

Impact of Nanotechnology on Water Resources

Bin Gao

Agricultural & Biological Engineering, University of Florida, Gainesville FL 32611

Nanotechnology holds great promise for pollution control, environment remediation, and resource conservation. However, like all emerging technologies with great promise, the nanotechnology presents health and environment risks. Improved understanding of the transport of nanoparticles in hydrologic pathways is critical to predict their fate in the environment. The Environmental Nanotechnology Lab in the Agricultural & Biological Engineering at the University of Florida has been developing multi-scale experimental and modeling methods to assess mobility of nano-sized particles in surface and subsurface flows. Our initial study indicates that findings from pore-scale visualizations are consistent with the larger scale experimental data. These results are used to identify the governing transport mechanisms of nanoparticles and to quantitatively describe their fate in hydrologic pathways. We anticipate that this research will enhance the development and refinement of engineering and management strategies to monitor nanomaterials in water resources.

Keywords: environmental nanotechnology, water resources, nanoparticles, fate and transport