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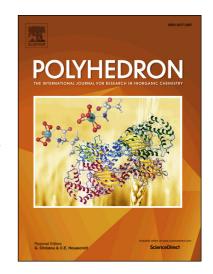
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Synthesis, crystal structure and adsorption property of a microporous

Cd(II) metal-organic framework based on

1H-imidazo[4,5-f][1,10]phenanthroline

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Abstract

A microporous metal-organic framework (MOF), $[Cd(IP)Cl]_n$ (1, HIP = 1H-imidazo[4,5-f][1,10]phenanthroline), with 1D square channels along the c axis was constructed through the solvothermal method. Because of the polar nitrogen atoms and the π -electron-rich ligand, activated MOF 1a presents a strong interaction with CO₂, showing selective capture of CO₂ from a mixture of CO₂/N₂. Additionally, MOF 1a also shows significant selective capture of CO₂ from CO₂/CH₄ and CO₂/C₂H₄ mixtures due to the sieving effect of the 1D channels. The column breakthrough experiment results further confirmed that microporous MOF 1a could be used as a potential porous material for selective CO₂ adsorption.

Keywords: metal organic frameworks; gas separation; CO₂ separation.

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