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| |  |  | | --- | --- | | **Dong-Shik Kim**  Associate Professor and Undergraduate Director  [dong.kim@utoledo.edu](mailto:dong.kim@utoledo.edu) Phone: +1 (419) 530-8084 Fax: +1 (419) 530-8086  The University of Toledo Chemical and Environmental Engineering (MS 305) 3051 Nitschke Hall 1650 N Westwood Ave Toledo, Ohio 43606-3390 | Dong-Shik Kim |  |  | | --- | | **Education** | | Ph.D. in Chemical Engineering, University of Michigan, Ann Arbor M.S in Chemical Engineering, Seoul National University, Seoul, Korea B.S. in Chemical Engineering, Seoul National University, Seoul, Korea |  |  | | --- | | **Research Interests** | | In situ bioremediation: Use of microbial metabolism and metabolic byproducts for degradation of toxic chemicals, metals and radionuclides, and mitigation of propagation of these contaminants.  Biological filtration: Improving the efficacy of biological water treatment systems for reducing humic acids and toxic heavy metals.  Recombinant DNA technique for biofilm formation mechanisms: The recombinant DNA fused with the reporter gene is used to investigate the biofilm formation mechanism at a molecular level. The mechanism study has been performed as a part of the new project to develop a novel material that prevents biofilm formation.  Metabolic pathway control: Nano-scale investigation of metabolic pathways in fermentation reactions in order to selectively increase the reaction yield of a target byproduct.  Biopolymer property control: Studying biopolymer gelation mechanisms and kinetics to determine more efficient methods for establishing a stable biologically active zone in in situ bioremediation and biological filtration, and to control biofilms in industrial and medical systems. |  |  | | --- | | **Selected Publications** | | "Modeling of Biomass Plug Development and Propagation in Porous Media," Biotech. Bioeng., with Terri Stewart.  "Effects of pH and Trace Minerals on Long-Term Starvation of Leuconostoc mesenteroides," Appl. Envir. Microbiol. 66(3):976-981 (2000), with H. Scott Fogler.  "Biomass Evolution in Porous Media and Its Effects on Permeability under Starvation Conditions," Biotech. Bioeng. 69(1):47-56 (2000), with H. Scott Fogler.  "The Effects of Biopolymers on Bacterial Morphology and Culturability during Starvation," Appl. Microbiol. Biotechnol. 52(6):839-844 (1999), with H. Scott Fogler.  "Convective Instability in Packed Beds with Internal Heat Sources and Throughflow," Korean J. Chem. Eng. 15(3):341-344 (1998), with D.Y. Yoon and C.K. Choi.  "Rates and Mechanisms for Modeling Microbial Transport for Bioremediation Systems," Proceedings of In-Situ and On-Site Bioremediation Conference 4(4):553-558 (1997), with D. Maurer and H. Scott Fogler.  "Removal of Trihalomethanes Using Granular Activated Carbon," J. Korean Soc. Envir. Eng. 16(3):371-379 (1994), with J.J. Lim and Y.S. Cho.  "An Experimental Study on Fluid Flow Characteristics of Superposed Porous and Fluid Layers, Korean J. Chem. Eng. 11(3):190-197 (1994), with C.K. Choi. | |

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