

Porous Coordination Polymer with Superhydrophobicity

For the Development of Absorbent for Organic Solvent with High Water Stability

[Inventor] Masakazu Higuchi, Institute for Integrated Cell-Material Sciences, Kyoto University

Description

This invention provides for porous coordination polymer (PCP) having superhydrophobicity on the surface, which is capable of selectively absorbing various gas molecules such as water vapor and CO₂ as well as aromatic organic solvent in pores.

Among organic/inorganic porous compounds that have pores in the solid structures, PCP, which are made of metal ion and organic ligand, has been attracting attention for its applicability for gas storage, separation and catalyst. However, conventional PCP can be decomposed easily with water, thus has limitations in the practical use.

Researchers at Kyoto University have developed a superhydrophobic PCP using aromatic ring with a specific structure as an organic ligand. This PCP selectively absorbs organic solvent such as benzene and toluene or gas molecule such as CO₂ and water vapor in pores.



Novel PCP powders repelling a water drop

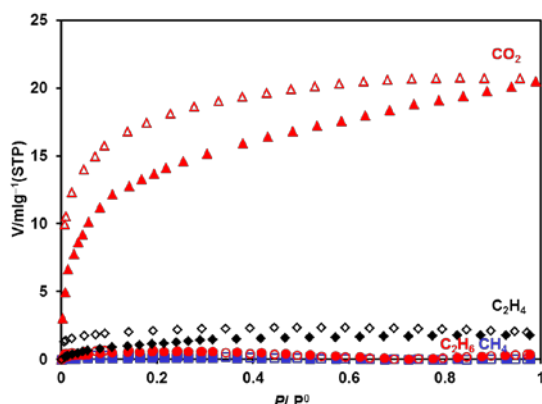


Fig. CO₂/methane/ethane/ethylene absorption isotherm at 195K of PCP after degassing

Advantage

- Superhydrophobic porous coordination polymer (Water contact angle over 150°)
- Selective absorption of various aromatic organic solvent (benzene, toluene) dispersed in water

Stage of research

Fundamental material development is completed. We are seeking licensing /collaborative development opportunities for the industrial applications of the developed PCP.

Potential Applications

- ◆ Water-repellent coating
 - Drip-proof material
 - Rust-proof material
 - Antifouling against aqueous stain
 - Better cleaning with cascade system
 - Ice/snow accretion preventive material
- ◆ Absorbent for aromatic organic solvent
 - Benzene
 - Toluene

Intellectual Property

JP Patent pending
Applicant : Kyoto university

Contact Information

Naoko Fujita
Licensing Associate, Kansai TLO Co.,Ltd.
Email: fujita@kansai-tlo.co.jp
Phone: +81 (75) 753-9150/ +81 (75) 353-5890



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