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Education:

PhD: **Environmental Engineering** MS: **Environmental Engineering** BS: **Civil Engineering**

General Areas of Expertise:

water energy nexus in urban water system, leakage management

Short Bio:

Dr. Shuming Liu obtained his PhD in Environmental Engineering in 2004 and now is an associate professor at Tsinghua University. He is now the vice dean of School of Environment (SOE) and Director of Smart Water Research Centre, SOE, Tsinghua University. His research interests mainly include leakage control, water energy nexus, water quality management, data driven modeling and optimal management of water distribution system etc. In the past 10 years, Dr. Liu has published more than 70 peer-reviewed papers and authored 2 books. He is the associate editor of Urban Water Journal and editorial board member of Journal of Hydroinformatics.

Five Representative Publications:

1. Smith, K., Liu S.*, Liu, Y., Liu, Y., Wu, Y. Reducing energy use for water supply to China's high-rises, *Energy and Buildings*, 2017, 135, 119-127. DOI: 10.1016/j.enbuild.2016.11.033.
2. Smith, K., Li, Z., Chen, B., Liang, H., Zhang, X., Xu, R., Li, Z., Dai, H., Wei, C., Liu, S.* Comparison of sand-based water filters for point-of-use arsenic removal in China, *Chemosphere*, 2017, 168, 155-162.
3. Smith, K., Liu S.* Energy for conventional water supply and wastewater treatment in urban China: A review, *Global Challenges*, 2017, in press.
4. Wang T*, Liu S, Qian X, Shimizu T, Dente S, Hashimoto S, Nakajima J. Assessment of the municipal water cycle in China, *Science of the Total Environment*, 2017, 607-608, 31 761-770. <https://doi.org/10.1016/j.scitotenv.2017.07.072>
5. Wu, Y., Liu S.*, Wu, X., Liu Y., Guan Y. Burst Detection in District Metering Areas Using a Data Driven Clustering Algorithm, *Water Research*, 100, 28-37, 2016, DOI: 10.1016/j.watres.2016.05.016.

FEWSTERN Symposium 2017 Presentation Title and Abstract:

Understanding the water energy nexus in urban water system in China

China aims to reduce CO2 emissions per unit GDP by 60-65% between 2005 and 2030, according to targets submitted in the lead up to the 2015 United Nations Climate Change Conference. In the urban water cycle, energy is generally used for treatment and distribution. This presentation explains the current water energy nexus situation in urban water system and identifies possible ways to energy reduction. It is noticed that the process of urbanization in China drive up the energy demand because more people move to cities and live in high-rises. Meanwhile, potential energy can be recovered in waster water treatment through implementation of anaerobic digestion and thermal recovery.