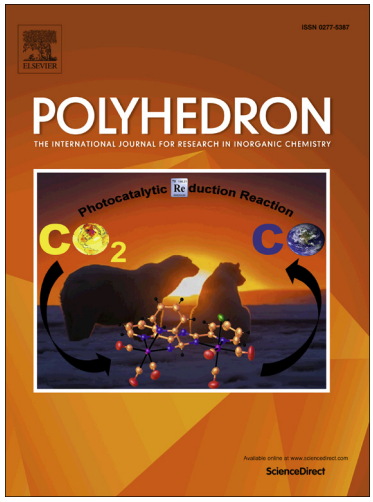

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Solid-state Conversion of a Three-dimensional Sodium(I) Coordination Polymer with Micro Trigon Morphology to Two-dimensional Silver(I) Coordination Polymer Nanostructures

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Abstract

The solid-state conversion of a Na^{I} coordination polymer with a micro trigon morphology, synthesized by a sonochemical procedure, to Ag^{I} coordination polymer nanostructures has been observed upon mechanochemical reaction of the compound $[Na_2(OBA)(H_2O)]_n$ (**1**), [H_2OBA = 4,4′-oxybis(benzoic acid)] with $AgNO_3$. During this conversion, one coordinated H_2O molecule was removed and two types of Na atoms were replaced with one type of Ag atom in $[Ag_2(OBA)]_n$ (**2**). In addition, the OBA^{2-} ligand, with μ_8 coordination mode in **1**, showed a μ_6 coordination mode in **2**. The angle of the two aromatic rings of the OBA^{2-} ligand is changed from 57.03° in **1** to 59.46° in **2**. IR spectroscopy, X-ray powder diffraction (XRD) and thermo gravimetric and differential thermal analyses (TG-DTA) indicated that this conversion is irreversible.

Keywords: Coordination polymer, Sonochemical, Mechanochemical, Solid-state, Conversion, Nanostructure.