

CIVE 6111 Graduate Seminar Series

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The Counterintuitive Nature of Concrete

Monday, September 08, 2014

10:30 - 11:30 am Seminar

Room: D3 W205

Abstract

Concrete is the most widely consumed material in the world after water, yet its behavior is still not fully understood. Contributing to this lack of understanding is the complex, transient, composite structure manifesting over several length scales, which leads to some counterintuitive behavior. In this seminar, some examples of this ostensibly counterintuitive behavior will be presented, along with physical explanations for the same. The role of poromechanics, interfaces in small pores, viscoelasticity, and coupling between chemistry and mechanics will be discussed as important mechanisms of the intriguing, counterintuitive behavior of concrete.

About the speaker: **Zachary C Grasley** is an Associate Professor and the Peter C. Forster Faculty Fellow I at Texas A&M University. Grasley completed his PhD at the University of Illinois at Urbana-Champaign in 2006 and started as an Assistant Professor at Texas A&M University the same year. At TAMU, Grasley was presented with several awards recognizing his research and teaching accomplishments and promise, including the NSF CAREER Award, the Zachry Teaching Award, and the TEES Select Young Faculty Award. Grasley joined Virginia Tech in the fall of 2012 as a tenured Associate Professor, and was selected for the 2013 Walter P. Moore, Jr., Faculty Achievement Award from the American Concrete Institute in recognition of his innovation in teaching. Grasley rejoined Texas A&M University in August 2014.

Since starting as a faculty member in 2006, Grasley has published over 30 peer-reviewed journal articles and has given over 25 invited or keynote seminars. He has been PI or co-PI on grants totaling over \$4.4 million (about \$2 million to Grasley). Grasley's research support comes from a variety of agencies including international (Qatar National Research Fund), national (National Science Foundation – multiple unsolicited awards and a CAREER award, the Department of Energy, and the Federal Highway Administration), regional (Southwest University Transportation Center), local (Texas Department of Transportation), and industrial (Ready Mixed Concrete Research and Education Foundation). Grasley's research approach involves the integration of analytical, computational, and experimental techniques across several length scales to advance the sustainability of civil infrastructure materials. He has published articles describing new numerical or computational routines, articles presenting original experimental techniques and analyses, and articles proposing novel theoretical understanding of material behavior. Grasley is the former Chair of the Cements Division of the American Ceramic Society and is currently an Associate Editor for the Journal of Materials in Civil Engineering and Secretary of American Concrete Institute Committee 236.

