Michael Ladisch

Ph.D. Purdue University - 1977

Distinguished Professor in ABE
Director, Laboratory of Renewable Resources Engineering

Member, National Academy of Engineering
"One Hundred Engineers of the Modern Era", American Institute of Chemical Engineers (AIChE), 2008
Department of the Army (for exemplary performance in support of the US Army "Tactical Biorefinery" project) – 2006
Inaugural recipient of Paul Dana Biotech Award – 2006
Ag Team 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 5 years):

Wyman, C. E.*, B. E. Dale, R. T. Elander, M. Holtzapple, M. R. Ladisch, C. Mitchinson, and J. N. Saddler, "Comparative Sugar Recovery and Fermentation Data Following Pretreatment of Poplar Wood By Leading Technologies," Biotechnology Progress, 25(2), 333-339 (2009).

Kim, Y.*, N. S. Mosier, and M. R. Ladisch, "Enzymatic Digestion of Liquid Hot Water Pretreated Hybrid Poplar," Biotechnology Progress, 25(2), 340-348 (2009).

Koo, O. K.*, Y. Liu, S. Shuaib, S. Bhattacharya, M. R. Ladisch, R. Bashir and A. K. Bhunia, "Targeted Capture of Pathogenic Bacteria Using a Mammalian Cell Receptor Coupled with Dielectrophoresis on a Biochip," Analytical Chemistry, 81(8), 3094-3101 (2009).

Ximenes, E.*, Y. Kim, N. Mosier, B. Dien, and M. Ladisch, "Phenolic Inhibitors of Enzymatic Cellulose Hydrolysis", Enzyme and Microbial Technology (2009) In press.

Kim, Y., R. Hendrickson, N. S. Mosier, M. R. Ladisch, B. Bals, V. Balan, B. E. Dale, "Enzyme Hydrolysis and Ethanol Fermentation of Liquid Hot Water and AFEX Pretreated Distillers' Grains at High-Solids Loadings," Bioresource Technology J., 99(12), 5206-5215 (2008).

Kim, Y., N. S. Mosier, R. Hendrickson, T. Ezeji, H. Blaschek, B. Dien, M. Cotta, B. Dale, M. R. Ladisch, "Composition of Corn Dry-Grind Ethanol By-products: DDGS, 3 Wet Cake, and Thin Stillage," Bioresource Technology J., 99(12), 5165-5176 (2008).

Kim, Y., N. Mosier, M. R. Ladisch, Process Simulation of Modified Dry Grind Ethanol Plant with Recycle 3 of Pretreated and Enzymatically Hydrolyzed Distillers' Grains," Bioresource Technology J., 99(12), 5177-5192 (2008).

Ladisch, M., B. Dale, W. Tyner, N. Mosier, Y. Kim, M. Cotta, B. Dien, H. Blaschek, E. Laurenas, B. Shanks, J. Verkade, C. Schell, and G. Petersen, "Cellulose Conversion in Dry Grind Ethanol Plants," Bioresource Technology J., 99(12), 5157-5159 (2008).

Ladisch, M. R., and B. Dale, "Distillers Grians: On the Pathway to Cellulose Conversion," Bioresource Technology J., 99(12), 5155-5156 (2008).

Ximenes, E. A., Dien, B. S., Ladisch, M. R., Mosier, N., Cotta, M. A., and Li, X. L., "Enzyme Production by Industrially Relevant Fungi Cultured on Feed Co-Product from Corn Dry Grind Ethanol Plants," Applied Biochemistry and Biotechnology, 136-140, 171-183 (2007).

Chapple, C., M. Ladisch, and R. Meilan, "Loosening Lignin's Grip on Biofuel Production," Nature Biotech., 25(7), 746-748 (2007).

Zeng, M., N. S. Mosier, C-P. Huang, D. M. Sherman, and M. R. Ladisch, "Microscopic Examination of Changes of Plant Cell Structure in Corn Stover Due to Cellulase Activity and Hot Water Pretreatment," Biotechnol. Bioeng., 97(2), 265-278 (2007).

Vermerris, W., A. Saballos, G. Ejeta, N. S. Mosier, M. R. Ladisch, and N. C. Carpita, "Molecular Breeding to Enhance Ethanol Production from Corn and Sorghum Stover," Crop Science, 47(S3), S142-S153 (2007).

Huang, T. T., D. G. Taylor, K-S. Lim, M. Sedlak, R. Bashir, N. S. Mosier, and M. R. Ladisch, "Surface-Directed Boundary Flow in Microfluidic Channels, Langmuir, 22(14), 6429-6437 (2006).

Yang, L., P. P. Banada, M. R. Chatni, K-S. Lim, A. K. Bhunia, M. Ladisch, and R. Bashir, "A Multifunctional Microfluidic System for Dielectrophoretic Concentration Coupled with Immuno-capture of Low Numbers of Listeria monocytogenes," Lab Chip, 6, 896-905 (2006).

Huang, T. T., N. S. Mosier, and M. R. Ladisch, "Review: Surface Engineering of Microchannel Walls for Protein Separation and Directed Microfluidic Flow," J. Sep. Sci., 29, 1733-1742 (2006).

Gupta, A., P. R. Nair, D. Akin, M. R. Ladisch, S. Broyles, M. A. Alam, and R. Bashir, "Anomalous Resonance in a Nanomechanical BioSensors, PNAS, 103(36), 13362-13367 (2006).

Chen, W-T., T. Geng, A. K. Bhunia, and M. R. Ladisch, "Membrane for Selective Capture of the Microbial Pathogen Listeria monocytogenes," AIChE J., 51(12), 3305-3308 (2005).

Kim, Y., R. Hendrickson, N. Mosier, and M. R. Ladisch, "Plug Flow Reactor for Continuous Hydrolysis of Glucans and Xylans from Pretreated Corn Fiber," Energy and Fuels (an American Chemical Society Journal), 19(5), 2189-2200 (2005).

Wyman, C. E., B. E. Dale, R. T. Elander, M. Holtzapple, M. R. Ladisch, and Y. Y. Lee, "Coordinated Development of Leading Biomass Pretreatment Technologies," Bioresource Technology, 96, 1959-1966 (2005).

Wyman, C. E., B. E. Dale, R. T. Elander, M. Holtzapple, M. R. Ladisch, and Y. Y. Lee, "Comparative Sugar Recovery Data from Laboratory Scale Application of Lead Pretreatment Technologies to Corn Stover," Bioresource Techn., 96, 2026-2032 (2005).

Mosier, N., R. Hendrickson, N. Ho, M. Sedlak, and M. R. Ladisch, "Optimization of pH Controlled Liquid Hot Water Pretreatment of Corn Stover," Bioresource Technology, 96, 1986-1993 (2005).

Mosier, N. S., R. Hendrickson, M. Brewer, N. Ho, M. Sedlak, R. Dreschel, G. Welch, B. S. Dien, A. Aden, and M. R. Ladisch, "Industrial Scale-up of pH Controlled Liquid Hot Water Pretreatment of Corn Fiber for Fuel Ethanol Production," Applied Biochem. and Biotech., 125, 77-97 (2005).

Huang, T. T., D. G. Taylor, M. Sedlak, N. S. Mosier, and M. R. Ladisch, "Microfiber-directed Boundary Flow in Press-fit Microdevices Fabricated from Self-adhesive Hydrophobic Surfaces," Analytical Chemistry, 77, 3671-3675 (2005).

Mosier, N., C. Wyman, B. Dale, R. Elander, Y. Y. Lee, M. Holtzapple, and M. Ladisch, "Features of Promising Technologies for Pretreatment of Lignocellulosic Biomass," Bioresource Technology, 96(6), 673-686 (2005).