Dr. Cecilia Mattevi
Faculty of Engineering, Department of Materials
Imperial College London

A platform of 3D printed energy storage devices for wearable electronics

3D-printing is regarded as a sustainable manufacturing technique with applications in different industries, from automotive to aerospace, medicine, and energy.
At small scale, 3D printing can enable the fabrication of miniaturized batteries and supercapacitors with free form factors and high mass loading electrodes over small footprint areas. 2D materials with outstanding electrochemical properties are particularly suitable to serve as functional materials in such electrodes.
In this talk, I will present our work on 3D printed energy storage devices in the form of supercapacitors and rechargeable batteries beyond lithium. We use earth-abundant electrode materials and water-based electrolytes to manufacture energy storage devices to meet the growing energy demand to power wearable and portable electronic devices.
I will discuss the materials challenges in formulating inks of 2D materials and different architectural design to optimize the electrochemical performance. I will then discuss how these devices can power wearable sensors.

Dr.Cecilia Mattevi is a Reader and Royal Society University Research Fellow in the Department of Materials at Imperial College London. Dr Cecilia Mattevi received her Laurea degree in Materials Science and a PhD in Materials Science from the University of Padua. After a postdoctoral appointment at Rutgers University, Cecilia joined the Materials Department at Imperial College London, becoming a Junior Research Fellow in 2010. Cecilia is a Fellow of the Royal Society of Chemistry and her research interest focuses on the precise synthesis of 2D materials and their three-dimensional structuring in the form of miniaturized devices to address pressing challenges in energy storage, energy conversion and nanoelectronics.