



The BRACE CENTRE FOR WATER RESOURCES MANAGEMENT

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IRON NANOPARTICLES FOR ENVIRONMENTAL REMEDICATION: FROM LAB TO FIELD

Zero-valent iron nanoparticle technology is becoming an increasingly popular choice for treatment of hazardous and toxic wastes, and for remediation of contaminated sites. More than 30 pilot- and full-scale applications of iron nanoparticles have been completed since 2001. More are planned in North America, Europe and Asia. The most important feature of nanoparticles is their large surface area, which leads to rapid surface reactions and degradation of pollutants. The diminutive size of the nanoparticles also helps to foster effective subsurface dispersion. Recent innovations in nanoparticle synthesis and production have resulted in substantial cost reductions and increased availability of iron nanoparticles for large-scale applications. In this presentation, methods of nanoparticle synthesis, characterizations, and reactions with a large number of organic and inorganic contaminants will be presented. Experience from recent field applications will be highlighted. Key issues related to field applications such as geochemistry, fate/transport and potential environmental impact will also be explored.

Dr. Zhang teaches environmental engineering, nanotechnology and advanced materials at Lehigh University. His research group has pioneered research on iron nanoparticles for environmental remediation and has published the early work on the synthesis of nanoscale iron particles and field applications. He co-authored the first feature article on environmental nanotechnology published by *Environmental Science & Technology* in 2003, and served as the guest editor of the first special issue on environmental nanotechnology of *Environmental Science & Technology* in 2005. Dr. Zhang is the recipient of the National Science Foundation's CAREER Award and Lehigh University's Class of 1961 Professorship. Dr. Zhang received his Ph.D. in Environmental Engineering from the Johns Hopkins University in 1996.

Friday, November 14th, 2008

McGill Downtown Campus, Trottier Engineering Building, Room 1090
11:30 am - 12:30 pm

EVERYONE WELCOME