

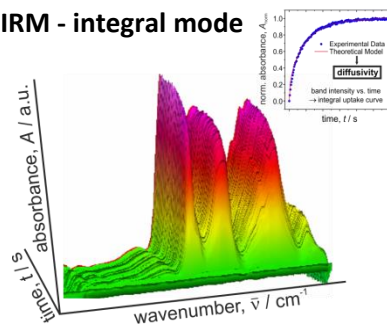
### IR Micro-Imaging (IRM)

- FTIR Microscope of type Bruker HYPERION 3000, consisting of a spectrometer (Bruker VERTEX 80v) and a microscope with a Focal Plane Array (FPA) detector
- Simultaneous measurement of transient intra-particle concentration profiles during multicomponent adsorption and separation and during chemical reactions
- Exploration of diffusion mode by the simultaneous measurement of transport and self-diffusion
- Applicability depends on sample specifications (particle and pore sizes, sample homogeneity, surface properties)
- For more details, see chapter 12 (introduction to the technique) and 15 to 21 (examples of application) in J. Kärger, D. M. Ruthven, D. N. Theodorou: [Diffusion in nanoporous materials](#), Wiley-VCH, Weinheim 2012

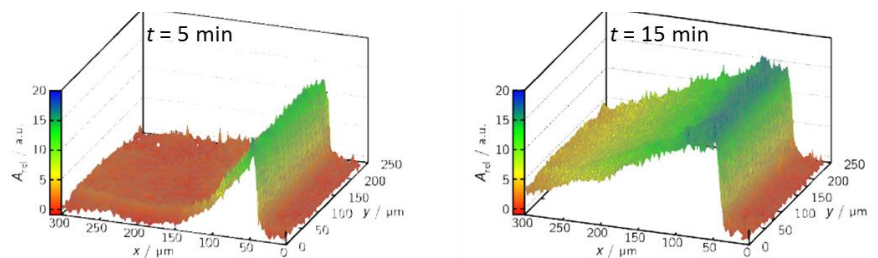


- spatial resolution: up to  $2.7 \mu\text{m} \times 2.7 \mu\text{m}$
- time resolution: 10 s (FPA) and 10 ms (integral mode)

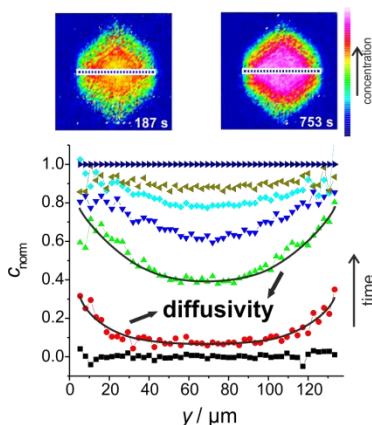
#### IRM - integral mode



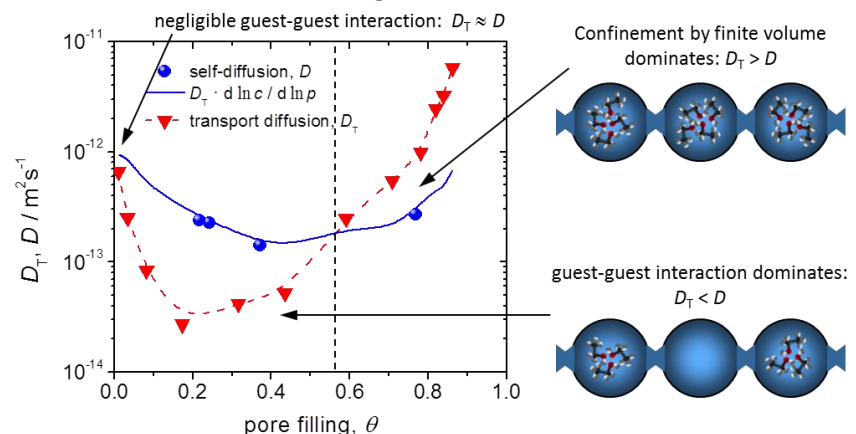
#### Progress of diffusion front with time into the interior of a plane sheet



#### IRM - FPA mode



#### Diffusion and clustering effects of ethanol in MOF ZIF-8



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