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The HOWARD P. ISERMANN
DEPARTMENT OF CHEMICAL AND
BIOLOGICAL ENGINEERING

CBE Seminar Series – Fall 2023

Dr. Shankar Narayan

Associate Professor | Mechanical, Aerospace, and Nuclear Engineering
Rensselaer Polytechnic Institute

Seminar: Wednesday, November 15, 2023

9:30 a.m. (Academy Hall Auditorium)

“Developing New Sensing Mechanisms to Quantify Evaporation Kinetics”

Abstract:

Evaporation is a fundamental phenomenon occurring in nature and several industrial applications. While evaporation has undergone extensive investigations for more than a century, continued interest exists due to the central role that evaporation plays in modern life and applications, including fuel combustion, water desalination, cooling technologies, fire suppression, microfluidics, and natural phenomena such as precipitation and dew formation. Pushing the limits of evaporation in applications requires a fundamental understanding of the rate-limiting transport mechanisms. Specifically, the liquid-vapor interface experiences a highly coupled heat and mass transfer phenomenon that is only partially understood. Moreover, since real-world processes do not operate under ideal conditions, understanding the role of non-idealities like impurities becomes critical, which requires high-sensitivity measurements. We use a quartz crystal microbalance (QCM) to investigate the evaporation phenomena more accurately than most traditional methods. This talk will describe my lab’s progress in developing this sensing mechanism and some of the key results obtained from our evaporation studies.

Biography:



Dr. Shankar Narayan is an associate professor in RPI’s mechanical, aerospace and nuclear engineering department. His research interest lies in the investigation of energy conversion, transport, and storage using computational and experimental techniques to create new materials, devices, and environmentally sustainable systems to address thermal challenges and clean water production. Before joining RPI as an assistant professor, Dr. Narayan was a research scientist at the Massachusetts Institute of Technology. He obtained his Ph.D. degree in Mechanical Engineering from the Georgia Institute of Technology. At RPI Dr. Narayan received the SOE Classroom Excellence Award, NASA Early Career Faculty Award, Class of 1951 Outstanding Teaching Development Award, National Science Foundation’s CAREER Award, and the American Chemical Society’s PRF Doctoral New Investigator Award (2018). He is a member of ASME, AAAS and IEEE, and an associate editor of IEEE’s Transactions on Components, Packaging and Manufacturing Technology Journal.

Refreshments will be available at 9:00 a.m. in the Academy Hall Auditorium

For more information, please contact Lisa Martin (swishl@rpi.edu)