant Biomass for Biological and Chemical Conversion to Fuels and Chemicals*, Charles Wyman, ed., Wiley, NY (ISBN 978-0-470-97202-1, 39-60 (2013).
- Wyman, C. E., B. E. Dale, V. Balan, R. T. Elander, M. T. Holtzapfle, R. S. Ramirez, M. R. Ladisch, N. S. Mosier, Y. Y. Lee, R. Gupta, S. R. Thomas, B. R. Hames, R. Warner, and R. Kumar, "Comparative Performance of Leading Pretreatment Technologies for Biological Conversion of Corn Stover, Poplar Wood, and Switchgrass to Sugars," Chapter 12 in *Aqueous Pretreatment of Plant Biomass for Biological and Chemical Conversion to Fuels and Chemicals*, Charles Wyman, ed., Wiley, NY (DOI: 10.1002/9780470975831), 239-259 (2013).
- Ho, N.W. Y., M. R. Ladisch, M. Sedlak, N. Mosier, and E. Casey, "Biofuels from Cellulosic Feedstocks," *Comprehensive Biotechnology*, Second Edition, Murray Moo-Young (ed.), Academic Press, 3, 51-62, (2011).

Refereed Journal Articles

- Ko, J-K., Y. Kim, E. Ximenes, and M. R. Ladisch, "Effect of Liquid Hot Water Pretreatment Severity on Properties of Hardwood Lignin and Enzymatic Hydrolysis of Cellulose," *Biotechnol. Bioeng.*, 112(2), 252-262 (2015).
- Ladisch, M. R., E. Ximenes, A. S. Engelberth, and N. S. Mosier, "Biological Engineering and the Emerging Cellulose Ethanol Industry," *Advances in Developing Sustainable Sources of Biomass, New Catalysts, and Bioprocessing Technologies are Moving Lignocellulosic Biofuels Closer to Commercial Reality*, CEP, 110(11), 59-62 (2014).

- Ko, J-K., E. Ximenes, Y. Kim, and M. R. Ladisch, "Adsorption of Enzyme onto Lignins of Liquid Hot Water Pretreated Hardwoods," *Biotechnol. Bioeng.*, DOI 10.1002/bit.25359 (In Press, 2014).
- Cunha, F., T. Kreke, A. Badino, C. Farinas, E. Ximenes, and M. R. Ladisch, "Liquefaction of Sugarcane Bagasse for Enzyme Production," *Bioresource Technology*, 172, 249-252 (2014).
- Slininger, P.J., B. S. Dien, J. M. Lomont, R. J. Bothast, M. R. Ladisch, and M. R. Okos, Evaluation of a Kinetic Model for Computer Simulation of Growth and Fermentation by *Scheffersomyces (Pichia) stipitis* Fed D-Xylose, *Biotechnol. Bioeng.*, 111(8), 1532-1540 (2014).
- Bonawitz, N. D., J. I. Kim, Y. Tobimatsu, P. N. Ciesielski, N. A. Anderson, E. Ximenes, J. Maeda, J. Ralph, B. S. Donohoe, M. R. Ladisch, C. Chapple, "Disruption of Mediator rescues the stunted growth of a lignin-deficient Arabidopsis mutant," *Nature*, 509, 376-380 (2014).
- Kim, Y., T. Kreke, and M. R. Ladisch, "Reaction Mechanisms and Kinetics of Xylo-oligosaccharide Hydrolysis by Dicarboxylic Acids," *AIChE Journal*, 59(1), 188-199 (2013).
- Cao, G., E. Ximenes, N. N. Nichols, L. Zhang, and M. Ladisch, "Biological Abatement of Cellulase Inhibitors," *Bioresource Technology*, 146, 604-610 (2013).
- Kim, Y., T. Kreke, R. Hendrickson, J. Parenti, M. R. Ladisch, "Fractionation of Cellulase and Fermentation Inhibitors from Steam Pretreated Mixed Hardwood," *Bioresource Technology*, 135, 30-38 (2013).
- Kim, Y., T. Kreke, N. Mosier, and M. Ladisch, "Severity Factor Coefficients for Subcritical Liquid Hot Water Pretreatment of Hardwood Chips," *Biotechnology & Bioengineering*, 111(2), 254-263 (2013).
- Li, X., E. Ximenes, M. Amalaradjou, H. Vibbert, K. Foster, J. Jones, X. Liu, A. Bhunia, and M. Ladisch, "Rapid Sample Processing for Foodborne Pathogen Detection via Cross-Flow Microfiltration," *Applied and Environmental Microbiology*, 79(22), 7048-7054 (2013) (selected as journal highlight).
- Zeng, M., E. Ximenes, M. R. Ladisch, N. S. Mosier, W. Vermerris, C.-P. Huang, and D. M. Sherman, "Tissue-specific Biomass Recalcitrance in Corn Stover Pretreated with Liquid Hot-water: Enzymatic Hydrolysis, Part 1," *Biotechnology and Bioengineering*, 109(2), 390-397 (2011) <http://onlinelibrary.wiley.com/journal/10.1002/%28ISSN%291097-0290/homepage/media.htm>.
- Zeng, M., E. Ximenes, M. R. Ladisch, N. S. Mosier, W. Vermerris, C.-P. Huang, and D. M. Sherman, "Tissue-specific Biomass Recalcitrance in Corn Stover Pretreated with Liquid Hot-water: Enzymatic Hydrolysis, Part 2," *Biotechnology and Bioengineering*, 109(2), 398-404 (2011) (visual abstract prepared <http://onlinelibrary.wiley.com/journal/10.1002/%28ISSN%291097-0290/homepage/media.htm>).