

# T.37 Controlled atmosphere and temperature FTIR-DRIFTS - CERTH



**TEESMAT**

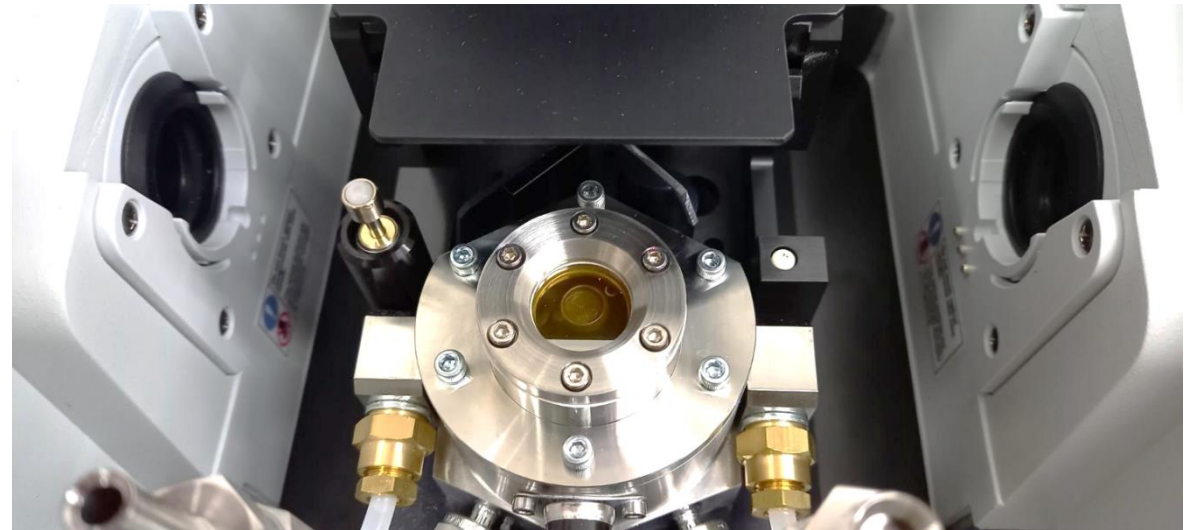
Open Innovation Test Bed for Electrochemical Energy Storage Materials

## How it works:

FTIR is a non-destructive technique that utilises the interaction of Infra Red light with matter, providing a spectrum characteristic of the specific vibrations of molecular bonds. FTIR-DRIFTS is a high-resolution technique that characterises small changes in material structure. Incorporating the sample in a controlled atmosphere and temperature allows us to study oxygen and water-sensitive samples and to study in-situ the interaction of a material with controlled gas (e.g. O<sub>2</sub>, CO<sub>2</sub>) and temperature profile.

## What can be seen

Changes in the chemistry of a material can be determined either by the appearance of characteristic spectrum peaks corresponding to a specific molecular or shifting of existing peaks to higher or lower wavenumbers can imply chemical interaction or lattice stresses.



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## What kind of sample?

DRIFTS-FTIR can characterise anodes, cathodes and electrolytes, but it is most appropriate for organic materials, such as solid-state and liquid electrolytes.

**Why is it useful ?** Explaining electrolyte degradation mechanisms by exposure to specific gases or temperature profiles can contribute to performance, durability and safety optimization.

**Investigation time-scale** : days

**Maturity level** : advanced

