

**Departments of Structural Engineering and Nano Engineering
University of California, San Diego
Special Seminar**



Dr. Sun Choi
Center for Urban Energy Research,
Korea Institutes of Science and Technology (KIST)

**“High-Volume Manufacturing” of Micro-encapsulated Phase Change
Materials (MPCMs) for Thermal Energy Storage (TES) Systems**

Monday, August 27, 2018

2:00 pm - 3:00 pm, SME Building, Room 248

Abstract

Micro-encapsulated Phase change materials (MPCMs) are frequently and widely used as composite materials for in thermal energy storage (TES) systems such as building composites, PV panels, or solar collectors, thanks to their large latent heats and capabilities of maintaining nearly constant temperature. However, the performances of MPCMs are constrained by their low thermal conductivities, poor heat transfer performances, and crude manufacturing methods. In this seminar, Dr. Sun Choi will address his ongoing efforts on the development of MPCMs. For the first part of the seminar, his recent inventions on MPCMs and its characterization results will be presented. In the latter part, he will discuss his methodologies for “High-Volume Manufacturing” to mass-produce MPCMs that aim to possess high thermal capacity and high thermal conductivities. The seminar will conclude with potential applications of MPCMs to various thermal energy storage (TES) systems and future opportunities and challenges of MPCM composite research.

Biography

Dr. Sun Choi is currently a Senior Research Scientist in Center for Urban Energy at Korea Institute of Science and Technology (KIST). He received his Ph.D. in 2012 and M.S. in 2008 from Dept. of Mechanical Engineering at University of California, Berkeley and received his B.S. degree in 2006 from Dept. of Mechanical and Aerospace Engineering at Seoul National University. During his Ph.D. program, he was the recipient of Samsung Ph.D. fellowship. Starting his academic career in Ph.D. work on Micro-Manufacturing, during his postdoc fellowship from 2012-2014 at Lawrence Berkeley National Laboratory (LBNL), he won prestigious 2014 R&D 100 Award by merging his high-throughput manufacturing systems with bioenergy research. In KIST, as a manufacturing engineer, he is employing his “high-volume manufacturing” systems to mass-produce functional energetic materials such as micro- encapsulated phase change materials (MPCMs) for thermal energy storage (TES) systems.

*Sponsored by John McCartney
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