

Seminar January 22nd, 2026

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“Stimuli-Responsive Bio-Based Materials: Connecting Mechano- and Electro-Biology”

Abstract

It is widely recognized that biological systems respond to physical cues such as mechanical forces and electrical signals. Understanding these responses is a key goal on the area of biophysics in biomedical applications. This talk will introduce stimuli-responsive, bio-based (nano)materials, including piezoelectric and conductive biopolymers, as platforms to study and control mechano- and electro-biological interactions. These materials enable controlled, non-invasive application of mechanical and electrical stimuli to biological systems. Applications include studying plant mechanosensing, microbial behavior, and host-pathogen interactions, as well as developing active antimicrobial surfaces and sustainable agricultural technologies. The presentation highlights key concepts, recent advances, and future opportunities at the interface of physics, biology, and materials science.