



### Name of the organization

SINTEF Material and Chemistry

### Name of the infrastructure / laboratory

SINTEF-PEM durability diagnostics lab

### Address and country of the infrastructure / laboratory

Sem Sælandsvei 12, NO-7465 Trondheim, Norway

### Person responsible of the access / Contact person

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### Main field of activity of the infrastructure / laboratory

- ▶ Stationary and Fuel Cells for Power and Heat Generation
- ▶ Hydrogen Production & Distribution

### Short description of the infrastructure / laboratory

The PEM durability diagnostics lab gives the opportunity to investigate the state-of-health and degradation of PEM electrolyzers and fuel cells, at single cell and short stack level. Complete electrochemical equipped test stations are combined with advanced on-line and post mortem analysis. By working in the PEM durability diagnostics lab, it is possible to combine extensive online diagnostics with post mortem analysis. Electrochemical characterisation of the cells/stacks will show the degree of degradation and processes occurring in the PEM cells and its components, while online gas/liquid analysis (MS, FTIR and LC/IC) supports these results and reveal further parameters for understanding the processes and changes in component properties. SEM and TEM are also available for post mortem investigations of components. This lab is currently in use in several international projects related to PEM fuel cell and electrolyzer development and degradation investigations. Among them are 3 FCH JU projects, with both industry and academia partners with interest in the test labs capabilities.

### Main research area(s) of the infrastructure / laboratory

PEM fuel cells and electrolyzers characterization.

### Instruments and tools available for the above mentioned research

The methods and equipment available include electrochemical impedance spectroscopy, cyclic voltammetry, mass spectroscopy, fourier transform infrared spectroscopy, liquid/ion chromatography, scanning electron microscope, transmission electron microscopy, nuclear magnetic resonance (liquid/solid). Cells and short stacks from a few cm<sup>2</sup> and up to 300 cm<sup>2</sup> are eligible for these test stations.

