UNIVERSITÀ DEGLI STUDI DI BRESCIA

I SEMINARI DEL DIPARTIMENTO DI MEDICINA MOLECOLARE E TRASLAZIONALE

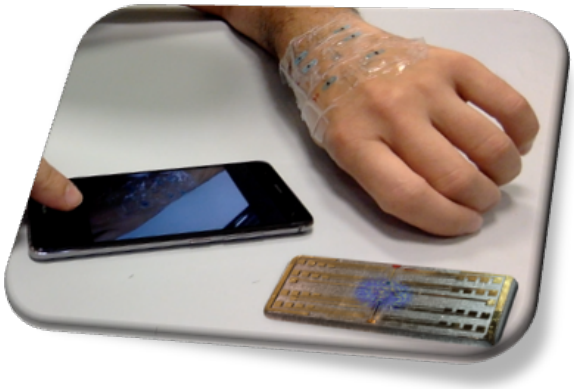
Dottorato in *PRECISION MEDICINE*

Venerdì 11 febbraio 2022, ore 13:00, aula A

Fabrizio Torricelli

Dipartimento di Ingegneria dell'Informazione
Università degli studi di Brescia

Next-Generation Multifunctional Organic Bioelectronics and Biomimetic Neuromorphic Biointerfacing



Organic bioelectronic is a technology platform based on organic mixed ionic-electronic materials and devices which enable the direct communication and interfacing with ions, biomolecules, soft tissues, cells, and organs in the aqueous biological environment at bio-safe low voltages and with biocompatible functional materials, thus opening opportunities for in-vitro and in-vivo applications.

This talk will present emerging organic bioelectronics including technologies, devices and integrated architectures for enhanced applications. Starting from the fundamental properties of the material technologies, device operating principles and integrated bio-circuit configurations, the talk will seamlessly move to a large set of applications including (i) multiscale selective ion detection and real-time monitoring, (ii) selective bio-marker multiplexed detection at the physiological limit, (iii) monitoring cell layer integrity and tight junction modulation, (iv) electrophysiology with local signal amplification, (v) artificial spiking neurons with electrobiochemical degrees of control for in situ neuromorphic sensing and biointerfacing.
The talk will summarize the key achievements of a beautiful journey that I am doing with various multidisciplinary and geographically-distributed research groups, highlighting possibilities for new activities and collaborations.

Ospite: Prof. Paolo Bergese