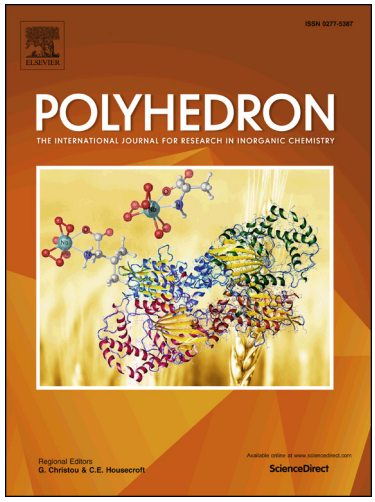

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Syntheses, crystal structures and knoevenagel condensation reactions of three coordination polymers assembled with Lewis basic ligand

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ABSTRACT

Three functional coordination polymers (CPs), $[(CH_3)_2NH_2]_2[Cd_3L_2(H_2O)_2]\cdot 6H_2O$ (**1**), $[Ba_4L_2(H_2O)_8]\cdot H_2O$ (**2**) and $[Zn(H_2L)(H_2O)_2]\cdot H_2O$ (**3**) (H_4L = 3,5-bis(3',5'-dicarboxylphenyl)-1H-1,2,4-triazole), were synthesized under solvothermal conditions. Structures of **1**-**3** were confirmed by crystallography and further physically characterized by elemental analysis, IR and TG. **1**-**3** exhibit fascinating multi-dimensional framework structures. Knoevenagel condensation reactions were systematically investigated by using **1-3** as heterogeneous catalysts under solvent-free conditions. Among them, **1** as a recyclable catalyst shows highly efficient catalytic performance in respect to **2** and **3**, which may be attributed to the open Lewis base sites and Lewis acid Cd(II) sites in the open channel of **1**.

Keywords: Coordination polymers · Knoevenagel condensation · Heterogeneous catalyst · Crystal structure