OGURA LAB.

[Molecule-sized Nano Space and Catalysis]

Institute of Industrial Science, Department of Materials and Environmental Science

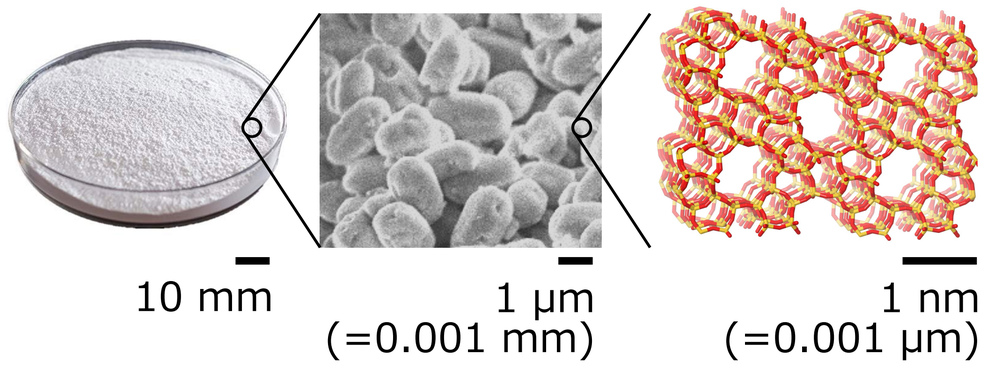
Environmental Catalysis, Materials Chemistry

Department of Chemical System Engineering

http://www.ogulab.iis.u-tokyo.ac.jp

Nano Space and Catalysis

Our research group tackles on the environmental, and resources and energy problems using nano porous materials.



Nano-sized space allows us to…

- Store and concentrate materials and energy
  - Capture harmful chemicals
  - Select or sieve molecules by their size and chemical properties
  - Anchor the catalytic site in the nano space
  - Catalyze space-selective reactions

Unique Adsorbent

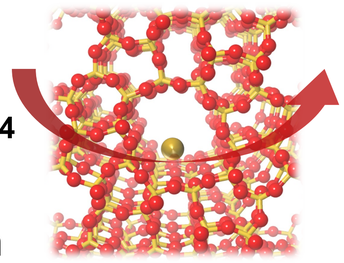
Unique Catalyst

Create The Truly Useful Catalysts via A Design of Nano Space Reaction

Approaches in Ogura Lab

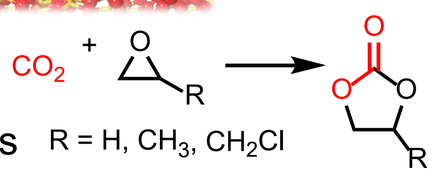
Nat. Res. | Cat. | Zeo. | C1 | CO_2 | CH_4 | N-site

CH_4, CO_2, MeOH, C_2H_4



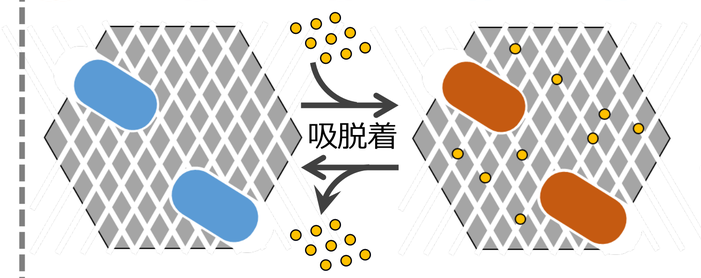
Olefins Fuels

MTO reaction
CO_2-FT reaction
CO_2-cycloaddition
CH_4 to Oxygenates



Nanoporous Catalysts and Reactions for Resources conv.

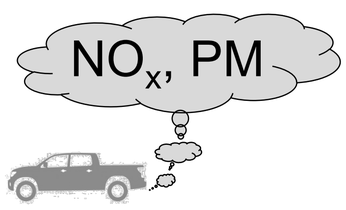
Ene rgy | Stor age | Sorp tion | Meso. Silica | Zeo. | ZIF | PCM

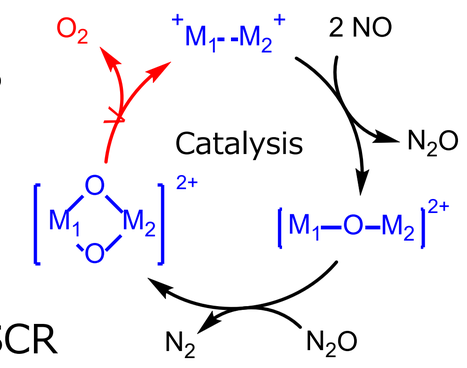


- Thermal control of sorption system
- Use of latent heat of PCM materials

Selective adsorption / gas storage / energy recovery on nano-space

Envi. | Cat. | Sorp tion | SCR | Zeo. | ZIF | NO_x





NOx removal → SCR

NOx concentration → Selective adsorption

Removal and Recycling of "N"-based Chemicals