Crystal structure, properties and phase transitions of morpholinum tetrafluoroborate $[C_4H_{10}NO][BF_4]$.

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Streszczenie

The crystal structure of $[C_4H_{10}NO][BF_4]$ is determined in the phase I at 160, 180, 240 and 290 K. At room temperature the compound crystallizes in the orthorhombic space group: Pnam. The structure is composed of the morpholinium cations, $[C_4H_{10}NO]^+$, which form one-dimensional hydrogen bonded chains, and $[BF_4]^-$ anions. $[C_4H_{10}NO][BF_4]$ undergoes two structural phase transformations: second-order at 153 K and first-order at 117/118 K (cooling/heating). The phase transitions are characterized with the differential scanning calorimetry, dilatometric and dielectric techniques. The possible mechanism of the phase transitions in $[C_4H_{10}NO][BF_4]$ is discussed on the basis of the presented results.

Słowa kluczowe

Morpholinium tetrafluoroborate, Hydrogen bond, X-ray, Phase transition, DSC, Dielectric

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