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Coordination Polymers from Amine-Based Ligands

By directly incorporating amine functionality into the ligand, the adsorption of CO2 into porous coordination polymers has been shown to be increased in comparison to the unfunctionalised frameworks. Using small polyamines such as diethylenetriamine and 1,4-bis(aminomethyl)benzene to synthesise the ligands N,N″-(4-carboxybenzyl)-N,N′,N″-(carboxymethyl)-diethylenetriamine (H5L1) and N,N′-di(4-carboxybenzyl)-1,4-bis(aminomethyl)benzene (H4L2), which contain tertiary amines along the core of the ligand. Both L1 and L2 ligands are able to form three-dimensional coordination polymers which contain moderate solvent free void volumes. The framework poly-[Cd3(L1)(OH2)]·2H2O contains 1D square solvent channels with 23 % void volume, a CO2 uptake of 66 cm3/g at 273 K and maintains crystallinity in water. The framework poly-[Cd2(L2)(OH2)] contains 1D hexagonal solvent channels with 37 % void volume.

Keywords or phrases (comma separated)

Porous coordination polymers

Are you a student?

Yes

Do you wish to take part in</br>the Student Poster Slam?

No

Are you an ECR? (<5 yrs</br>since PhD/Masters)

No

What is your gender?

Male

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