

Structural characterization and properties of [4-CH₃C₅H₄NH][SbBr₄]. The mechanism of phase transitions in 4-methylpyridinium bromoantimonates(III).

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Streszczenie

The crystal structure of [4-CH₃C₅H₄NH][SbBr₄] is determined at 297 K. The compound crystallizes in the monoclinic space group: . The structure consists of ions which form infinite chains through the crystal via halogen linkages. The anions are connected with the 4-methylpyridinium via weak NH...X hydrogen bonds. The phase situation was studied on two methyl-substituted pyridinium analogous: [4-CH₃C₅H₄NH][SbBr₄] and [4-CH₃C₅H₄NH]₂[SbBr₅] with the differential scanning calorimetry and dilatometric methods. The former derivative undergoes two structural phase transitions: at 351/349 K (heating-cooling) and at 385/381. [4-CH₃C₅H₄NH]₂[SbBr₅] reveals one phase transition at 426/419 K. The dielectric relaxation studies on [4-CH₃C₅H₄NH]₂[SbBr₅] in the frequency range between 800 Hz and 6 MHz indicate a presence of relaxation process below room temperature. The dielectric response is well explained in terms of an existence of two dielectric relaxators. The mechanism of the phase transitions in the studied crystals is discussed.

Słowa kluczowe

Halogenantimonates(III), Phase transition, X-ray diffraction, Dielectric

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