

# OGU LAB.

## [Nanospace for Environment, Resources, and Energy]

Department of Materials and Environmental Science

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

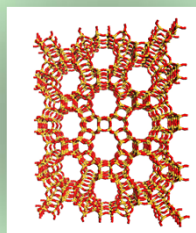
Laboratory for Environmental Catalyses and Materials Science

※Department of Applied Chemistry

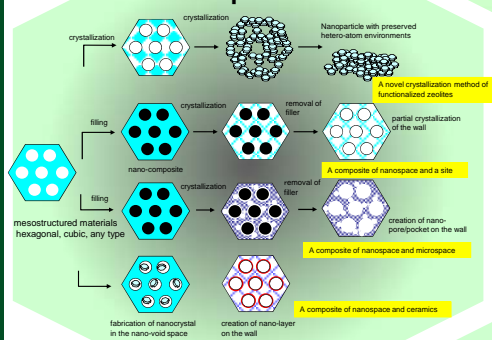
### Zeolite ~ A Uniform Nanospace Material

#### Zeolite?

- ✓ An inorganic crystal composed of O, Si, Al, and alkaline elements
- ✓ Having a micropore in a molecular level
- ✓ Stabilizing metal ions or proton on the framework
- ✓ A key material in the 20<sup>th</sup> century, being used in important, scientific processes



#### Hierarchical pore networks

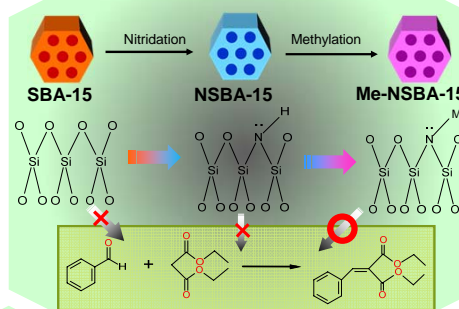


#### How to use pores in the current century

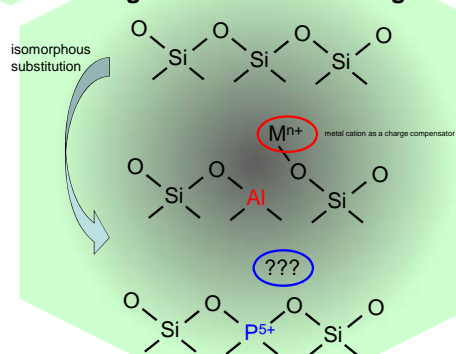
- ◆ **Resource:** Design of hierarchical pore networks for petro/petchem processes as a higher efficient acid catalyst  
 Recovery of important sources in waste water
- ◆ **Energy:** Preparation of nitrogen-doped zeolites as a base catalyst  
 Catalysis by the base for a new system of energy/resources
- ◆ **Environment:** Catalysis for automobile exhaust without using Pt  
 Selective storage of low-concentration pollutants

For zero emission!

#### A solid base catalyst and its functionalization



#### Inorganic solid ion-exchanger



#### Catalysts for automobile exhaust

