

May M. Wu

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PROFESSIONAL EXPERIENCE

- **2004-Present.** Environmental Scientist, Center for Transportation Research, Energy System Division, Argonne National Laboratory
 - PI, Water quality and quantity analysis for biofuels, funded by DOE EERE Office of Biomass Program (OBP).
 - Lead, a team of multi-disciplinary multi-institute researchers to assess water resource and quality associated with biofuel sustainability.
 - Technical support to OBP responsible for water issues.
 - National Biomass R&D Board and CSBP in the development of biofuel sustainability standard, criteria, and indicators.
 - External reviewer, U.S. EPA's draft Report to Congress (2010); Chair, Expert advisory board for Sustainable pathways to achieving biofuel policy goals, funded by USDA (2008-2011).
- **1998-2003.** Nalco Chemical Company; Naperville, Illinois
 - 2000-2003. Senior Research Microbiologist
 - 1998-2000. Senior Microbiologist
 - Formulating, characterizing, and testing low-toxic befouling control agents for cooling water systems and RO membrane with sensor monitoring technology in bench and pilot scale.
 - Technical lead, collaboration research effort between Degremont and Nalco, evaluated Bioactive filtration for cooling water treatment.
- **1994-1997.** Argonne National Laboratory. Postdoctoral Fellow
 - Developing and testing a methodology to monitor and control a fermentation process to produce biologically derived succinic acid in a DOE multi-lab effort.
 - Conducting membrane separation test to recovery chemicals from process waste stream using electrodialysis at pilot scale.
 - Evaluating efficacy of various corrosion inhibitors in control of microbial induced corrosion (MIC) in oil and gas field.
- **1989-1994.** Research Assistant at the Michigan Biotechnology Institute/Michigan State University; East Lansing, Michigan
 - Developing a monitoring and control technology based on trace gas (H₂ and CO) monitoring in the up flow anaerobic sludge blanket (UASB) reactor.
- **1983-1986.** Shanghai Municipal Engineering Design Institute; Shanghai, China
 - Principle, Process Design Engineer for water treatment plant design.

RESEARCH HIGHLIGHTS

Biofuel Water Sustainability Analysis

- Developed assessment for the impact of projected biofuel feedstock production on water resource and water quality using SWAT model for Mississippi River Basin.
- Developed water consumption data inventory to estimate water footprint (WF) of biofuel produced from conventional and cellulosic, electricity generated from renewable and non-renewable sources, and petroleum oil at regional and national scale.

LCA Cellulosic and advanced biofuel and bioproduct

- Conducted a LCA for cellulosic ethanol produced via a hybrid syngas-to-ethanol process, butanol produced from corn starch via ABE process, switchgrass-based ethanol, Fisher-Tropsch diesel, and dimethyl ether via biochemical and thermochemical gasification processes.
- Performed a LCA for sugar cane grown in Brazil and derived ethanol to be used in U.S. transportation.
- Participated DOE's 30x30 effort to perform a Well-to-wheels (WTW) analysis for biofuels derived from corn-stover, switchgrass (SWG), and forest wood residue.

LCA of Conventional Fuel Ethanol

- Examined use of corn ethanol dry mill co-product DDGS to displace conventional animal feed for beef cattle, dairy, swine and poultry and its impact on corn ethanol LCA.
- Evaluated various process fuel options for corn ethanol plants and their WTW impacts on fossil fuel use and greenhouse gas emissions.

LCA of Non-renewable Fuel

- Conducted Cradle-to-gate analysis for petroleum-based butanol and acetone, hydrogen generated from sub-bituminous coals via coal gasification, and pathways of BTL, CTL, and GTL.

EDUCATION

- **Ph.D.** Dual degree, Environmental Engineering and Environmental Toxicology, **Michigan State University**
- **M.S.E.** Environmental Engineering, **North Carolina State University**
- **B.S.** Environmental Engineering, **Tong-Ji University, Shanghai, China**

AWARDS

- R&D 100 award (1997)
- Nalco Global Research Award (1998, 2000)

PUBLICATIONS & PATENTS

- 13 journal articles
- 4 publications in published refereed proceedings
- 10 Argonne reports and other technical reports
- 4 invited talks, 3 seminars, 30 presentations
- Method for Locating Hidden Microorganism Contaminated Surfaces in Industrial Water Systems (US6818417)
- Method of Monitoring Biofouling in Membrane Separation Systems (US6699684)
- Method of Controlling Biofouling in Aqueous Media using Antimicrobial Emulsions (US6096225)