ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA

MICRO/NANO-ELECTRONICS, ORGANIC AND LARGE AREA ELECTRONICS

Embedded systems featuring innovative microelectronics components based on next-generation devices, highly reliable systems, development of new technologies for energy efficiency, microcontrollers and sensors for biomedical applications and environmental monitoring.

The research of the University of Bologna covers a wide range of issues:

Modeling & Characterization

- Modelling and simulation aspects of micro/nano-electronic devices: simulation based on semiclassical microscopic transport models of nanoelectronic devices and quantum numerical simulation of nanoelectronic devices
- Organic/inorganic semiconducting materials and devices with applications on wearable devices, realized on non-conventional substrates
- Design of energy harvesting circuits and systems, with a special focus on micro-/nano-power scenarios
- Design of ultra-low power electronic systems
- Applications of piezoelectric transducers for real-time monitoring of physical properties of materials and objects

Electronic design

- Innovative systems in health/energy/environmental monitoring, in industrial manufacturing/production and in food/agriculture
- Low power electronics and sensor to fit many application scenarios: design of high-accuracy and low-noise circuit interfaces for several types of sensors; design and characterization of capacitive sensors including custom implementations; design of integrated circuits and MEMS and energy autonomous sensor nodes for IoT; RFID systems; smart metering for smart grid/ buildings applications and biosensors and lab-on-a-chip devices

HIGHLIGHTS

The University of Bologna is member of the **AENEAS** - *Association for European NanoElectronics ActivitieS* (Nanoelectronics R&D partners in the **ECSEL** JU).

At national level, it is member of **IUNET** - Inter-University Consortium for Nanoelectronics and of the Mirror Group **ECSEL ITALIA**.

The inter-department research center **ARCES** focused on Nanoelectronics, Microsystems and IoT hosts the **ARCES-ST joint Lab**, the industry-academia joint laboratory with STMicroelectronics Italia.

European funded projects

H2020 FLAG-ERA **CONVERGENCE** - *Frictionless Energy Efficient Convergent Wearables for Healthcare and Lifestyle Applications* (2017-2020)

Partner of the following H2020 ECSEL projects:

R2POWER300 - *Preparing R2 extension to 300mm for BCD Smart Power* (2015-2018)

R3-PowerUP - *300mm Pilot Line for Smart Power and Power Discretes* (2017-2021)

WInSiC4AP - *Wide band gap Innovative SiC for Advanced Power* (2017-2020)

CONNECT - *Innovative smart components, modules and appliances for a truly connected, efficient and secure smart grid* (2017-2020)

REACTION - first and euRopEAn siC eigTh Inches pilOt liNe (2018-2022)

AI4DI (2019-2022)

iRel40 - Intelligent Reliability 4.0 (2020-2023)