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0.94Na<sub>0.5</sub>Bi<sub>0.5</sub>TiO<sub>3</sub>-0.06BaTiO<sub>3</sub>:CoFe<sub>2</sub>O<sub>4</sub> composite  
ceramics with a deferred thermal depolarization

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# 0-3 type magnetoelectric $0.94\text{Na}_{0.5}\text{Bi}_{0.5}\text{TiO}_3$ - $0.06\text{BaTiO}_3$ : $\text{CoFe}_2\text{O}_4$ composite ceramics with a deferred thermal depolarization

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## Abstract

Developing  $\text{Na}_{0.5}\text{Bi}_{0.5}\text{TiO}_3$ -based magnetoelectric (ME) coupling composites with higher depolarization temperature is highly valuable for the environment-friendly smart electronic devices. We have developed a new kind of 0-3 type  $0.94\text{Na}_{0.5}\text{Bi}_{0.5}\text{TiO}_3$ - $0.06\text{BaTiO}_3$ : $x\text{CoFe}_2\text{O}_4$  (NBTBT: $x\text{CFO}$ ,  $x=0, 0.1, 0.2, 0.3$ ) composite ceramics with a deferred depolarization temperature, together with an additional strong ME coupling of  $9.2 \text{ mV/cm}\cdot\text{Oe}$  for the NBTBT:0.2CFO. The basic structure, ferroelectric/ferromagnetic properties, and the depolarization temperature of the NBTBT: $x\text{CFO}$  composite ceramics were investigated. It was found that an enhancement of depolarization temperature ( $>25^\circ\text{C}$ ) was obtained in these 0-3 type composites relative to the pure NBTBT ones ( $115^\circ\text{C}$  vs  $90^\circ\text{C}$ ). The mechanism of the

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