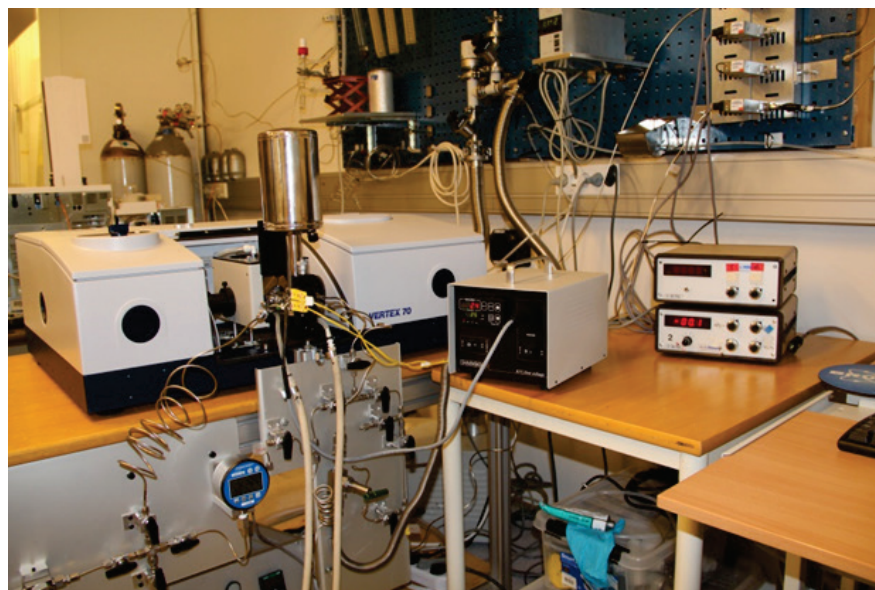


in-situ IR-spectroscopy at SINTEF

- Systems
 - Solids, liquids and gasses
 - Pure and mixtures
- Quantitative
- Sensitive
- Fast
- Non-invasive
- Non-destructive



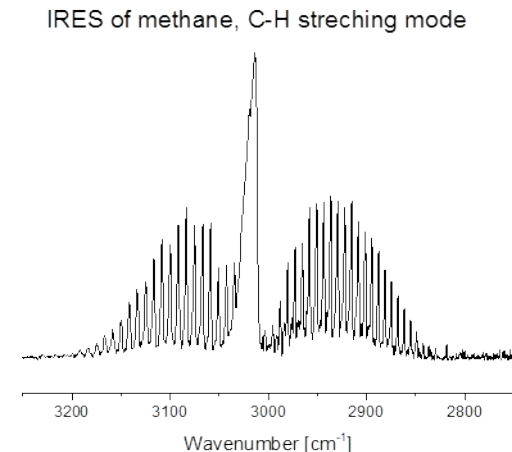
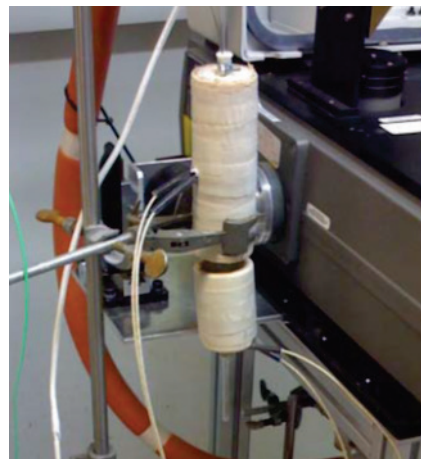
Bruker Vertex 70 with low-*T* DIFTS

Monitor the concentration of species present as the reaction proceeds.

- *t*-dependency
- Which species are present and what are their concentrations?
- Intermediates?
- Response to changes in the conditions, e.g. add reactants, change *P*, *T*, etc.

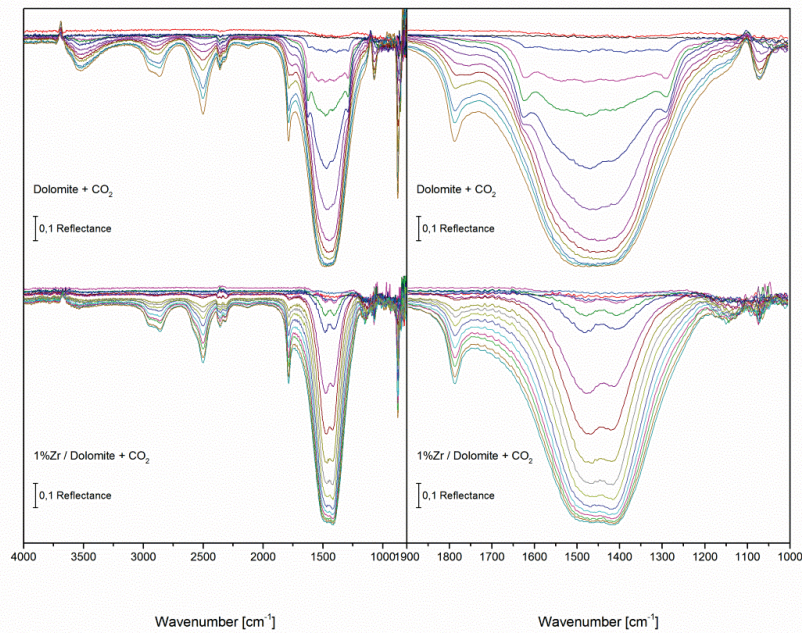
in-situ IR-spectroscopy at SINTEF - specifications

- **Bruker Vertex 70**
 - **Transmission (bulk)**
 - Solids and gasses
 - $25 < T [^{\circ}\text{C}] < 450$
 - $0 < P[\text{bar}] < 30$ bar
 - **DRIFTS (surface sensitive)**
 - Solids and gasses
 - $-196 < T [^{\circ}\text{C}] < 800$
 - $0 < P[\text{bar}] < 2$ bar
 - **Liquids (bulk)**
 - T : external heating
 - P : 1 bar
- **IR emission spectroscopy (IRES)**
 - Gasses
 - $25 < T [^{\circ}\text{C}] < 700$
 - $P \approx 1$ bar
 - Home made



Examples

- FTIR-spectra were continuously recorded during the CO₂ capture at 600°C
- *t*-resolved



- Zeolites with Brønsted sites
- FTIR-spectra were continuously recorded during the CO adsorption at -150 °C
- *P*-resolved

