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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), $[(\text{CH}_3)_2\text{NH}_2]_2[\text{Cd}_3\text{L}_2(\text{H}_2\text{O})_2] \cdot 6\text{H}_2\text{O}$ (**1**), $[\text{Ba}_4\text{L}_2(\text{H}_2\text{O})_8] \cdot \text{H}_2\text{O}$ (**2**) and $[\text{Zn}(\text{H}_2\text{L})(\text{H}_2\text{O})_2] \cdot \text{H}_2\text{O}$ (**3**) ($\text{H}_4\text{L} = 3,5\text{-bis}(3',5'\text{-dicarboxylphenyl})\text{-1H-1,2,4-triazole}$), 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

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