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Molten salt synthesis and magnetic anisotropy of multiferroic $Bi_4NdTi_3Fe_{0.7}Ni_{0.3}O_{15}$ ceramics

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ABSTRACT

Multiferroic $Bi_4NdTi_3Fe_{0.7}Ni_{0.3}O_{15}$ ceramics were prepared by molten salt synthesis (MSS). The equimolar mixture of NaCl and KCl was chosen as the salt and the mass ratio of chlorides/oxides was 4/1. The ceramic samples were obtained by dry pressing plate-like powders (synthesized by MSS) under low uniaxial pressure (10 MPa) and subsequently sintering at different temperatures without applied pressure. The phase structure and the morphology of the samples were analyzed by X-ray diffraction (XRD) and scanning electron microscopy (SEM). The ceramics are all of preferential *c*-axis orientation and the *c*-axis orientation degree, Lotgering factor *f*, decreases with increasing the sintering temperature (ST). The results of magnetic measurement indicated obvious magnetic anisotropy, i.e., the interactions between the magnetic ions in *aob* plane are larger than those along the *c* axis.

***Keywords*:** Molten salt synthesis; Aurivillius compounds; Multiferroic; Magnetic anisotropy

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