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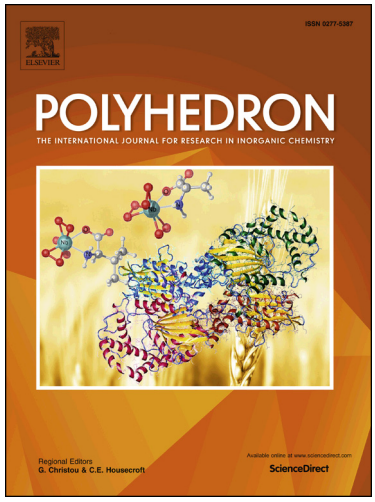

A Novel 3D Self-Penetrating Metal–Organic Framework with Unprecedented 7-Connectivity and Entangled Pattern

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A Novel 3D Self-Penetrating Metal–Organic Framework with Unprecedented 7-Connectivity and Entangled Pattern

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Abstract: A novel (4,4,7)-connected 3D self-penetrating network with unprecedented 7-connectivity, has been constructed using 1,4-bis(2-methylbenzimidazol-1-ylmethyl) benzene and 3,3',4,4'-Benzophenonetetracarboxylic acid as co-ligands. It represents an unusual self-penetrating pattern with the entanglements of nonequivalent 4- and 6-membered shortest rings.

Keywords: Self-penetrating network; 7-Connectivity; Nonequivalent shortest rings; Entangled pattern

1. Introduction

Metal–organic frameworks (MOFs) with entangled architectures, such as the most common interpenetrating nets, polyrotaxane structures, self-penetrating nets etc., are of great attention [1-7]. It is not only because of their intrinsic aesthetic appeal and complicated molecular architectures as well as topological features [8-13], but also for their potential application, such as gas adsorption, molecular electronic devices, and so on [14-18]. Compared to the interpenetrating nets (the polymeric equivalents of catenanes and rotaxanes) and other intertwining nets, the self-penetrating frameworks, have attracted much higher interest [19-23]. These structures are mainly sole networks where