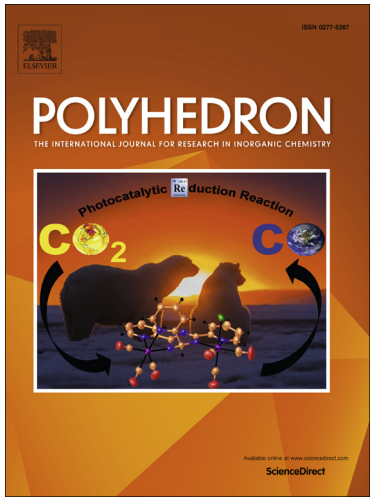

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Anion directed Cu(I) complexes constructed from a benzotriazole derivative and their photoluminescence

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Abstract

Two luminescent Cu(I) complexes employing a V-shaped flexible ligand have been prepared, namely $\{Cu(pbmb)(ClO_4)\}_n$ (**1**) and $\{Cu(pbmb)Br\}_n$ (**2**), [pbmb = 1-((2-(pyridine -3-yl)-1H-benzoimidazol-1-yl)methyl)-1H-benzotriazole]. Complex **1** takes on a 2D network architecture and complex **2** features a 1D chain structure, both of which are constructed from a binuclear metallacycle unit. Photoluminescence measurements indicate that with a temperature reduction, the increased lifetimes in the millisecond range and the large Stokes shift agree with strong intense phosphorescence emissions for **1** and **2**.

Keywords: Flexible benzotriazole-based linker; Cu(I) complexes; Crystal structure; Photoluminescence properties

1. Introduction

There has been great interest in phosphorescent transition metal complexes because of their intriguing framework structures and their widely potential applications in various areas, such as chemical sensors/probes, biological labelling, organic light-emitting devices (OLEDs) and sensitizers in photovoltaic devices [1]. Although the preparation of such complexes is usually dominated by various factors, the influences of inorganic and organic components are indispensable [2]. Therefore, the combination of the characteristics of the organic and inorganic components may lead to unique solid-state structures and unusual physical properties in building novel multifunctional materials.