



SEMINAR

APPLIED MATHEMATICS AND MECHANICS

FS967

28 October 2021

A DCAMM seminar No. 751 will be presented by

**Associate Professor Amy Marconnet
Mechanical Engineering, Purdue University,
Indiana, USA**

The title of the lecture is

Engineering Materials for Thermal Challenges

Abstract:

Heat transfer is a limiting factor in reliability and performance of next-generation batteries, electronic devices, electric vehicles, and energy generation and conversion systems. Mobile platforms with limited heat dissipation pathways are becoming ubiquitous while requiring integration of dissimilar materials and components with a high density of interfaces and placing additional constraints on device performance. Open challenges exist in optimizing and tuning the thermal transport within these heterogeneous systems, while meeting constraints on mechanical properties and device performance. Ultimately, efficient, thermally informed engineering is needed to translate research into technology and requires integrated modeling, experiments, and materials development. This talk will describe several recent examples from my group of engineering materials from the nano- and micro-structural level to achieve targeted performance objectives. First, it will highlight our work on thermal engineering of materials and design of novel metrology techniques to understand thermal aspects of lithium ion batteries from the granular electrode level to the cell level. Second, we build from steady state to transient and high-powered heat dissipation systems for electronics cooling illustrating combined experimental and modeling approaches. These current and past projects provide a foundation for new research directions related to energy conversion and aerospace systems.

DATE:	Thursday, 11 November 2021
TIME:	10:00 – 10:45 + questions
PLACE:	Building 42, Room Ø28-600-3 (Ellehammer) SDU, University of Southern Denmark

Danish pastry, coffee and tea will be served 15 minutes before the seminar starts.

All interested persons are invited.

Niels Leergaard Pedersen

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