Crystalline Cu(ii) metal–organic frameworks based on a carboxamide pincer ligand and an NCONCON–Pd(ii) pincer complex

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Abstract

Two new metal–organic frameworks (MOFs) with copper(II) paddlewheel secondary building units are presented. Cu-MOF and Pd@Cu-MOF were prepared in open air at room temperature from a pincer ligand 4,4′-((pyridine-2,6-dicarbonyl)bis(azanediyl))dibenzoic acid (L1) and a pincer complex NCONCON–Pd(II) (C1), respectively. The two crystalline 2-D frameworks Pd@Cu-MOF and Cu-MOF were characterized as microporous materials with Brunauer–Emmett–Teller (BET) surface areas of 12 m2 g−1 and 33 m2 g−1, respectively. Gas adsorption experiments revealed a low uptake of carbon dioxide by these materials attributed to crystal-to-crystal transformation of the MOFs upon activation.