MS33-P14 | CONSTRUCTING EXTENDED BISMUTH(III) STRUCTURES USING TRIDENTATE ORGANIC LINKERS

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Reticular chemistry entails a 'building block' approach to developing porous compounds that extend infinitely in 1-3 dimensions [1]. Primarily approached using transition-metal-based nodes, less has been developed around metals with more flexible coordination geometries, such as bismuth.

Bismuth is a non-toxic metal element of known medicinal value – currently used to treat gastrointestinal problems. A small range of metal-organic framework (MOF) materials has been developed through the employment of the same carboxylate-based linkers as used to produce *d*-block-based MOFs [2]. Few instances of polymeric bismuth complexes utilising non-carboxylate organic linking ligands have been reported to date.

We are exploring the structural chemistry of extended bismuth-based frameworks primarily through the tridentate 2,6-pyridinedicarboxylic acid (PDC) backbone as an organic linking moiety [3]. The crystal structures of several Bi-PDC-based coordination polymers are presented and shown to possess a consistent coordination environment from which multidimensional frameworks evolve. A node consisting of bismuth bound by two tridentate PDC moieties is apparent, capable of forming a Bi_2O_2 cluster through carboxylate bridging interactions. Through this, rigid, charge-neutral frameworks might be constructed in a predictable manner.

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[2] G. Wang, Y. Liu, B. Huang, X. Qin, X. Zhang, Y. Dai*, Dalton Trans*, 2015, **44**, 16238-16241
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