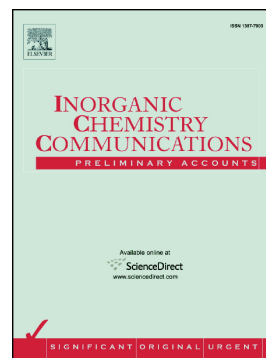


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Semiconductive 1D nanobelt iodoplumbate hybrid with high humidity response

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Abstract

Owing to the structural diversity and potential applications in optoelectronic devices, inorganic-organic hybrid materials have attracted extensive attentions in recent years. They are widely used in the fields of fluorescence, photoconductivity, ferroelectricity and solar cells. A new compound, $[(\text{Et}_2)\text{HDABH}(\text{Et}_2)]_2\text{Pb}_5\text{I}_{14}\cdot 2\text{H}_2\text{O}$ (DAB = benzidine), was solvothermally synthesized using $[(\text{Et}_2)\text{HDABH}(\text{Et}_2)]^{2+}$ as templates and balance cations. The structure is consisted of one-dimensional (1D) nanobelt iodoplumbate, $[(\text{Et}_2)\text{HDABH}(\text{Et}_2)]^{2+}$ dications and water molecules. The compound exhibits typical semiconductive behaviors, whose conductivity increases along with the raising of temperature. The compound also shows high electrical response to humidity, which indicates great potential application in humidity quantitatively detecting.

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