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KIM, Sungpyo

Current position

Associate Professor, Korea University, Korea

Education

[2001 - 2005] State University of New York at Buffalo, Buffalo, NY
Doctor of Philosophy – Environmental Engineering
- Dissertation title: The Effect of Operational Parameters on the Fate of Tetracycline Resistant Bacteria in Biological Wastewater Treatment Plants
- Advisor: Professor A. Scott Weber

[1998 - 2001] State University of New York at Buffalo, Buffalo, NY
Master of Engineering – Environmental Engineering
- Dissertation title: Process Control of Dissolved Oxygen in Suspended Growth Processes
- Advisor: Professor A. Scott Weber

[1995 - 1997] Korea University, Seoul, Korea
Master of Engineering – Environmental Engineering
- Dissertation title: Nitrogen Removal in Wastewater Using Biological Aerated Filter (B.A.F.) System
- Advisor: Professor Euiso Choi

[1989 - 1995] Korea University, Seoul, Korea
Bachelor of Science – Civil Engineering

Research interests

Environmental Health Engineering/Wastewater Engineering

- AOP process applications for removal of micro-pollutants including pharmaceutical compounds and antibiotic resistant bacteria and genes
- Investigating green house gas emission in engineered aquatic systems
- Investigating a microbial response by anthropogenic pollution
- Investigating an ecological biomarker related to human health
-Applying knowledge of engineering technologies to improve the removal of emerging contaminants during wastewater management processes

Research experience

[2006 – 2009] Columbia University, New York City, NY
Adjunct Assistant Professor/Research Scientist – advisor Dr. Kartik Chandran
- Green house gas emission study in wastewater treatment plants
- Antibiotic resistant bacteria monitoring using molecular biological techniques in wastewater treatment plants
- Microbial stress- response study using Pseudomonas putida KT2440
- Bio-kinetic study for denitrifiers

[2005 - 2006] State University of New York at Buffalo, Buffalo, NY
Postdoctoral Associate – advisor Dr. Diana S. Aga
- Collaborated with Korea University to investigate the fate of tetracycline antibiotics in Korean anaerobic swine wastewater treatment processes
- Collected, prepared, and analyzed wastewater samples using solid phase extraction and LC/MS/MS for antibiotics and other pharmaceuticals
- Designed and operated laboratory scale mixed culture bioreactors
- Investigated the occurrence and fate of antibiotics and pharmaceuticals in varying biological and physicochemical wastewater treatment processes

[1998 - 2005] State University of New York at Buffalo, Buffalo, NY
Research Assistant – advisor Dr. A. Scott Weber
- Studied the influence of varying operating conditions of biological wastewater treatment on the fate of tetracycline and its resistant bacteria
- Studied the effect of tetracycline occurrences on the amplification of tetracycline resistant bacteria in an activated sludge process
- Investigated industrial wastewater biodegradation in an activated sludge process
- Conducted a field study to determine the applicability of shredded tires as a leach-field aggregate
- Designed a process control of dissolved oxygen in suspended growth process

[1997 – 1998] The Research Institute for Environmental Technology and Sustainable Development, Korea University, Seoul , Korea
Research Engineer
- Developed methodology for optimum utilization of resources towards construction of environmental maintenance facilities in Korea

[1995 – 1997] Korea University, Seoul , Korea
Research Assistant – advisor Dr. Euiso Choi
- Conducted nutrient removal process operations in wastewater (SBRs, MUCT, Anaerobic digestion)
- Investigated nitrogen removal using a biological aerated filter

List of Publications

- Kwon, E., Jeon, Y., Kim, S., Yi, H. Biodiesel from sewage sludge: New paradigm for mining energy from municipal hazardous materials. Environmental Science and Technology, 2012, (accepted).
- Hu, Z., Lee, J., Chandran, K., Kim, S., Khanal, S. Nitrous oxide emission from aquaculture: A review. Environmental Science and Technology, 2012, 46, 6470-6480.
- Ha, C., Kim, N., Park, H., Kwon, S., Lee, H., Hong, U., Park, S., Kim, S., Kim, Y. Natural gradient drift tests for assessing the feasibility of in situ aerobic cometabolism of trichloroethylene and evaluating the microbial community change, Water Air and Soil Pollution, 2011, 219, 353-364.
- Cho, Y., Jang, S., Kim, Y., Komarneri, Sridhar, Kim, S., Uptake of cadmium, copper ,and lead by microporous synthetic Na-birnessite, Journal of Porous Materials, 2011, 18,125-131.
- Kim, J., Ha, C., Oa, S., Lee, J., Park, S., Kwon, S., Kim, S ., Kim, Y. Assessing the activity and diversity of fumarate-fed denitrifying bacteria by performing field single-well push-pull tests, Journal of environmental science and health part A-toxic/hazardous substances & environmental engineering, 2010, 46, 33-41.
- Ahn, J. H., Kim S ., Park, H., Katehis, D., Pagilla, K., Chandran, K. Spatial and temporal variability in atmospheric nitrous oxide generation and emission from full-scale biological nitrogen removal and non-BNR processes. Water Environment Research, 2010, 82, 2362-2372
- Ahn, J. H., Kim, S ., Park, H., Rahm, B., Pagilla, K., Chandran, K. N2O Emissions from activated sludge processes, 2008-2009: Results of a national monitoring survey in the United States. Environmental Science and Technology, 2010, 44, 4505-4511
- Kim, H., Pak, G., Jun, H., Kim, S., Yoon, J., Distributed modeling of urban runoff using a matachannel concept. Water Science and Technology, 2010, 61, 2707-2715.
- Kim, S., Park, H., Chandran, K. Propensity of activated sludge to amplify or attenuate tetracycline resistant genes and tetracycline resistant bacteria: A mathematical modeling approach. Chemosphere, 2010, 78, 1071-1077.
- Baytshtok, V., Lu, H., Park, H., Kim, S., Yu, R., Chandran, K. Impact of varying electron donors on the molecular microbial ecology and biokinetics of methylotrophic denitrifying bacteria. Biotechnology and Bioengineering, 2009,102, 1527-1536.
- Baytshtok, V., Kim, S., Yu, R., Park, H., Chandran, K. Molecular and biokinetic characterization of methylotrophic denitrification using nitrate and nitrite as terminal electron acceptors. Water Science and Technology, 2008, 58, 359-365.
- Mojica, E -R. E., Kim, S., Aga, D. S. Formation of N-Ethylmaleimide (NEM)-Glutathione Conjugate and N-Ethylmaleamic Acid Revealed by Mass Spectral Characterization of Intracellular and Extracellular Microbial Metabolites of NEM. Applied Environmental Microbiology, 2008, 74, 323-326.
- Kim, S., Aga, D. S. Potential Ecological and Human Health Impacts of Antibiotics and Antibiotic Resistant Bacteria from Wastewater Treatment Plants. Journal of Toxicology and Environmental Health, 2007, 10, 559-573.
- Kim, S., Aga, D. S., Jensen, J. N., Weber, A. S. Effect of Sequencing Batch Reactor Operation on Presence and Concentration of Tetracycline-Resistant Organisms. Water Environment Research, 2007, 79, 2287-2297.
- Batt, A. L., Kim, S., Aga, D. S. Comparison of the Occurrence of Antibiotics in Four Full-Scale Wastewater Treatments with Varying Designs and Operations. Chemosphere, 2007, 68, 428-435.
- Kim, S., Jensen, J. N., Aga, D. S., Weber, A. S. Fate of Tetracycline Resistant Bacteria as a Function of Activated Sludge Process Organic Loading and Growth Rate. Water Science and Technology, 2007, 55, 291-297.
- Kim, S., Jensen, J. N., Aga, D. S., Weber, A. S. Tetracycline as a Selector for Resistant Bacteria in Activated Sludge. Chemosphere, 2007, 66, 1643-1651.
- Batt, A. L., Kim, S., Aga, D. S. Enhanced Biodegradation of Iopromide and Trimethoprim in Nitrifying Activated Sludge. Environmental Science and Technology, 2006, 40, 7367-7373.
- Kim, S., Eichhorn, P., Jensen, J. N., Weber, A., S. Aga, D. S. Removal of Antibiotics in Wastewater: Effect of Hydraulic and Solids Retention Times on the Fate of Tetracycline in the Activated Sludge Process. Environmental