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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  $\{\text{Cu}(\text{pbmb})(\text{ClO}_4)\}_n$  (**1**) and  $\{\text{Cu}(\text{pbmb})\text{Br}\}_n$  (**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.

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