Microstructure and PTCR Behavior of Semiconducting
(1-x)BaTiO_3 - x(Bi_{0.5}K_{0.5})TiO_3 Ceramics
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Abstract: A positive temperature coefficient of electrical resistivity (PTCR) was investigated in a ferroelectric lead-free perovskite-type compound (Bi_{0.5}K_{0.5})TiO_3 within BaTiO_3-based solid solution ceramics. The electrical properties and the microstructure of (1-x) BaTiO_3 - x (Bi_{0.5}K_{0.5})TiO_3 (BBKT) ceramics made using a conventional mixed and have been synthesized by an ordinary sintering technique. The Curie temperature was obviously increased with increasing of (Bi_{0.5}K_{0.5})TiO_3 content. The BBKT ceramics (x=0.05) sintered at 1400°C for 4h display low resistivity values of 10^2-10^3 ohm-cm at room temperature, PTCR effect(jump) of 1.05*10^4, and the Curie temperature of T_c=141°C.

Key Words: PTC, Thermistor, Lead-free, BKT, Curie temperature