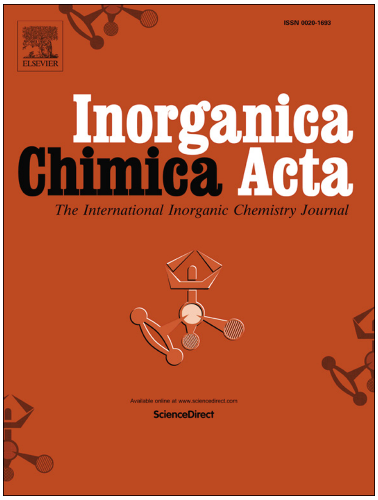

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Construction of Mononuclear Macrocyclic and Dinuclear Acyclic Schiff Base Complexes via Cadmium(II)–Ion Template: Synthesis, Characterisation, and Crystal Structures

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Abstract

Using a metal template approach a series of mono and dinuclear cadmium(II) were synthesized by Schiff base condensation of a pendant armed dialdehyde, i.e. 2-[3-(2-formylphenoxy)-2-hydroxypropoxy] benzaldehyde (PL) with selection of different diamines, diethylenetriamine, dipropylenetriamine, 1,2-diaminopropane and 1,2-diaminoethane. Depending on the nature of the diaminoalkane spacers and metal ion, 1:1 (metal:ligand) macrocyclic (L1OH and L2OH) or 2:1 (metal:ligand) acylic ($L3O^-$ and $L4O^-$) complexes of cadmium(II) were obtained. With the longer spacers diethylenetriamine and dipropylenetriamine ring closure around the cadmium ion was observed and [1+1] macrocyclic Schiff base ligands (L1OH and L2OH) were formed. With the shorter spacers 1,2-diaminopropane and 1,2-diaminoethane ring closure was not observed. Interestingly, the dialdehyde PL reacted with two molecules of diamine, forming intermediate product acyclic Schiff base [1+2] ligands ($L3O^-$ and $L4O^-$) that are coordinated to two cadmium ions

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