Study on Ferroelectricity of Nanocrystalline $BaTiO_3$ ceramics

Xiangyun Deng[1], Jianbao Li[1], Xiaohui Wang[2] and Longtu Li[2]

[1]College of Materials and Chemical Engineering, Hainan University, No. 58, Renmin Avenue, Haikou, Hainan Province, 570228, P.R. China

[2]Department of Materials Science and Engineering, Tsinghua University, Beijing 100084, China

Abstract

The bulk dense nanoceramics $BaTiO_3$ of grain size less than 100nm were prepared by the spark plasma sintering method. Raman spectroscopy revealed the dispersive phase transition character in the nanocrystalline $BaTiO_3$ ceramics. The $BaTiO_3$ ceramics of the nanograin of 15 nm exhibited the similar phase transformations from rhombohedral to orthorhombic to tetragonal to cubic transitions as those in the coarse $BaTiO_3$ ceramics.

Key words: nanocrystalline $BaTiO_3$ ceramics; preparation; microstructure; size effect