

Sungwoo Ahn, Ph.D.
Senior Scientist

Professional Profile

Dr. Sungwoo Ahn is a Senior Scientist in Exponent's Environmental Sciences practice who specializes in the transport and fate of hydrophobic organic contaminants including PAHs, PCBs, and polybrominated diphenyl ethers (PBDEs), and their bioavailability. Dr. Ahn also has expertise in the environmental behavior of nanomaterials. He is knowledgeable in the use of a variety of laboratory analytical methods including gas chromatography (GC) and mass spectrometry (GC/MS), transmission electron microscopy (TEM), scanning electron microscopy (SEM), x-ray photoelectron spectroscopy (XPS), and x-ray diffraction (XRD).

Before joining Exponent, Dr. Ahn worked as a postdoctoral scholar at Stanford University, where he conducted research on the degradation of flame retardant PBDEs by various forms of nano-scale zerovalent iron (nZVI). Dr. Ahn studied the reaction kinetics and the degradation pathways of PBDEs with positional preference in the debromination. As a part of the research, he synthesized the nanoparticle, as well as its catalyzed and carbon supported particles, in the laboratory and characterized them using analytical tools such as TEM, SEM, XPS, and XRD.

During his Ph.D. work, Dr. Ahn studied the transport and fate of PAHs in contaminated soil and sediment amended with a carbon sorbents for *in situ* contaminant stabilization. The study included physicochemical characterization of contamination at the micro-scale for source identification, assessment of PAH bioavailability and availability to the surroundings, and model simulation of contaminant mass transfer in sediment-sorbent systems, to predict the fate of PAHs and the long-term effect of carbon amendment. In addition, he also has extensive field and laboratory experience in *in situ* stabilization of PCBs in contaminated sediment using carbon amendment.

Academic Credentials and Professional Honors

Ph.D., Civil and Environmental Engineering, Stanford University, 2006

M.S., Civil and Environmental Engineering, Stanford University, 2001

M.S., Chemical Engineering, Yonsei University, South Korea, 1997

B.S., Chemical Engineering, Yonsei University, South Korea, 1995

The Ford Fund Fellowship, 2001–2003

Languages

Korean – native speaker

Publications

Ahn S, Werner D, Luthy RG. Modeling PAH mass transfer in a slurry of contaminated soil or sediment amended with organic sorbents. *Water Research* 2008; 42:2931–2942.

Yoon TH, Benzerara K, Ahn S, Luthy RG, Tyliczszak T, Brown GE. Nanometer-scale chemical heterogeneities of black carbon materials and their impacts on PCB sorption properties: Soft x-ray spectromicroscopy study. *Environmental Science and Technology* 2006; 40:5923–5929.

Ahn S, Werner D, Karapanagioti HK, McGlothlin DR, Zare RN, Luthy RG. Phenanthrene and pyrene sorption and intraparticle diffusion in polyoxymethylene, coke, and activated carbon. *Environmental Science and Technology* 2005; 39:6516–6526.

Ahn S, Werner D, Luthy RG. Physicochemical characterization of coke-plant soil for the assessment of polycyclic aromatic hydrocarbon availability and the feasibility of phytoremediation. *Environmental Toxicology and Chemistry* 2005; 24:2185–2195.

Presentations

Zhuang Y, Ahn S, Luthy RG. Debromination of polybrominated diphenyl ethers by nano-iron particles and carbon-supported nano-iron particles. 239th American Chemical Society National Meeting, San Francisco, CA, March 2010.

Zhuang Y, Ahn S, Luthy RG. PBDE debromination by nano-scale zerovalent iron (nZVI) and carbon supported nZVI. SETAC North America Annual Meeting, New Orleans, LA, November 2009.

Yoon TH, Benzerara K, Ahn S, Luthy RG, Tyliczszak T, Brown GE. Soft x-ray spectromicroscopy study of carbonaceous materials: Characterization of their chemical heterogeneities in sub-micrometer scale. 229th American Chemical Society National Meeting, San Diego, CA, March 2005.

Prior Experience

Postdoctoral Scholar, Stanford University, 2006–2010

Peer Reviewer

- Environmental Science and Technology
- Environmental Toxicology and Chemistry

Professional Affiliations

- American Chemical Society