



Iron Nanoparticles for Environmental Remediation: Environmental and Materials Chemistry

**Wednesday, September 27, 2006
Babbio Bldg, Room 104, Time 11am**

Professor Wei-xian Zhang
Department of Civil and Environmental Engineering, Lehigh University

Zero-valent iron nanoparticle technology is rapidly becoming a popular choice for remediation and treatment of a wide variety of common environmental contaminants in soil and groundwater. More than 30 projects have been completed in the last four years and more applications are ongoing and under planning in North America, Europe and Asia. Nanoparticles have small sizes for effective in situ injection and dispersion and large surface areas and high surface reactivity for rapid contaminant transformation. Recent innovations in the nanoparticle technology have substantially reduced the cost of this technology for large scale applications. In this lecture, fundamental principles on nanoparticle synthesis and characterization will be highlighted. Applications of iron nanoparticles for treatment of chlorinated organic solvents, organochlorine pesticides, PCBs, perchlorate, and hexavalent chromium will be presented. In addition, key issues related to field applications such as cost, fate/transport, and potential environmental impact will also be discussed.

Dr. Wei-xian Zhang is an associate professor of environmental engineering, nanotechnology and advanced materials at Lehigh University. He teaches Introduction to Environmental Engineering, Environmental Organic Chemistry and Environmental Nanotechnology. Dr. Zhang's research group has pioneered the research on iron nanoparticles for environmental remediation. His research group published the early work on the synthesis of nanoscale iron particles in 1997 and the first field application in 2000. He was the co-author of the first feature article on Environmental Nanotechnology published by Environmental Science & Technology in March 2003. He served as co-editor of the first special issue on environmental nanotechnology published by Environmental Science & Technology in March 2005. Dr. Zhang is the recipient of National Science Foundation's CAREER Award (2000) and Lehigh University's Class 1961 Professorship (2001). Dr. Zhang received his Ph.D. in Environmental Engineering from the Johns Hopkins University (1995).

Light refreshments will be served prior to seminar



**Co-sponsored by the Department of Civil,
Environmental, and Ocean Engineering (CEOE)**