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Abstract

We have successfully fabricated Mn-doped wide band gap lead-free ferroelectric $Bi_{0.5}Na_{0.5}TiO_3$ by sol-gel technique. The band gap reduced from 3.12 eV to 1.71 eV as increasing doping Mn concentration level up to 9 mol%. The room temperature ferromagnetism in Mn-doped $Bi_{0.5}Na_{0.5}TiO_3$ samples was observed. The magnetic moment was around 2.69 μ_B/Mn at 5 K. We expected that this work will open the new direction for advance function of lead-free ferroelectric materials.

Key words: Sol-gel preparation; Lead-free ferroelectric; Ferromagnetism; Multiferroics; Perovskites

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