

CIVIL AND ENVIRONMENTAL ENGINEERING GRADUATE SEMINAR SERIES

The Next 82 years in thirty minutes: The Future of Concrete by 2100

The 20th century saw the rise of massively reinforced concrete, the dawn of concrete with steel-like properties, the introduction of flowable, pumpable and sprayable concrete and high strength and high performance concrete that has given us the interstate highway system in the US, the world's tallest buildings and massive dams. These achievements, surprisingly, have come on the *back* of portland cement, a binder system that has remained largely unchanged for 100 years. What might contractors wake-up to on the first day of the next century?

Professor Joseph J. Biernacki received his BS in Chemical Engineering from Case Western Reserve University and the Doctor of Engineering from Cleveland State University. Biernacki began his professional career in 1980 with Standard Oil of Ohio (SOHIO), later to be part of British Petroleum, where he spent six years (1989-1995) working on ceramic materials processing. In 1995, he moved to the Center for Science and Technology of Advanced Cement-Based Materials at Northwestern University to become the Director of Educational Programs



where he was first attracted to cements research. Having joined Tennessee Tech University in 1997, he has since focused on topics such as phase resolved characterization and modeling of cement hydration, mechanically and chemo-mechanically induced strains in hydrated portland cement and more recently design of admixtures and additive manufacturing (3-D printing) of cement-based materials. Biernacki is a Fellow of both the American Concrete Institute (ACI) and the American Ceramic Society (ACerS). Biernacki was the recipient of the 2016 ACerS Cements Division Della Roy Lectureship for career achievement in the area of cements science.

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Chemical
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FRIDAY

Sept. 28,
2018

3:30pm

Prescott
Hall 215



Civil & Environmental Engineering

TENNESSEE TECH