

Evento organizzato nell'ambito di Engineering
Physics Colloquia



Ca' Foscari
University
of Venice
Department of
Molecular Sciences
and Nanosystems

Micro and Nano Engineering of Sensors and Actuators for the Body

20 Novembre 2025, 11.30

Conference Room Orio Zanetto, Alfa Building

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Sarà possibile seguire
il seminario anche da
remoto, collegandosi
al seguente link:

<https://unive.zoom.us/j/84825539836>

Password: seminar1

Combining nanotechnologies with photonic, electronic, micromechanical, and biochemical approaches produces novel, compact, and effective tools for recording and manipulating animal models' and human behavior at multiple spatial and temporal scales. In this talk, I will discuss multimodal technologies for implantable brain probes applied to record and control neuronal activities, and compliant piezoelectric technologies for transducing biomechanical signals in healthcare applications. Sensors and actuators for the brain exploit tapered optical fibers and are applied in vivo in depth-resolved optogenetic and fiber photometry behavioral experiments in the striatum of mouse models. Developing unconventional nanomachining techniques has allowed us to produce

optrodes for photoelectric artifact-free optogenetics and electrophysiology and to fabricate dense arrays of metallic nanostructures on the tapered surface of fibers for in vivo label-free surface-enhanced Raman Spectroscopy (SERS). Lead-free piezoelectric transducers, such as skin smartpatches, acoustic resonators, and pMUTs, have been fabricated and employed in skin electronics and wearable devices to monitor signals produced or scattered by cells, muscles, and organs. This approach is used to detect gestures, movements, and sounds of arteries and organs in the body, and it aims at detecting and correlating biomechanical signals to pathophysiological conditions.

Organizzazione di
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