学科进展系列报告

Porous Metal and Covalent-Organic-Materials: Hydrogen Storage, Carbon Capture and Proton Conduction

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Rahul Banerjee's research interests include the study of structural chemistry with the flavor of chemical synthesis to design new materials for hydrogen storage and carbon sequestration. Additionally, his group is also engaged in design and synthesis of lightweight materials for storage, capture and proton conduction.

Recent work in hydrogen storage and CO_2 sequestration has been overwhelmingly dominated by the use of a narrow range of materials. Our strategy is aimed at the development of new materials systems where the host-guest interactions are intermediate between those found in the carbons and the metal hydrides. Little improvement in water stability was achieved by pyridine doping and alkylation of Covalent Organic Framework(COF) pore walls. However these modifications always lead to decrease in the gas adsorption properties. Here we report the first time synthesis of new COFs by a combination of reversible and irreversible organic reaction.