



The **Center of Excellence for Airport Technology** is sponsoring this seminar. Everyone is invited to attend.

## **"An Advanced Single Particle Model for $C_3S$ and Alite Hydration"**

**Professor Joseph Biernacki**

***Department of Chemical Engineering, Tennessee Technological University***

This seminar will begin with a brief introduction reviewing the "origins and evolution" of hydration models. With that as a basis, some of the fundamental principles underlying the development of mass continuity-based models will then be extended to develop the present continuum-based single particle approach.

Dr. Biernacki received his BS in Chemical Engineering from Case Western Reserve University (CWRU, Cleveland, OH) and his MS and Doctor of Engineering (DRE) from Cleveland State University. After graduation, he worked for the British Petroleum Company (BP) and its subsidiaries for 15 years, mainly in research and development. In 1995 he chose to begin an academic career and moved from BP to Northwestern University where he was with the Department of Civil Engineering and the National Science Foundation (NSF) Center for Advanced Cement-Based Materials. In 1997 he joined Tennessee Technological University (TTU) where he is now Professor of Chemical Engineering. Biernacki's research focuses on multi-scale characterization of materials and synthesis, microstructure and transport properties of materials, particularly in cement-based systems. His work has included hydration mechanisms and kinetics of portland cement phases, blast furnace slag and fly ash, characterization of pore structure and water in cement hydrates and use of novel high flux x-ray and neutron methods for phase resolved micromechanical response. Dr. Biernacki is a ten time NSF grant award recipient and recipient of numerous national, regional and campus recognitions for education and research including the 2006 ASEE Corcoran Ward for best paper and the 2010 TTU Caplenor Research Award. Dr. Biernacki is also a Fellow of the American Concrete Institute (ACI) and a member of the American Ceramic Society (ACerS) where he is presently the Cement Division's Trustee.

***12:00 pm, Friday, Aug 6, 2010***  
***Quade Lounge, 1220H NCEL***