Physics Colloquium, University of South Florida
3:00 pm, Friday, Nov. 9th, 2018, ISA 2023
☞☞*Refreshment available* ☜☜

"Smart" Biodegradable Polymer for Medical Applications

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The ability to transform medical polymers, commonly used for resorbable surgical sutures, into desired 3D forms/shapes/structures at small-scales with "smart" functions, while sustaining the materials' excellent biocompatibility and biodegradability, provides significant applications in different biomedical fields, ranging from tissue engineering and controlled drug-delivery to medical devices. Here, I will present our recent research works to create 3D microstructures of biodegradable polymers for developing single-administered vaccines, and convert the biopolymers into "smart" piezoelectric materials, which can generate electricity under deformation and vice versa, offering a variety of exciting applications in biodegradable force sensors, tissue-engineering scaffolds and medical transducers.

Dr. Nguyen joined the Departments of Mechanical Engineering and Biomedical Engineering at UConn as an assistant professor since 2016. His research is highly interdisciplinary and at the interface of biomedicine, materials and nano/micro technology. He has invented and developed a platform technology which can create 3D microstructures of biodegradable polymers for applications in vaccine/drug delivery and medical implants. Recently, his research group at UConn has studied a novel biodegradable piezoelectric polymer which can be used for monitoring vital biophysiological forces and stimulating tissue growth. Dr. Nguyen's works have been published in prestigious journals (e.g. Science, Nature Nanotech., PNAS etc.) and highlighted in major media (e.g. The NewYork Times, the Gaurdian, BBC News etc.). He received several prestigious awards including the NIH Trailblazer Award for Young and Early Investigators, and the SME Outstanding Young Manufacturing Engineer Award.