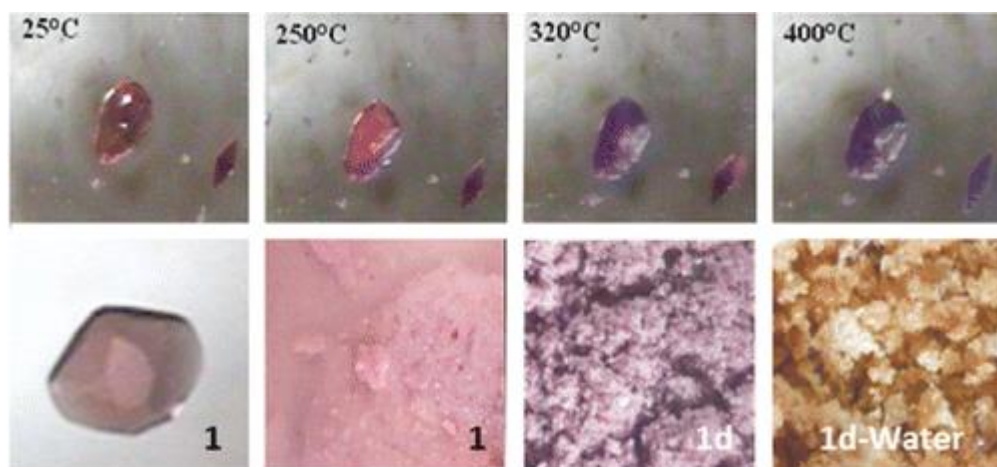


Concomitant Metal Organic Frameworks of Cobalt(II) and 3-(4-Pyridyl)benzoate: Optimized Synthetic Conditions of Solvatochromic and Thermochromic Systems

Abstract



Two coordination networks, $\{[\text{Co}(34\text{pba})_2]\cdot\text{DMF}\}_n$ (1 and 2), where 34pba is 3-(4-pyridyl)benzoate, were prepared by solvothermal methods. 1 is a three-dimensional metal organic framework formed by linking $[\text{Co}_2(34\text{pba})_8]$ clusters in a bcu net. 2 consists of single $[\text{Co}(34\text{pba})_4]$ units in a tetragonal plane net of sql topology. The thermal conditions leading to their selective synthesis were established: 120 °C for 1 and 75 °C for 2. Their structures were solved and their thermal behavior was investigated. Further experiments established the activation energy for the desorption of the DMF molecules entrapped in their framework: 76(6)–106(16) kJ mol⁻¹ for 1 and 49(3)–58(3) kJ mol⁻¹ for 2. For 1, sorption experiments were carried out to demonstrate the ability of the coordination network to absorb different solvents, and the framework solvatochromic response was also ascertained