

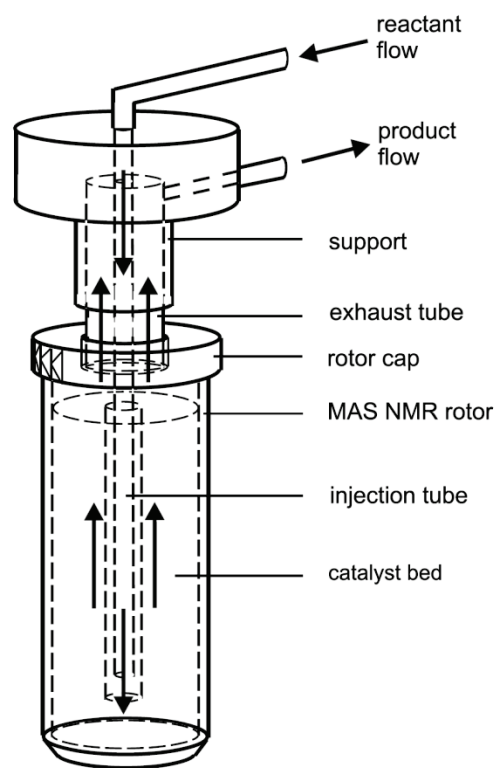
Nuclear Magnetic Resonance (NMR) at SINTEF MC in Oslo



The NMR lab at SINTEF (Oslo)

- Two Bruker Avance III instruments (state of the art in 2009, and still that considering experimental possibilities)
 - One for liquid samples (400 MHz)
 - One for solid samples (500MHz)
- Both instruments are equipped for a broad range of NMR possibilities, including a flow cell for gas-solid reactions up to about 350 °C (see next slide), range of nuclei, and temperature ranges.
- Possible with inert sample handling before/during a solid state experiment.
- Personnel with:
 - Experience in data interpretation and specter simulations (including quadrupolar nuclei modelling).
 - Experience in many different NMR experiments (1D and 2D) for different nuclei and (incl. dynamic studies) for both solid and liquid state NMR.

Flow cell NMR principle (gas reactions with a solid catalyst is main use for this equipment).



Up to about 350-400 °C
Atmospheric pressure

in-situ flow MAS NMR spectroscopy is utilized for clarifying:

1. the nature, behavior, and transformation of surface sites on solid catalysts under reaction conditions;
2. adsorption processes on porous solids;
3. the nature of surface complexes formed by adsorption of reactants;
4. the nature and reactivity of intermediates formed on the active sites of solid catalysts;
5. the nature and reactivity of deposits on solid catalysts under steady-state conditions, and
6. the reasons for catalyst deactivation.