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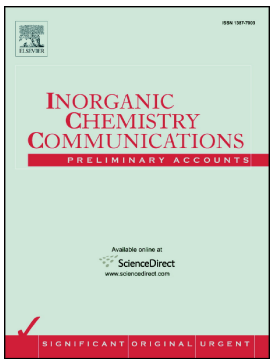

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Hui Zhang, Shan-Shan Yu, Hai-Bao Duan

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A hybrid crystal with high dielectric constant and relaxation dielectric behavior

Hui Zhang, Shan-Shan Yu and Hai-Bao Duan*

Shan-Shan Yu and Hui Zhang have contributed equally

Key laboratory of Advanced Functional Materials of Nanjing, Nanjing Xiaozhuang University, Nanjing 211171, P. R. China

Tel.: +86 25 86178274

Fax: +86 25 86178274

E-mail: duanhaibao4660@163.com

Abstract

In this study, the crystal structure and dielectric properties of the iodoplumbate-based hybrid crystal, $[C_6Apy][PbI_3]$ (**1**) (C_6-Apy^+ = 1-hexyl-4-aminopyridinium) have been investigated. The hybrid crystal belongs to the orthorhombic system with space group *Pbca* at room temperature and is composed of one dimensional inorganic chains. The organic cation is incorporated into the space between the inorganic chains along the b-axis. This is a rare inorganic-organic hybrid compound which exhibits a very high dielectric constant at room temperature. A typical dielectric relaxation is observed in the temperature range of 60-130 °C. The dielectric relaxation process exhibits an Arrhenius-type temperature dependence with an activation energy of 0.950 eV. The results indicate that this hybrid, possessing a high dielectric constant, could be a promising actuator material.

Keywords: Iodoplumbate-based hybrid, high dielectric constant, dielectric relaxation

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