Post-Docs

Qingshi Tu, E.I.T/ zerateltu85@gmail.com

Qingshi Tu, PhD

Education

PhD in Environmental Engineering (University of Cincinnati) 2012-2015
MS in Environmental Engineering (University of Cincinnati) 2009-2012
BE in Environmental Engineering (Univ. of Shanghai for Sci. &Technol.) 2004-2008

Research Interests

Biofuels, green chemistry, green engineering, life cycle assessment (LCA), process simulation, waste-to-energy (WTE)

Knowledge and Skills

- Agent-based modeling (ABM), air pollution control, data mining, environmental chemistry, LCA, life cycle costing (LCC), Multi-objective optimization (MOO), process simulation, and techno-economic analysis (TEA)
- Programming language: Python, R, VBA
- Other software: Aspen Plus, ChemCAD, SimaPro, Quantis Suite
- Operation of GC-MS, HPLC, AA, UV-Vis, IC and TOC

Employment

- Yale University (Center for Green Chemistry and Green Engineering)
  Postdoctoral Associate *(02/2016-present)*
  - Acquire life cycle inventory data for emerging technologies via process simulation
  - Study the environmental, economic and social impacts of the emerging technologies, as well as their potential impact on the sustainability of the relevant industrial sectors, via: LCA, LCC, TEA, MOO and ABM
  - Tool development: transform research results into visualized tools that can aid the stakeholders in technology development, policy-making, and education & outreach.
- Quantis International
  LCA analyst *(06/2015-01/2016)*
  - Conduct LCA for products of different industries, including food, beverage, IT and construction materials.
  - Develop tools for clients to track, improve and report corporate sustainability performances
  - Develop EPDs; CDP reporting
- University of Cincinnati
  Graduate research assistant *(01/2010-06/2015)*
  - Conduct research projects; design and initiate new research topics
  - Lab management
  - Help with proposal writing and grant application

Research Experiences by Expertise

- LCA and modeling
  1. Reinventing Aging Infrastructure for Nutrient Management (RAINmgt) (funded by *US EPA grant: RD835569*)
     - Life cycle assessment of centralized/decentralized infrastructure. The infrastructure efforts are primarily centered on work related to resource and energy recovery from wastewater, which covers conventional and emerging technologies including source separation and green infrastructure.
  2. Life cycle assessment of biorefinery systems
     -The biorefinery assessments focus on conventional and emerging technologies, including hydrothermal liquefaction, supercritical fluid extraction/reaction systems, and integrated biorefinery systems.
  3. Life cycle analysis of GHG emission and energy consumption for the trap grease-to-biodiesel process (funded by *US EPA P3 grant: SU835291*)
     - Methodology and life cycle model development in Python
     - Uncertainty analysis by Monte Carlo simulation
  4. Implementation of integrated waste-to-energy production at the wastewater treatment plants (WWTPs): an evaluation of GHG reduction and economics
     - Create an Excel model to evaluate the GHG emission and economics of the integration of waste FOG-to-biodiesel, biosolids-to-biogas, and algae-to-biodiesel technology pathways at a WWTP.