

The Department of Civil and Environmental Engineering at the University of Houston presents...

CIVE 6111 Graduate Seminar

Recent Advances in Sustainable Concrete Materials and Technologies



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2:45pm-3:45pm

Classroom Business Building (CBB) - Room 124

Zoom <https://uh-edu-cougarnet.zoom.us/j/97353968525>

Abstract

The development of cementitious binders capable of hardening by binding carbon dioxide (CO₂) and recent forays into the use of the non-traditional and natural pozzolanic materials are just two examples of transformations in the ways we think about sustainability of concrete materials and construction technology. This presentation will focus on these relatively young innovations in the traditionally conservative construction sector as a way to address such looming challenges as global climate change due to greenhouse gases emissions and need for more sustainable infrastructure. The first part of the presentation will review reaction mechanisms underlying the formation of cementing phases in low-lime, non-hydraulic binders and highlight selected mechanical and durability properties of concretes produced using such materials. The second part of the talk will focus on evaluation of reactivity and performance of several non-traditional pozzolans to determine the viability of using these underutilized resources in concrete to address the widening gap in the supply of traditional supplementary cementitious materials.

Bio

Jan Olek is a James H. and Carol H. Cure Professor of Civil Engineering in the Lyles School of Civil Engineering at Purdue University where he also serves as the Director of the North Central Superpave Center and the Director of Pankow Materials Laboratory. He received his master's degree in construction materials from Cracow University of Technology in Krakow, Poland and his second master's degree in materials & structures from the University of Texas at Austin. He received his PhD in cementitious materials from Purdue University. After holding academic appointments at Colorado School of Mines and at Penn State University he returned to Purdue University in 1994. His current research interests include sustainability of concrete materials and structures, durability of concrete and asphalt pavements and application of 3D-printing technology for structural optimization of cement-based materials.