



PARTNER PRESENTATION AND INTEREST IN HORIZON EUROPE PARTICIPATION



The National Institute for Research and Development in Microtechnologies (IMT), Laboratory of Microsystems for Environmental and Biomedical Applications Organization type: Research Institute

Short description of the organization:

IMT Bucharest is a non-budgetary public research unit, established in 1993 and supervised by the Romanian Ministry of Research, Innovation and Digitalization since 1996 when it became a national institute. Being an internationally competitive organization, IMT has been involved in world class research in the fields of micro- and nanoelectronic components and systems, including smart sensors, micro- and nanotechnology for biomedical applications, integrated devices, systems and platforms, portable self-powered devices for medical monitoring, multichannel probes for bio-signal acquisition, and CAD of electromechanical microstructures. In terms of integrated systems IMT has also seen success in the implementation of implantable electrodes, neural interfaces, Wi-Fi communication, biocompatible materials. IMT employs 200 people with differing expertise in the fields of electronics, computer science, physics, chemistry, and biology. The institute is structured in 4 R&D centers, grouping 11 laboratories specialized in the following areas: Microsystems for biomedical and environmental applications; Nanobiotechnology; Molecular nanotechnology; Micro-nano photonics; Micromachined structures, microwave circuits and devices; Simulation, modelling, micro-and nano-fluidics; Reliability. More info at www.imt.ro.

Expertise:

The Laboratory of Microsystems for Environmental and Biomedical Applications (Head Dr. Carmen Moldovan), has been working for over 15 years on the development of biomaterials, formulations, biomarkers, sensors, transducers, implantable electrodes and microfluidic chips and systems (e.g organ on chip) for both biomedical and environmental applications. Some recent applications developed in the lab include sensors for the quantification of glucose in saliva, platforms for the early detection of myocardial infarct and the development of electrodes for an advanced arm prosthesis, as well as a series of nanoelectronic sensors for monitoring of gases, water, and food, as well as the effect of their degradation on human health. Our team includes electrical engineers, physicists, biochemists and electrochemists, with a broad range of expertise covering aspects of design, simulation, experimental development, fabrication, testing and characterization.

Short CV of lead contact person:

Dr. Carmen Moldovan is the Head of the Research Centre for Integration of Technologies and Head of Laboratory of Microsystems for Biomedical applications. She graduated on Electronics and Telecommunications at Politehnica Bucharest and holds a PhD in Microelectronics. Her research activity is focused on development of chemosensors and biosensors, implantable micro-nanoelectrodes and neuronal microprobes, ISFETs, nanowire transistors, M(N)EMS, BioMEMS, microfluidic platforms, readout design, signal processing, data acquisition for microsensor arrays and energy harvester for self-autonomous systems and Platforms. Carmen is/ was involved in more than 20 EU projects and more of 40 National projects and her scientific activity was published in more than 120 papers and she holds 8 Patents (<https://www.scopus.com/authid/detail.uri?authorId=7003563437>).



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Calls of interest:

HORIZON-CL4-2023-RESILIENCE-01-33: Smart sensors for the Electronic Appliances market (RIA)

IMT will use its expertise in the development and manufacturing of smart sensors to develop sensor technologies based on novel substrates for the monitoring of the environment (including water, air) and of the food delivered to the EU population.

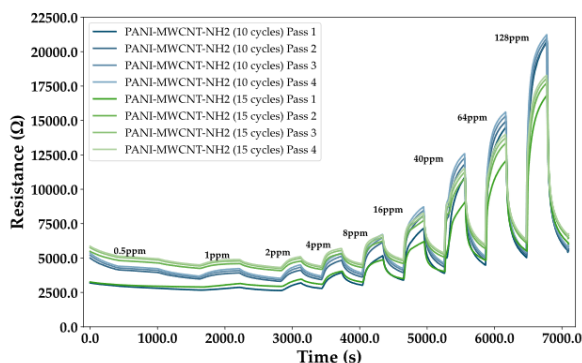
HORIZON-CL4-2023-DIGITAL-EMERGING-01-11: Low TRL research in microelectronics and integration technologies for industrial solutions (RIA)

IMT will use its expertise in the development and manufacturing of microelectronic systems for the development of low energy cost integrated circuits with primary use in sensing and actuation.

Previous EU funded projects:

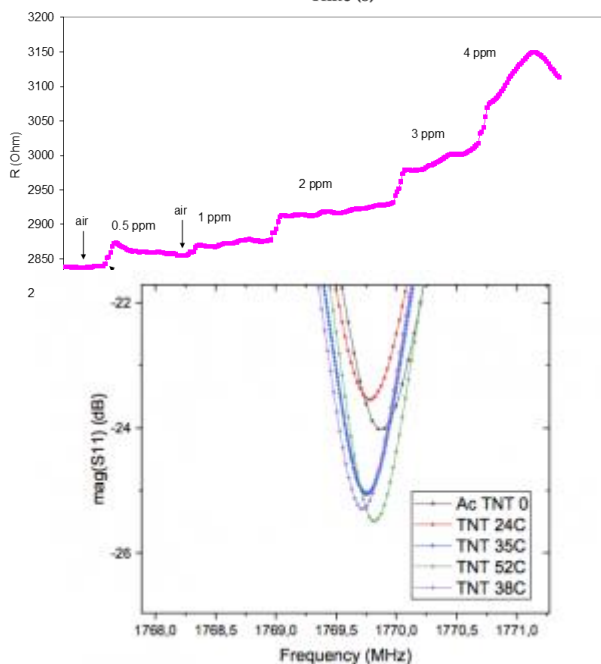
NET4Air (January 2023 – December 2025)

EU project funded under the HORIZON-WIDERA-2021-ACCESS-03-01 call. The 'Networking center for excellence in nanoelectronic devices for air monitoring' project is focused on the development of the administrative capabilities of IMT and the development of novel air monitoring systems.



VigiAir (September 2020 – August 2022)

National project funded under the PN-III-P2-2.1-PTE-2019-0517 call. The 'Intelligent system for the monitoring on indoor air quality' was focused on the development of new sensor systems for the detection of CO, NH₃, NO₂ and CH₂O.



VOC-DETECT (May 2019 – May 2022)

M-ERA.NET H2020 project targeting the development of sensors based on MOX structures and CNT materials for VOC detection. Focused on monitoring formaldehyde and benzene in indoor spaces.

SENSIS-ICT (May 2019 – May 2021)

National project targeting the development of new sensors, new integrated electrical systems and photonic systems for the detection of explosive substances.

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