

Abstract

Coordination polymers of [Zn(INA)₂] (1) (INA = isonicotinate), [Cu₂(mal)₂(H₂O)₂(bipy)] (2) (mal = malonate, bipy = 4,4-bipyridine), and [Zn₂(OAC)₄(bipy)₂] (3) (OAC = acetate) were prepared using mechanochemical grinding and heating methods. The materials were characterized with elemental analysis, FT-IR spectroscopy, TGA, SEM, EI-MS, BET, and PXRD. Comparison of PXRD patterns of the materials with patterns simulated from single-crystal X-ray diffraction data allowed identification of the products. Compared to conventional synthetic techniques such as solvothermal/hydrothermal solvent-based methods, solvent-free method was found to be simple, highly efficient, and environmentally friendly especially for the preparation of these coordination polymers on a large scale. Solvent-vapor interaction properties of 1, 2, and 3 were investigated by exposure of the compounds to water and methanol at room temperature.