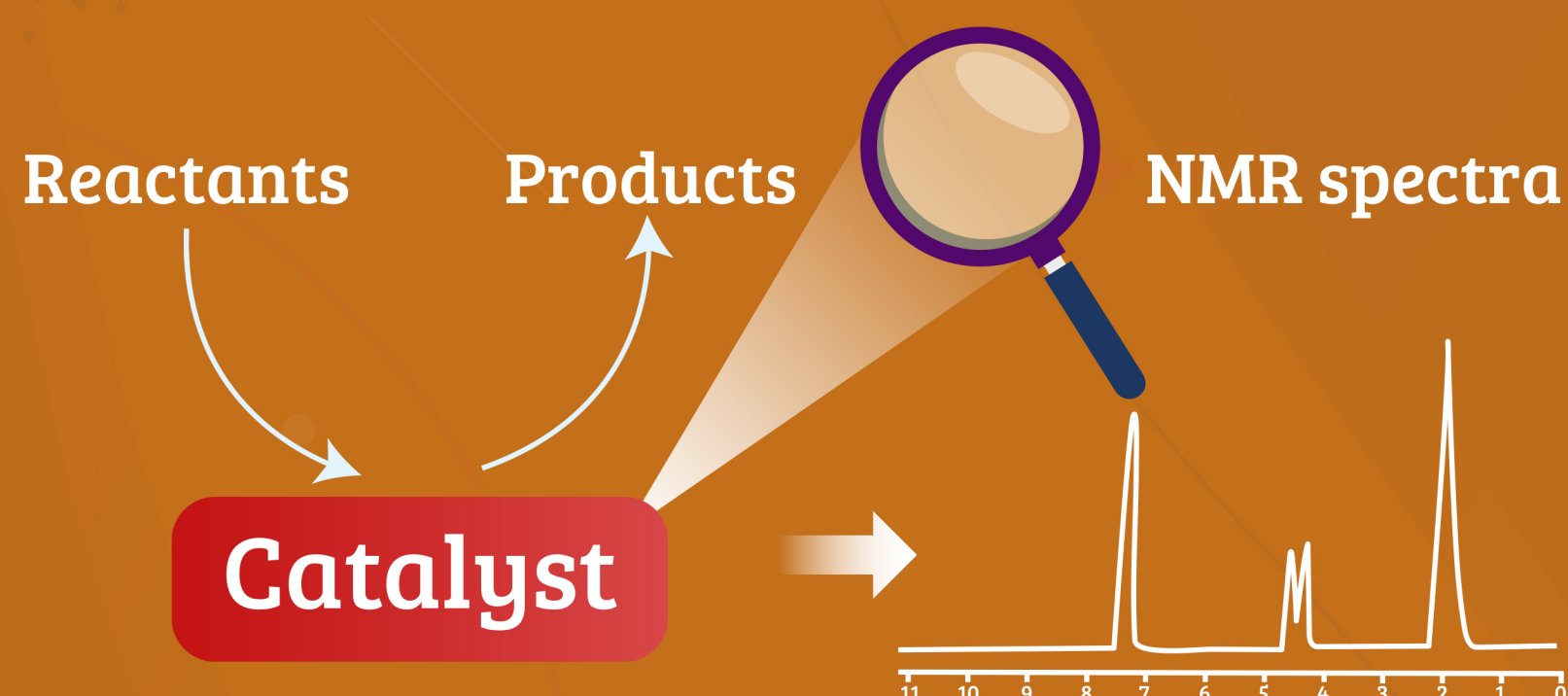




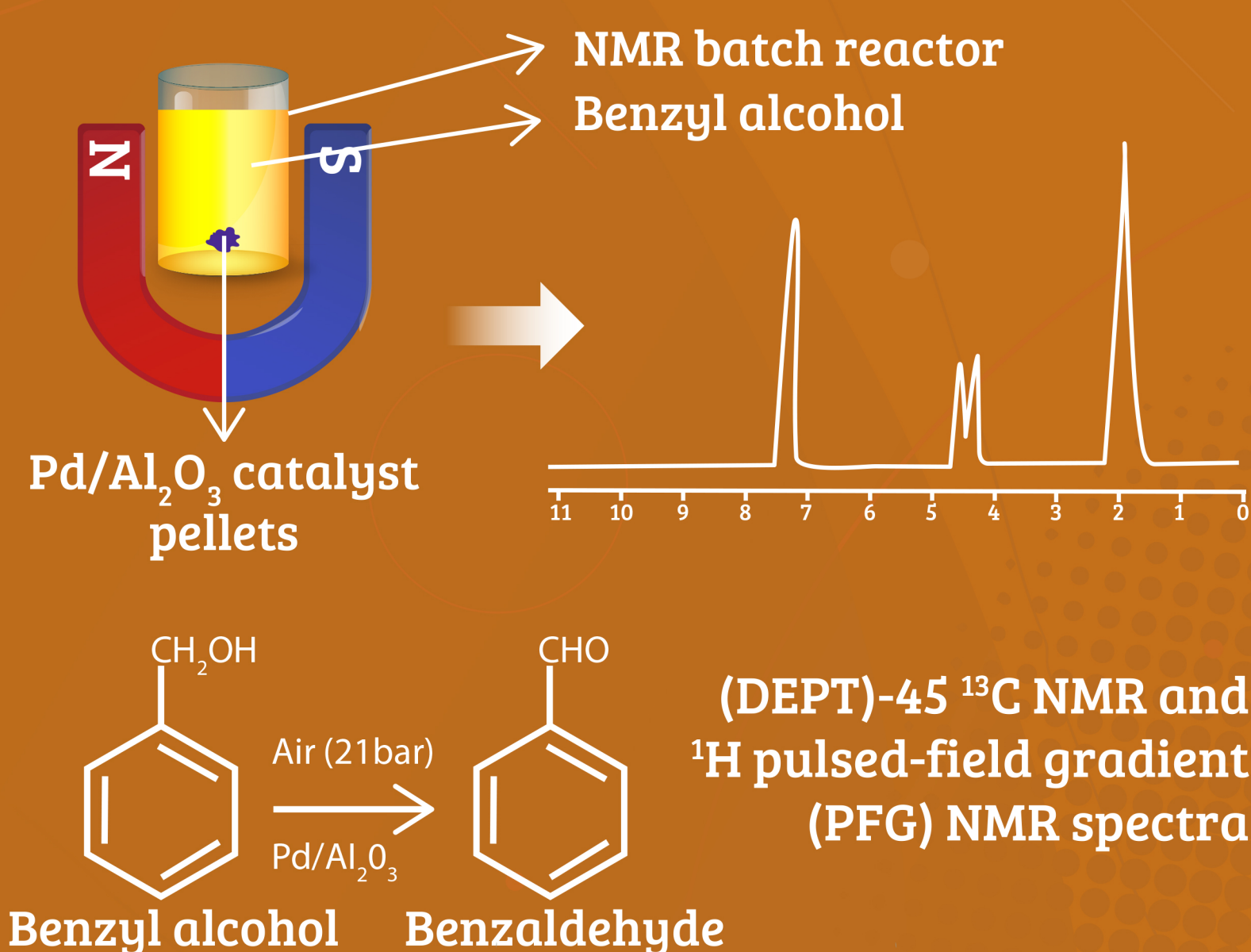
What goes on inside a catalyst?

NMR spectroscopy can be used to study chemical reactions inside the catalyst



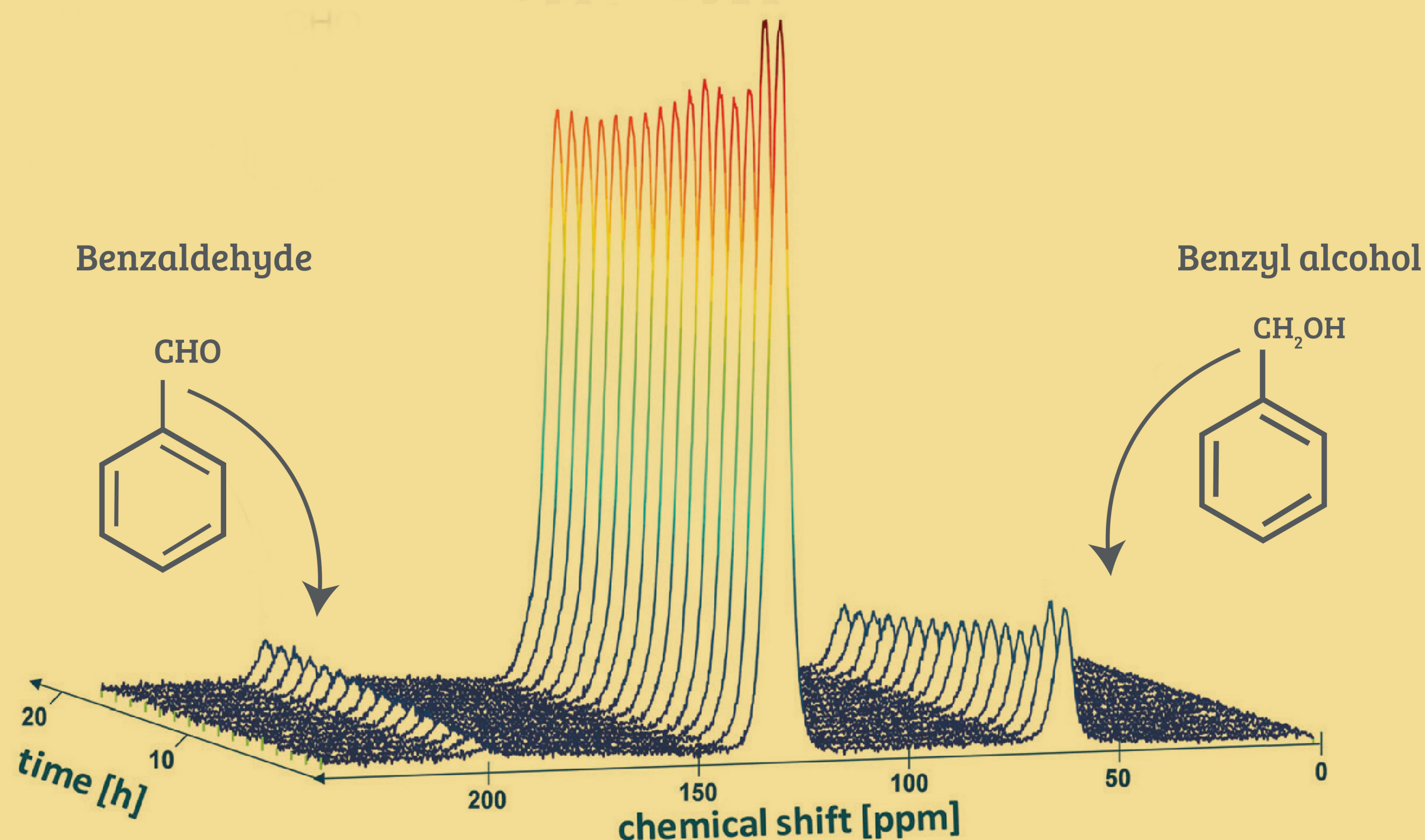
However, validation is lacking for catalytic oxidations in porous catalysts

Catalytic oxidation of benzyl alcohol was analysed using NMR spectroscopy enhanced by polarisation transfer techniques



The ¹³C DEPT-45 NMR spectra displays...

Conversion of reactant with time (rate of catalytic reaction)



- ✓ Decreasing signal at 60 ppm → Consumption of benzyl alcohol
- ✓ Rising peak at 200 ppm → Formation of benzaldehyde
- ✓ NMR peak area reading → Composition of chemical species

¹H PFG NMR spectra highlight diffusion of benzyl alcohol in solvents

NMR spectroscopy allows non-invasive monitoring of oxidation reaction kinetics in porous catalysts