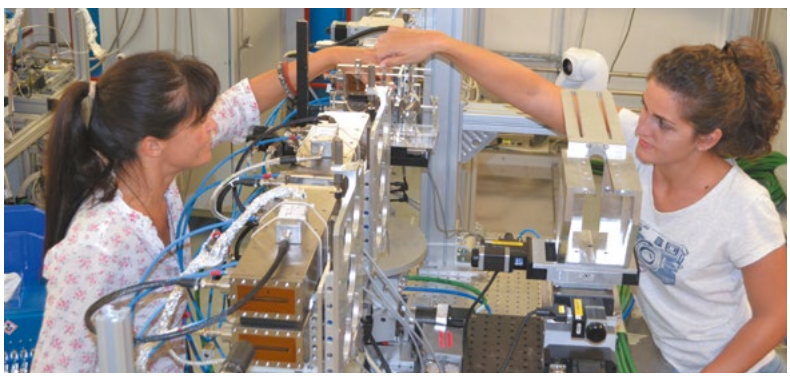
ENERGY

Towards the electrochemical storage of energy, a new generation

* Research network on electrochemical energy storage

Global warming and the finite nature of fossil fuels mean that renewable energy is a French and European priority. Within this context, the aim of RS2E*, initiated in 2011, is to develop new methods for the low cost, large-scale, electrochemical storage of energy whilst adhering to sustainability principles.

It is a French research and technology transfer network, dedicated to various electrochemical energy storage devices: rechargeable batteries, supercapacitors and alternative technologies for electric cars, portable electronics or the storage of electricity generated from renewable sources. Noteworthy amongst medium-term objectives are: assembly of batteries in a single step using 3D printing; design of systems comprised of abundant materials, at low cost and produced using low-temperature processes; the emergence of lithium-free technologies; development of devices that simultaneously combine energy storage and conversion capabilities, etc.



Stéphanie Belin (left), ROCK beamline scientist, and Antonella Iadecola, CNRS/RS2E research engineer, positioning electrochemical cells in the multiple sample carrier of the ROCK experimental cabin.

Project in 3 points

RS2E is a partner in the ROCK "équipement d'excellence", notably including the SOLEIL beamline of the same name, the construction of which was financed by the French National Research Agency (ANR) within the scope of the "Plan Investissements d'Avenir" (Investing in the Future Programme). The ROCK beamline is dedicated to the study of fast kinetic processes on nanomaterials used mainly in the fields of catalysis and batteries, using X-ray absorption spectroscopy.
Via a specific CNRS/RS2E/SOLEIL collaboration, a research engineer is working on ROCK, under the co-responsibility of the beamline and the network, tasked with developing innovative experiments using the synchrotron for research into the electrochemical storage of energy. This engineer is likewise responsible for assisting RS2E scientists as users of ROCK.

SOLEIL beamlines offering analysis techniques complementary to those available on ROCK can also be called upon within the scope of this network: a range of light radiation wavelengths available for research into the storage of energy.

→ To find out more:
www.energie-rs2e.com/
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1 CNRS (French national centre for scientific research) Research network created with the support of the French Ministry of Higher Education and Research, the RS2E brings together 17 public research laboratories, 3 public research and technology transfer establishments (CEA, IFP, INERIS) and 15 industrial partners.

2 RS2E was created to prevent domination of the latest energy storage technologies by Asian economies, as was the case in the 1990s when, in spite of highly active western research, Li-ion battery technology was dominated by them.

3 Since the start of operation of ROCK in March 2015, studies on the mode of operation of a range of electrode materials have been performed thanks to developments of dedicated equipment, and powerful chemometric tools are now available, making possible the exploitation of thousands of energy spectra recorded during the experiments.

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