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Ansto



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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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