



UNIVERSITA' CAMPUS BIO-MEDICO DI ROMA

Unit of Intelligent Health Technologies, Sustainable Design
Management and Assessment

Electronics for the body

Francesca Santoro



Biography:

Francesca Santoro received her Bachelor's and Master's degrees in Biomedical Engineering at the 'Federico II' University of Naples (Italy) with specialization in biomaterials. She received a PhD in 2014 in Electrical Engineering and Information Technology in a joint partnership between the RWTH Aachen and the Forschungszentrum Juelich (Germany). In October 2014, she joined Stanford University (USA) and received a research fellowship in 2016 by the Heart Rhythm Society. She joined IIT in July 2017 as Principal Investigator of the 'Tissue Electronics' lab. In 2018 she has been awarded the MIT Technology Review Under 35 Innovator ITALIA and EUROPE. She has been awarded an ERC Starting Grant in 2020. She is among the Inspiring Fifty Italy and Europe and is also the winner of the Falling Walls Science Breakthrough of the Year in Engineering and Technology in 2021. Since January 2022, she is Professor in Neuroelectronic Interfaces at RWTH Aachen and Forschungszentrum Juelich and in the same year has been selected as a PI in the Interstellar Initiative by the New York Academy of Science and is the recipient of the prestigious Early Career Award by the German National Academy of Science Leopoldina.

Abstract:

Electronic devices can be interfaced with human body especially with electrogenic organs like heart and brain. This is extremely relevant not only to monitor their activity but also to exploit electricity to restore lost functionalities. Here, I will show how microfabricated devices can be coupled through 'smart interfacing' with brain and skin to establish a bidirectional stable communication over time. At the intersection of electrical engineering, materials science, biology and chemistry, these human chip interfaces withstand sensitivity, stability over time and adaptation to the continuous response of the target biological tissues. Here, I will discuss how materials' design requires understanding and emulation of the biotic counterpart for successful human implantation, seamless integration, monitoring and stimulation on the long term.

Seminario

16 Maggio 2024 - ore 12:00

Aula T11 - TRAPEZIO

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