Yanjin Liu, Ph.D., P.E.

AMERICAN WATER
Water Research and Development

KEY EXPERIENCE

Dr. Liu has over 15 years of experiences in water and wastewater treatment processes with special focus on wastewater system design, evaluation, optimization, operation, management, and research. As a Senior Environmental Engineer, he is a technical lead on wastewater research and development, comprehensive planning, engineering design, technical support, and company's strategies/best practices development.

Dr. Liu's expertise includes evaluation, design, and operation of small to large scale municipal wastewater treatment plants, collection systems, nutrient removal and recovery, energy minimization, bioenergy recovery, decentralized treatment and reuse systems, industrial wastewater systems, and biosolids management. He has extensive experience in process modeling, hydraulic modeling, and computational fluid dynamic modeling for wastewater systems. Dr. Liu's research achievements include development, demonstration, and implementation of an energy efficient nutrient removal process, a patented technology at full-scale wastewater treatment systems. He also participated in the development, design, and startup of the first sidestream and mainstream Anammox reactors in the US. His current research interests also include biogas energy recovery through anaerobic digestion and codigestion of high strength waste, and sewer collection system on-line monitoring and realtime modeling. Dr. Liu has conducted many applied research projects as the principal investigator or project manager. He has given numerous presentations in national and international conferences and published many papers as author or co-author. He is a licensed wastewater operator, superintendent, and a register Professional Engineer.

EDUCATION

- PhD, Environmental Engineering, North Carolina State University, North Carolina. 2004
- MS and BS, Civil Engineering, Dalian University of Technology, China, 2001 and 1998

PROFESSIONAL HISTORY

- **Senior Environmental Engineer**, July 2014 – present
- American Water. New Jersey, USA
  Process Manager, May 2013 – July 2014
- Alexandrian Renew Enterprises (Alexandria Sanitation Authority). Virginia, USA
  Environmental Engineer, February 2006 – May 2013
- American Water. New Jersey, USA
  Plant Engineering Supervisor, January 2004 – November 2005
- Washington Suburban Sanitation Commission. Maryland, USA

PATENTS

- Optimized Nutrient Removal from wastewater. September 2011: US 08012352
- Simultaneous anoxic biological phosphorus and nitrogen removal. March 2012: US 20120067816-A1

CERTIFICATIONS

- Professional Engineer, Registered in the State of Maryland
- Wastewater Operator 5 & A Certificate, Registered in the State of Maryland
- Wastewater Superintendent Certificate, Registered in the State of Maryland

RESEARCH PROJECTS

- Project Manager (2016). Water Research Foundation and Water Environment & Reuse Foundation, Project #4614, Defining Attributes and Demonstrating Benefits of Intelligent Water Systems
- Technical Advisor (2016). WateReuse Research Foundation 13-08, Impact of Mainstream Low DO Conditions at a Full-scale MBR Water Reuse Plant
- Principle Investigator (2013). NYSERDA: Cost Effective Nitrogen and Phosphorus Removal.
- Project Manager (2012). WateReuse Research Foundation 10-08, Guidance For Implementing Water Reuse In New Buildings And Developments To Achieve LEED Sustainability Goals.

BOOK CHAPTERS

- Milestones in Water Reuse: the 20 best success stories, International Water Association (2012)
- Water –Energy Interactions in Water Reuse, International Water Association (2012)

RECENT PUBLICATIONS AND PRESENTATIONS

- Wen, J., Tu, Y., Liu, Y., and LeChevallier, M. 2015. Kinetic Studies on Ultra-Low DO Operations at a Full-Scale MBR Plant. WEFTEC 2016.
- Wen, J., Liu, Y., Tu, Y., and LeChevallier, M. 2015. Energy and chemical efficient nitrogen removal at a full-scale MBR wáter reuse facility. AIMS Environmental Science. Vol. 2(1), 42-55.
- Liu, Y., Everette, R. and Fancher, A. 2014. Side-by-side comparisons of step-feed process and MLE process to achieve low effluent total nitrogen – a case study. WaterJAM 2014.
- Liu, Y. 2013. Overview of Mainstream Anammox Technology and Potential Applications at Alexandria Renew Enterprises. Mainstream Anammox Workshop. Alexandria, VA.
- Lou, I., Gong, S., Huang, X., Liu, Y. and Mok, K. 2013. Coagulation optimization using ferric and aluminum salts for treating high algae and high alkalinity source water in a typical North-China plant. Desalination and Water Treatment. Vol. 51(16-18), 3361-3370.
- Liu, Y., LeChevallier, M., Giraldo, E. 2012. Successful case studies of onsite wastewater reuse - a strategic way to solve water crisis. WEFTEC 2012.
- Liu, Y., Muthukrishnan, S., Giraldo, E., LeChevallier, M. 2012. Cost efficient nitrogen and phosphorus removal in full-scale MBR plants. IWA Nutrient Removal and Recovery Conference, Harbin, China.
- Liu, Y. and Giraldo, E., 2012. Side effects of cultured bacteria addition in wastewater collection system on plant operations. Water Practice *and Technology.* Vol. 7(1).
- Lou, I., Gong, S., Huang, X., and Liu, Y. 2012. Coagulation optimization for low temperature and low turbidity source water using combined coagulants: a case study. Desalination and Water Treatment. Vol. 46 (1-3), 107-114.
- Liu, Y., Giraldo, E. and Stewart, W., 2009. Effect of Variable Influent Phosphorus Loads and Internal Returns on Biological Phosphorus Removal, A Case Study. WEF Nutrient Removal Conference, Washington DC.
- Liu, Y. and Ducoste, J., 2006. Numerical Simulation of Chloramines Formation in Turbulent Flow Using a Multi-fluid Micromixing Model. Environmental Modeling & Software. Vol. 21, Issue 8, 1198-1213.
- Liu, Y. and Ducoste, J., 2006. Impact of Turbulent Mixing on the Performance of a CFD Chloramine Model. Environmental Engineering Science. Vol. 23, Issue 2, 341-356.

AFFILIATIONS AND PROFESSIONAL SERVICES:

- Water Reuse Specialty Group Management Board, International Water Association (2009-2014)
- Reviewer, Journal of Engineering Applications of Computational Fluid Mechanics
- Reviewer, Journal of Water Science and Technology
- Reviewer, Journal of Desalination and Water Treatment