Organic-Inorganic Hybrid Mesoporous Materials

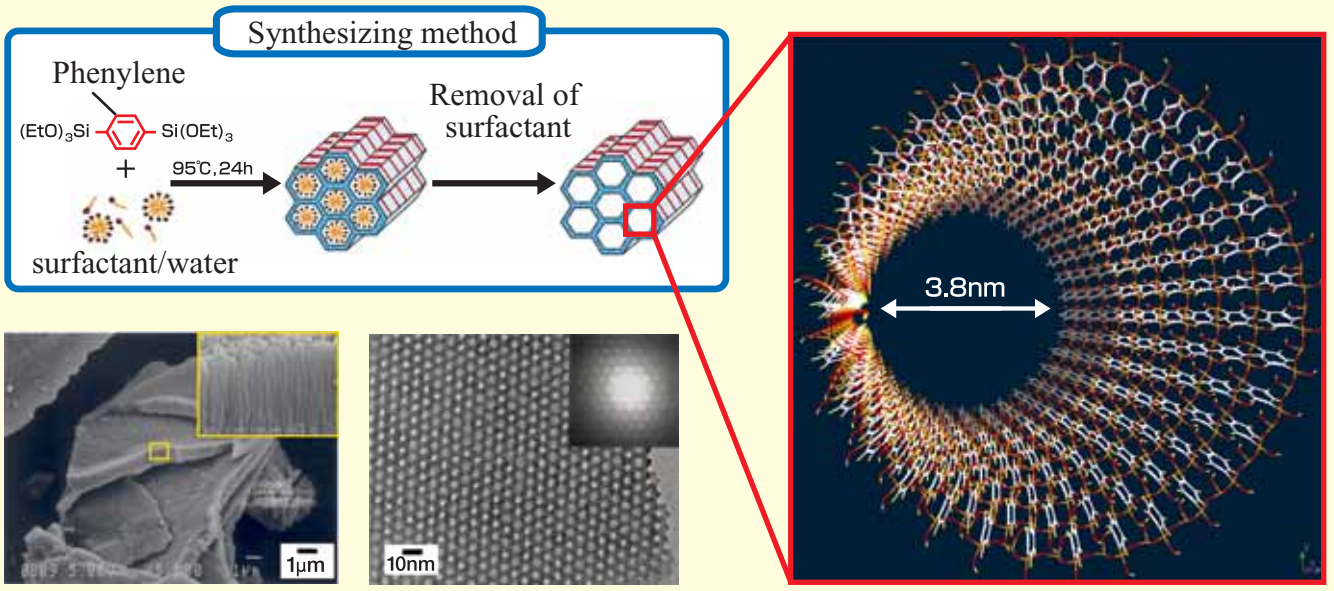
Aim

To create advanced materials possessing highly controlled nano-porous structure that would bring about breakthrough in the fields of energy, environment and other important technologies.

Outline

We have succeeded in synthesizing a mesoporous phenylene-silica hybrid material with regularly arranged nano-pores (2 to 10 nm) and crystal-like ordered pore-wall structure.

The result was reported on Nature [416, 304 (2002)], a famous British science magazine.



Scanning electron micrograph | Transmission electron micrograph | Structure in mesoporous wall (CG image)

Characteristics

- It has large surface area (800 m^2/g or more), high heat resistance (500 ^oC), and high moisture resistance.
- Generation of singular catalysis and optical properties based on the ordered pore-wall structure can be expected.
- Various organic groups and functional groups (-SO_3H, etc.) can be introduced according to the uses and desired functions.

Application

Catalyst, Gas-storage, Gas-separating membrane, Ion conducor, Electron device, Artificial photosynthesis

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