Access provider – CEA-LETI – RAPHAEL SALOT (CEA LETI)

Energy Storage - Access description

Access to electrochemical energy storage facilities and expertise, including test structures and characterization infrastructure at CEA

Technical offering

- Materials characterisation using x-ray diffraction, Raman spectroscopy to establish the likely outputs of the materials
- Electrochemical test system to analyse battery characteristics of individual electrodes or electrolytes for integration in hybrid energy harvesting and storage solutions.
- Assessment of the ageing characteristics of components under various environments.
- Evolution of physico-chemical characteristics with State of Charge of the component

Main equipment

- Expertise in electrochemistry and lithium chemistry
- BioLogic VSP Potentiostat galvanostat multichannel electrochemical test system:
    - Allows simultaneous test of independent cells controlled with a single PC enabling electrochemical analysis of more than one cell in parallel.
    - Impedance spectroscopy of the energy storage materials can also be assessed with this system.
    - Lithium based and oxygen or water sensitive materials can be housed for analysis in the argon environment
- Cascade Prober that can allow parallel measurement of several batteries on a same 200 mm wafer
- Ionic conductivity and Energy activation measurement
- Ultra precise electronic conductivity measurement (down to 10^{-14} S/cm)
- Climatic chamber (humidity, temperature)

Typical applications

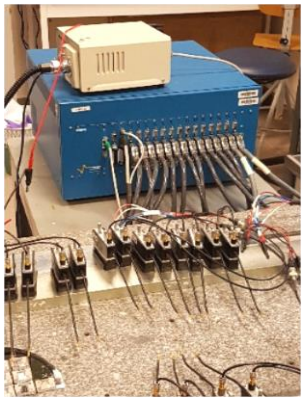
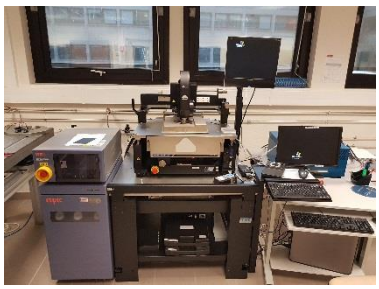
Commercialisation of electrical energy storage solutions to enable energy harvesters as an energy sources for IoT sensors, for example to overcome the intermittent nature of the harvesting source such as solar or vibrational energy.

Case study

An SME or research team are developing new materials for a smart battery but they need access to characterisation equipment to optimise this. EnABLES will provide access to the facilities required. A typical project will offer 10 days access to the Tyndall researchers and equipment required.

Responsible

Dr Raphaël Salot

		
Biologic VSP potentiostat/galvanostat for electrochemical test	**MBraun argon glove box**	**CASCADE Prober**
Keys specifications		
• Low current to high current • Electrochemical Impedance spectroscopy • Specific connections for button cell or thin pads	• Button cells manufacturing tools inside • Electrical feedthroughs included	• 200 mm susbtrate • Temperature range: from 0 to 50°C • Dry air environment