

Please join us for a
Special Chemical Engineering Seminar

Wednesday, November 28, 2012
108 West Village H
11:45 a.m. – 1:00 p.m.

**“Zeolite Nanosheets for Thin Film Applications
and Hierarchical Zeolite Catalysts”**

Michael Tsapatsis, Ph.D.

Amundson Endowed Chair and Professor
Chemical Engineering and Materials Science
University of Minnesota

ABSTRACT

Among energy conservation strategies, many rely on replacing thermally driven separation processes, like distillation, with more energy efficient hybrid processes that incorporate thin films functioning as permselective membranes. We are developing a novel membrane technology that will enable energy efficient separations in the chemical, petrochemical, water, fossil fuel and renewable energy industries. The technology is based on a recently discovered class of materials: zeolite nanosheets. Zeolite nanosheets are crystalline, nanometer-thick layers of silicon dioxide containing precisely sized pores of molecular dimensions. Their synthesis and structure determination and their use in forming compact, highly selective and highly permeable membranes will be presented. The recent demonstration of zeolite nanosheet assembly in a house-of-cards arrangement to form hierarchical (micro- and mesoporous) zeolites and applications in catalysis will be discussed.

BIOGRAPHY: Michael Tsapatsis is a Professor in the Department of Chemical Engineering and Materials Science at the University of Minnesota, and currently holds the Amundson Endowed Chair. He received his Bachelor's degree in chemical engineering from the University of Patras, in 1988. He earned a Master's degree and a Doctorate in Chemical Engineering from the California Institute of Technology in 1991 and 1994 working with George R. Gavalas. After postdoctoral studies with Mark E. Davis, he joined the Department of Chemical Engineering at the University of Massachusetts, at Amherst, attaining the rank of Associate Professor in 1999. In 2003, he moved to the University of Minnesota with the rank of Full Professor. He is a AAAS fellow and recipient of the 2007 Charles M.A. Stine Award from the Materials Engineering & Sciences Division of AIChE. He was also awarded a David and Lucile Packard Foundation Fellowship, a National Science Foundation CAREER Award, a Camille Dreyfus Teacher-Scholar Award and of a North American Membrane Society Fellowship. Since 2008, he serves as a USA Regional Editor for *Microporous and Mesoporous Materials*, the official journal of The International Zeolite Association. He has supervised the PhD work of 25 former students and served as the advisor of 15 postdoctoral fellows, who are now pursuing influential careers in academia and industry.

Refreshments will be served