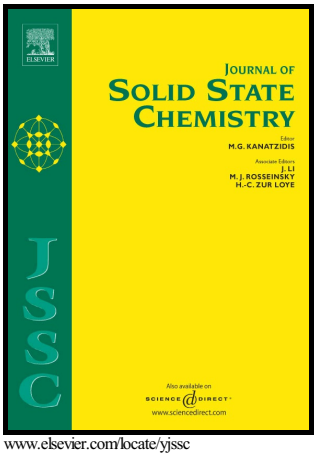

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A 3D Metal-Organic Framework with a pcu Net Constructed from Lead(II) and Thiophene-2, 5-dicarboxylic Acid: Synthesis, Structure and Ferroelectric Property

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Abstract

Self-assembly reaction of $Pb(NO_3)_2$ with thiophene-2, 5-dicarboxylic acid (H_2TDC) led to an acentric three-dimensional (3D) metal-organic framework under solvothermal conditions, namely, Pb(TDC) (**1**). The 3D framework of **1** is a pillared-layer structure with the $\mathbf{I}^2\mathbf{O}^1$ type which is composed of a 2D inorganic Pb–O–Pb substructural layer and two independent μ_6-TDC^{2-} anions pillars. This 3D framework shows a six-connected **pcu** topological net according to the topological analysis. Compound **1** crystallizes in an acentric space group and displays potential ferroelectric property which could be due to the swing of the thiophene rings. The