Electrical & Computer ENGINEERING

Carnegie Mellon University

Seminar

Engineering Far-from-equilibrium Materials

B. Reeja Jayan

October 4, 2017 | 12:00 - 1:30pm | Scott Hall 6142

Seminar abstract

We are a multidisciplinary team of electrical engineers, material scientists, mechanical engineers, physicists, and chemists investigating new processes to synthesize materials far-from-thermodynamic equilibrium. This talk will demonstrate two examples for processing methods that can disrupt the traditional “equilibrium” structure and consequently, the properties of materials: (1) ceramic oxides crystallized under electromagnetic fields and (2) polymeric thin film materials synthesized in the vapor phase. An additional benefit of these low temperature methods allows for direct processing of structurally integrated oxide-polymer composites and transparent oxides like spinels, perovskites on flexible, light-weight substrates for several technologies related to energy conversion and storage, and sensing.

The DSN-I Seminar Series is hosted by the Device Science and Nanofabrication Initiative. DSN-I Seminars target researchers in micro and nanofabrication technologies or devices, with the goal of strengthening the user community of the new Scott Hall nanofabrication facility and other shared infrastructure.

Speaker bio

B. Reeja Jayan is an Assistant Professor in Mechanical Engineering at Carnegie Mellon University. She also holds courtesy appointments in Materials Science and Engineering, Chemical Engineering, and Electrical & Computer Engineering departments at Carnegie Mellon. Her multidisciplinary lab synthesizes far-from-equilibrium materials hitherto unavailable to conventional synthesis routes. These low temperature processed materials directly grow on flexible, lightweight substrates like fibers, enabling structurally integrated energy harnessing, storage, and sensing. Dr. Jayan is a strong believer in game based learning methodologies that she uses extensively in her undergraduate and graduate courses. Dr. Jayan is a recipient of 2017 Army Research Office (ARO) Young Investigator Award, 2016 Air Force Office of Scientific Research (AFOSR) Young Investigator Award, the Donald L. and Rhonda Struminger Faculty Fellowship, the Berkman Faculty Development Fund, and Pittsburgh Magazine’s 40 Under 40 Award.

Seminar notes: Lunch will be served.