

Birmingham Centre for Energy Storage

Expertise and Facilities

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Research focuses

BCES focuses on

- Novel TES Materials & Advanced Manufacturing Technology
- TES Components/Devices
- TES Systems Integration, Optimisation and the Big Data including Cyber Security
- Energy Storage Economics & Policy
- TES Applications



Economy & Policy



Smart Grids

Materials – manufacturing from nano to industrial-scale

Weighing/sizing



Scale (0.1 μg)



Nano-particle sizer

Grinding



Ball mill



Water mill (nano-fluid)

Moulding



Tablet press, Bosch



Extrusion, Brabender

Sintering



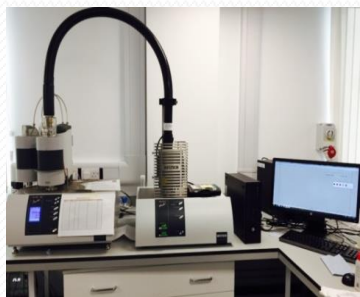
Furnace (1300°C)



Oven (300°C)

Materials – physical property measurement

Phase change



STA (-150 ~ 1600 °C)



DSC (-80 ~ 700 °C)

Contact angle/conductivity



Drop shape analyzer



LFA (-120 ~ 2800 °C)

Viscosity/TG



Rheometer

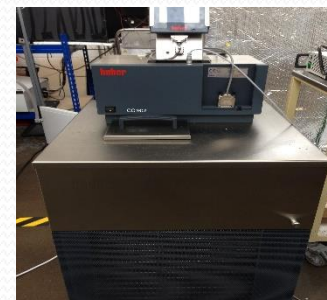


TGA

Thermal stability



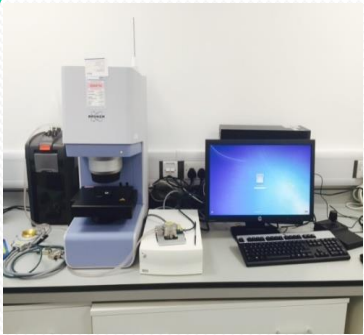
Thermal cycler
(30 ~ 1000 °C)



Cold cycler
(-90 ~ 30 °C)

Materials – structure and morphology representation

Microstructure



Infrared microscope



X-ray diffraction
(inorganic crystal)

Porosity



Gas porosimeter

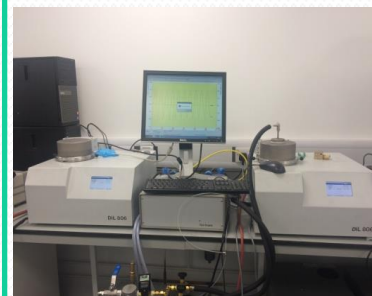


Mercury porosimeter

Composition/expansion

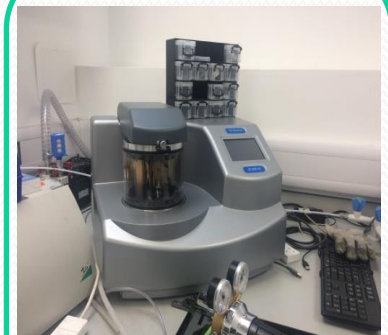


FTIR



Dilatometer

Coating



Coater



SEM