



STORAGE RESEARCH INFRASTRUCTURE ECO-SYSTEM

RI Information sheet 2022

ECCSEL/ISTO, Nano-Microfluidic laboratory (Nano μ Lab)

Chemical Technology(ies) of Energy Storage that can be assign to the facility:
Chemical

Contact person 1:

Sophie, Roman, sophie.roman@univ-orleans.fr

Contact person 2:

Lionel, Mercury, lionel.mercury@univ-orleans.fr

Project Acronym	StoRIES
Call	H2020-LC-GD-2020
Grant Agreement No.	101036910
Project Start Date	01-11-2021
Project End Date	31-10-2025
Duration	48 months

1. Photo



Figure 1: the upright microscope coupled with Raman spectrometer.

2. Geographical coordinates (°, ′, ... N/S, E/W)

Orléans

[47.83368432868658, 1.943649127811021](https://www.google.com/maps/place/47.83368432868658,1.943649127811021)

3. Description of the research infrastructure for the webpage

The micro/nanofluidic facility at ISTO offers high-resolution imaging and metrology techniques for geomimetic experiments, focused on multiphase systems, defining the rules of positioning/moving for the critical interfaces and chemical fields, and getting deep insights into the behaviour of suspended particles. The experimental platform is equipped with several microscopes, high-resolution cameras, flow controllers as well as temperature controllers (-100°C - 600°C). A Raman micro-spectrometer coupled with a top-quality optical microscope makes possible to measure the Raman spectra of dissolved, solid or colloidal substances, in situ and in real-time, down to the micrometer scale.

Raman mapping is possible along a channel and over a pore/reservoir. Besides, the platform allows for high-resolution measurements of velocity fields, with a resolution of 1 μm vector grid, using micro-Particle Image Velocimetry (PIV) and tracking velocimetry techniques. In parallel, computational microfluidics also known as pore-scale modelling is developed.

Micro-nanofluidic devices, also called micromodels or Geological lab-on-a-chip, are a two-dimensional representation of a porous medium that allows for direct visualization of flows, reactions, and transport mechanisms at the pore-scale. The platform may provide some supports under request about chip holder adjustments, but the samples themselves have to be fabricated by the applicant.

4. Availability of the research infrastructure

(Please indicate time periods in which infrastructure will not be available for StoRIES in the next 2 years – if already known)

To be assessed under request.

5. Special considerations (confidentiality / NDA agreements, insurance requirement, special training, HSE training)

For long-time or recurrent users, a special training to manage the laser must be planned when using the Raman spectrometer.

6. Energy storage technology that can be analysed/studied by using the research infrastructure

- Electrochemical
- Chemical
- Thermal
- Mechanical
- Superconducting Magnetic
- Cross-cutting (Specifically: ...)

7. Key words for the webpage

...

8. TRL level (if applicable): even down to 0!

- 1-3
- 4-6
- Above