

Department of

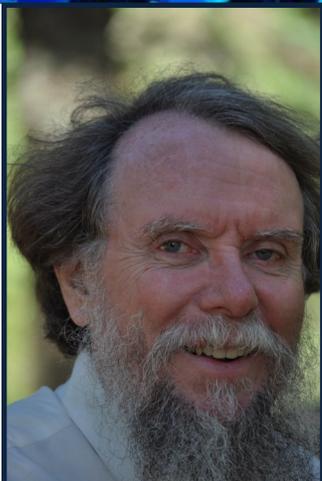
Chemical and Environmental Engineering

2015—2016 Seminar Series

Friday, April 29, 2016

9:30-10:30am

Winston Chung Hall 205/206



## Desmond F. Lawler

Nasser I. Al-Rashid Chair in Civil Engineering

University of Texas Distinguished Teaching Professor

### Granular Media Filtration: Can We Capture Particles from 10 nanometers to 100 microns?

Granular media filtration has been used in water treatment for more than a century but the problems in water treatment have changed dramatically in that time. Our water supplies have changed dramatically in that time, and our requirements for clean water are far more developed. My research on granular media filtration has long focused on how particles of different sizes are removed, and how that is influenced by the design and operational variables at our disposal. Recent research in our laboratory extends the range of interest into the nanoparticle size range (10 to 100 nm), whereas previous work focused on particle larger than 1 micrometer. This new nanoparticle work will be presented along with a surprisingly simple methodology for the design of granular media filters; despite the long and widespread use of this technology, current design methods invariably involve extensive pilot testing. The new methodology should eliminate or drastically reduce the need for piloting for both water treatment plants and wastewater treatment plants.

**Biosketch:** Desmond F. Lawler is the Nasser I. Al-Rashid Chair in Civil Engineering and a member of the Academy of Distinguished Teachers at the University of Texas. He obtained his B.S. in Civil Engineering from the University of Notre Dame in 1968, and his M.S. and Ph.D. from the University of North Carolina (Chapel Hill) in 1975 and 1980, respectively. His research and teaching focus on physical/chemical treatment processes for water and wastewater. Throughout his career, he has studied particle removal processes and more recently has been studying desalination, processes for the removal of pharmaceuticals and personal care products, and technologies particularly appropriate for small drinking water systems in the US. Desmond co-authored a text book on "Water Quality Engineering: Physical-Chemical Treatment Processes" with Mark Benjamin (U. of Washington), published by Wiley in 2013.

Desmond has received numerous teaching awards at UT. His contributions to research and education have been recognized with major awards by the American Water Works Association (A.P. Black award, 1999), Water Environment Federation (Gordon Fair Distinguished Engineering Educator Award, 2009), American Membrane Technology Association (Water Quality Person of the Year, 2010), and the Association of Environmental Engineering and Science Professors ("Distinguished Lecturer" for 2012-13; Charles R. O'Melia Distinguished Educator Award, 2012; and Outstanding Contribution to Environmental Engineering Education, 2015).