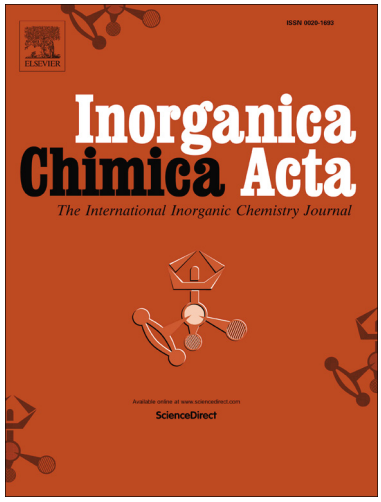

Review article

Structural diversity of 1,3-propylenediaminetetraacetato metal complexes: from coordination monomers to coordination polymers and MOF materials

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Structural diversity of 1,3-propylenediaminetetraacetato metal complexes: from coordination monomers to coordination polymers and MOF materials

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Abstract

1,3-propylenediaminetetraacetic acid (1,3-H_4pdta, $C_{11}H_{18}N_2O_8$) is an aminopolycarboxylic acid and has been researched widely. It is a hexadentate ("six-toothed") ligand as a typical chelating agent. In neutral solution, it mainly formed water-soluble monomeric coordination complexes $[TM(1,3\text{-pdta})(H_2O)_x]^{y-}$ (TM = transition metal; x = 0,1; y = 1,2) when coordinated with first transition metals. When involving lanthanide complexes, monomeric and dimeric complexes, different kinds of one-dimensional (1D) and two-dimensional (2D) coordination polymers were isolated. In acidic solution, the coordination modes of 1,3-pdta ligand were widely increased with the variation of acidity and temperature of the solution.

Keywords: 1,3-propylenediaminetetraacetic acid; coordination complex; coordination polymer; coordination mode; transition metal; lanthanide

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