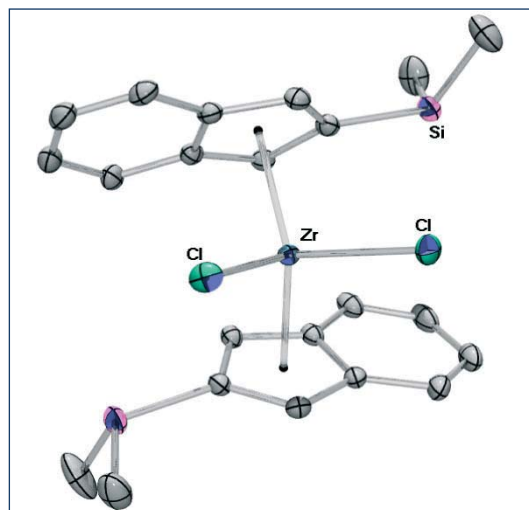
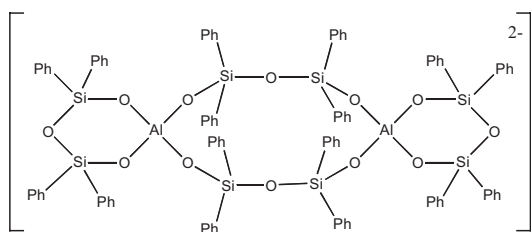


Metalorganic and Material Synthesis

for New and Existing Precursors, Catalysts, Adsorbents, and Membranes

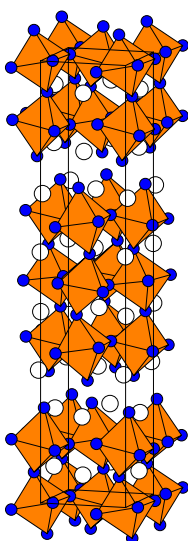
Advanced Synthesis

Wide ranging experience in the synthesis of coordination and organometallic compounds, involving all transition metals, main group metals, lanthanides and actinides, and a large variety of ligand sets (Cp-systems and C-, Si-, N-, P-, O-, and S-based ligands).



Diverse experience in materials syntheses via sol-gel routes (perovskites, silicas), citrate- and ceramic methods, and co-precipitation (hydrotalcite derived materials).

Special focus has been put on solvothermal syntheses of zeolites and aluminium phosphates.



Our expertise covers all types of synthetic conditions:

- Inert (air- and water-sensitive) syntheses
 - Several Schlenk lines
 - Gloveboxes
 - High vacuum line
- Carefully controlled material syntheses
 - Automatic temperature control, up to 1600 °C
 - Atmosphere/gas flow/pressure
 - Automatic pH control

Advanced Characterisation and Testing

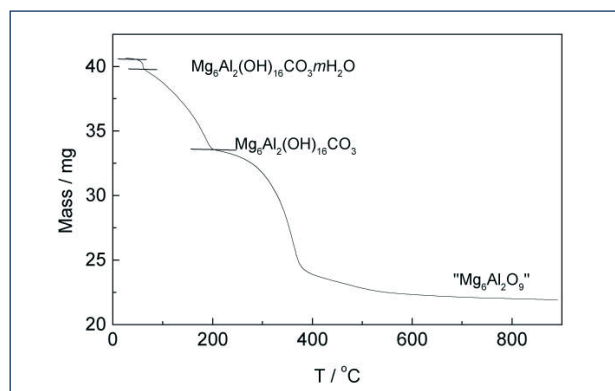
Single-crystal X-ray Diffraction

Powder X-ray Diffraction up to 1600 °C

- unit cell dimensions and particle size determination
- thermal expansion and in-situ experiments under program-controlled temperature and atmosphere
- structure analysis
- quantitative analysis

Electron Microscopy (low vacuum SEM, Microprobe, TEM)

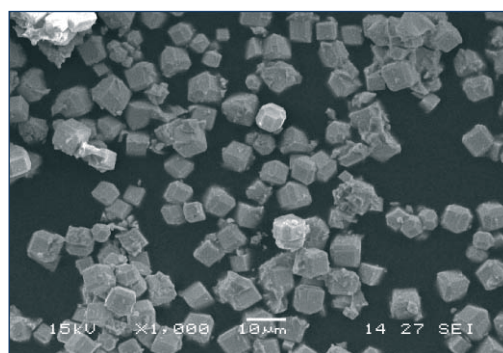
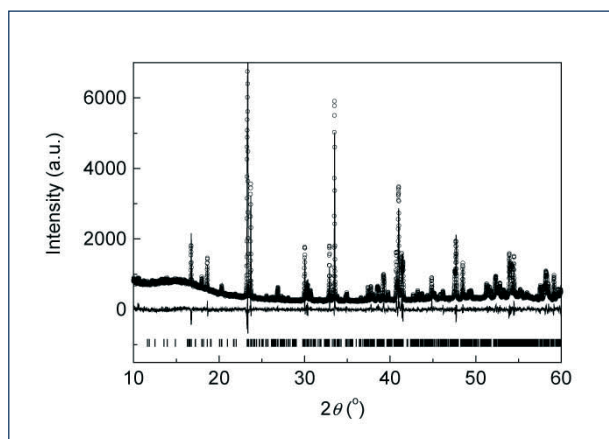
Thermal Analysis (DTA/DSC, TGA, TPX)



IR-DRIFT/Raman spectroscopy, IR-Micro balance

Two 300 MHz Multinuclear, high resolution NMR/MAS-NMR

N_2 -adsorption, Hg-porosimetry



Wide range of testing experience, including:

- Building test rigs for special applications
- Using on-line analyses (micro-GC, GC, MS, GC-MS, IR)
- Optimising processes, including those at challenging temperatures and pressures
- Designing reactors (heat exchangers and nozzles)
- Utilising fluidised and fixed bed reactors

We have a close collaboration with the Department of Chemistry at the University of Oslo.



SINTEF Materials and Chemistry

Hydrocarbon Process Chemistry

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