

X-ray structure and investigation of molecular motions by dielectric, vibrational and ^1H NMR methods for two organic-inorganic hybrid piperazinium compounds:
 $(\text{C}_4\text{H}_{12}\text{N}_2)_2[\text{Sb}_2\text{Cl}_{10}]\cdot 2\text{H}_2\text{O}$ and $(\text{C}_4\text{H}_{12}\text{N}_2)_2[\text{Sb}_2\text{Br}_{10}]\cdot 2\text{H}_2\text{O}$

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Rok wydania

2018

Czasopismo

Materials Research Bulletin

Numer woluminu

104

Strony

202-211

DOI

10.1016/j.materresbull.2018.03.048

Kolekcja

Naukowa

Język

Angielski

Typ publikacji

Artykuł

Streszczenie

Bis(piperazine-1,4-dium) decabromodiantimonate(III) dihydrate, $(\text{C}_4\text{H}_{12}\text{N}_2)_2[\text{Sb}_2\text{Br}_{10}]\cdot 2\text{H}_2\text{O}$, (abbreviated as **PSB**) has been synthesized and characterized by single-crystal X-ray diffraction studies. The obtained results indicate that **PSB** is isostructural with a recently described chloride analogue, $(\text{C}_4\text{H}_{12}\text{N}_2)_2[\text{Sb}_2\text{Cl}_{10}]\cdot 2\text{H}_2\text{O}$ (**PSC**), crystallizing with $\text{R}_2\text{MX}_5\cdot n\text{H}_2\text{O}$ stoichiometry and characterized by the discrete zero-dimensional anionic species. The crystal structure of **PSB** is described by monoclinic symmetry in $aP2_1/n$ space group. Dielectric measurements (down to 25K) and IR spectral analyses (measured over a broad temperature range) suggested a much more complicated phase situation below 80K than for that of **PSC**. To verify and compare the molecular motions of the organic cations in both analogues, a proton magnetic resonance (^1H NMR) technique was also applied.

Słowa kluczowePiperazine-1,4-dium, phase transition, Dielectric, ^1H NMR, IRAdres publiczny<https://doi.org/10.1016/j.materresbull.2018.03.048>Strona internetowa wydawcy<http://www.elsevier.com>

Plik został wygenerowany dnia 2026-04-24 22:35:56

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