

A novel 2D coordination network built from hexacopper(I)-iodide clusters and cage-like aminophosphine blocks for reversible "turn-on" sensing of aniline.

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Streszczenie

A new copper(I) coordination polymer $[\text{Cu}_6(\mu_3\text{-I})_6(\mu_3\text{-PTAO})_2]_n$ (**1**) was prepared from copper(I) iodide and 1,3,5-triaza-7-phosphaadamantane-7-oxide (PTAO). The crystal structure of **1** reveals an intricate 2D coordination network constructed from the hexacopper(I)-iodide $[\text{Cu}_6(\mu_3\text{-I})_6]$ cluster units with the **4M6-1** topology interlinked by the μ_3 -PTAO spacers. An overall 2D layer network can be simplified to a binodal 3,6-connected net with the **kfd** topology. A derived **1@paper** material was prepared by impregnating compound **1** onto a filter paper. Detailed investigation of the luminescence properties for **1** and **1@paper** in the solid state revealed a remarkable ability of both materials to sense aniline molecules in liquid and vapor phases at room temperature. The visibility to the naked eye and the reversible color response of **1** and **1@paper** upon contact with aniline make these materials rather promising candidates for application as "turn-on" luminescence sensors for aniline recognition at room temperature. Visual aniline sensing detection limits of 0.26 and 0.065 ppb were observed for **1** and **1@paper** under ambient conditions, respectively.

Adres publiczny

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<https://www.rsc.org/>

