



**Simposio Internacional: Zeoforum: Foro sobre la innovación en zeolitas y materiales porosos ordenados**

***International Symposium: Zeoforum: Forum on innovation in zeolites and ordered porous materials***

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## **Structuring zeolites for catalysis and separation** **Freek Kapteijn and Jorge Gascon**

The well-defined crystalline porous structure of zeolites with pores of molecular dimensions invite for size and shape selective adsorption-separation and catalysis. The combination of separation and catalytic conversion in membrane reactors may be attractive from an energetic and operational point of view.

In this presentation zeolite-based membrane reactors are considered on different scale levels, ranging from the macro- (classical membrane reactors), the meso- (coated particles), to the micro-scale (coated catalytic crystallites), whereby the area to volume ratio increases orders of magnitude. Hereby imbalances between permeation rates and reaction rates can be compensated and the influence of defects becomes less devastating. Zeolite coatings of porous particles cannot only be used as membrane, but also to combine consecutive catalytic reactions in one catalyst.

Several examples of separation and membrane catalysis will be presented and an outlook given for potential of zeolite membrane application.

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