Synthesis and Crystal Structures of Copper(II), Zinc(II), Lead(II) and Cadmium(II) Tetrazole-5-carboxylate Complexes Generated via in situ Hydrolysis Reaction

Jun-Feng Koua, Meng Su a, Yu-Hong Zhang a, Zhan-Dong Huang a, Seik Weng Ng b, and Guang Yang a

a Department of Chemistry, Zhengzhou University, Zhengzhou 450001, China
b Department of Chemistry, University of Malaya, 50603, Kuala Lumpur, Malaysia

Reprint requests to Prof. Guang Yang. E-mail: yang@zzu.edu.cn

Z. Naturforsch. 2010, 65b, 1467 –1471; received July 12, 2010

Four metal complexes, namely [Cu2(ttzCOO)2(H2O)4]·4H2O (1), [Zn2(ttzCOO)2(H2O)6]·2H2O (2), [Pb(ttzCOO)(H2O)]n (3), and {[Cd(ttzCOO)(H2O)]·1/2H2O}n (4), where ttzCOO2− = tetrazole-5-carboxylate dianion, have been prepared by the reaction of the sodium salt of 1H-tetrazole-5-carboxylic acid ethyl ester in aqueous methanolic solution at room temperature with CuCl2, ZnI2, Pb(NO3)2, or Cd(NO3)2, respectively. The compounds were characterized by elemental analysis, IR spectroscopy, TG-DSC analysis and single-crystal X-ray diffraction. While 1 and 2 are structurally similar dinuclear complexes, 3 and 4 exhibit a 1D chain structure and a 3D polymeric framework, respectively.

Key words: Tetrazole-5-carboxylate, Complex, in situ Synthesis, Structure