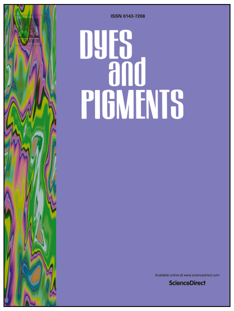

Structural and photochromic modulation of dimethylbenzotriazolium iodoargentate hybrid materials

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Structural and Photochromic Modulation of Dimethylbenzotriazolium Iodoargentate Hybrid Materials

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ABSTRACT: Using *in situ* methylated benzotriazolium as structural directing agent and moderate electron acceptor, three iodoargentate hybrids, [DMBTz][AgI_2] (**1**), [DMBTz][Ag_4I_5] (**2**) and $[DMBTz]_2[Ag_5I_7]$ (**3**) ($DMBTz^+$ = dimethylbenzotriazolium), have been solvothermally synthesized. Three compounds present a regularly structural variation from 1-D polymeric chain (**1**), 2D layer (**2**) to 3D open framework (**3**) and structure-dependent electron transfer photochromism.

Keywords: Dimethylbenzotriazolium; iodoargentate; organic-inorganic hybrid; photochromism; intermolecular electron transfer

1. Introduction

Since the photochromic tetracene was reported by Fritsche in 1867 [1], photochromism have received considerable attention and photochromic materials based on diverse compositions and mechanism have been widely investigated due to their potential applications in ophthalmics, cosmetics, actinometry and heat measurement, optical memories (data storage, filters, optical switches, displays, etc.), and so on [2]. Especially, photochromic organic-inorganic hybrids composed of electron donor-acceptor units have attracted intense interest owing to their tunable electron transfer (ET) [3]. Among these numerous photochromic hybrids are mainly formulated as chlorometallates [4], carboxylates [5], zoelites [6], and phosphates [7], which exhibit excellent compositional and structural dependence, as well as potential synergistic effect. To ensure efficient ET and sufficient stability of resulted organic