



Conjugated Porous Organic Polymers for Gas Capture and Separation

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■ Conjugated organic polymers, possessing intrinsic properties of large surface areas, high thermal and chemical stabilities, and low skeleton density, exhibit potential applications in gas storage and separation. Based on special spirocyclic or propeller-like monomers, various heteroatom-containing organic microporous polymers were prepared through a wide variety of C–C coupling reactions and further characterized at the molecular level by ^{13}C CP/MAS NMR spectrum, as well as other techniques. All the obtained polymers are chemically and thermally stable. According to the obtained nitrogen physisorption isotherms, the BET specific surface area for these polymers varies between 700 and $2200\text{ m}^2\text{g}^{-1}$. The sorption measurements show the polymers possess nice adsorption capacity to hydrogen and carbon dioxide, showing a good gas separation of carbon dioxide over methane/nitrogen.