

Ferroelectric properties of $(C_5H_5NH)_5Bi_2Br_{11}$.

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Streszczenie

A new pyridinium compound, $(C_5H_5NH)_5Bi_2Br_{11}$, has been synthesized. The x-ray diffraction studies indicate that its structure is built up of four independent pyridinium cations and isolated $Bi_2Br_{11}^{2-}$ groups. At room temperature it crystallizes in the monoclinic space group $P2_1/n$. Two phase transitions of second- and first-order type are detected by the differential scanning calorimetry measurements at 118 and 405/403 K—on heating—cooling!, respectively. The corresponding anomalies in the linear thermal expansion at 118 and 405 K are observed along three crystallographic directions. The dielectric investigations reveal dielectric absorption and dispersion in the radio-frequency region. The experimental results were analyzed on the basis of dielectric formula which represents the sum of two independent relaxators. The pyroelectric measurements reveal that $(C_5H_5NH)_5Bi_2Br_{11}$ becomes ferroelectric below 118 K and is characterized by the appearance of spontaneous polarization of the order of $3 \times 10^{-23} C/m^2$ along the b axis.

Adres publiczny

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