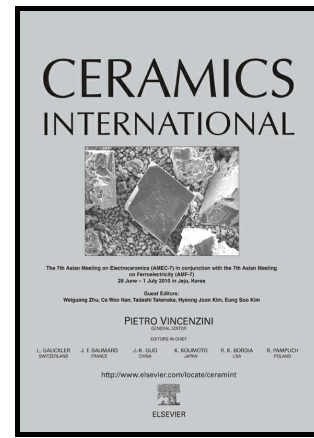


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Perovskite Structure and Low frequency Relaxor-like-Dielectric

Response of (Sr,Ce)TiO₃ Solid Solution

Burhan Ullah^{a,b}, Wen Lei^{a,b,*}, Xiao-Qiang Song^{a,b}, Xiao-Hong Wang^{a,b}, Wen-Zhong Lu^{a,b,*}

^aSchool of Optical and Electronic Information, Huazhong University of Science and Technology, Wuhan 430074, P.R. China. lwz@mail.hust.edu.cn (Wen-Zhong Lu).

^bKey Lab of Functional Materials for Electronic Information (B), Ministry of Education, Wuhan 430074, P.R. China. wenlei@mail.hust.edu.cn (Wen Lei).

Abstract

Phase composition, structure stability, cations valance state, and relaxor-like-dielectric behavior of Sr_(1-3/2x)Ce_xTiO₃ (SCT, $x = 0.3, 0.4$) solid solution were investigated systematically. The Sr_(1-3/2x)Ce_xTiO₃ samples appear to be single phase within the detection limits of the technique, whereas the solid solution exhibits the higher angle doublet and triplet peak splitting associated with (200) and (321). X-ray photoelectron spectroscopy (XPS) analysis showed that the Ce substitution induces change in the cations valance state upon oxygen vacancies formation. The system exhibits features of low-frequency dependent relaxor-like-dielectric behavior rather than sharp frequency-independent anomalies. Besides this, two kind of relaxations were detected in the temperature range ≥ 350 °C. According to the electric modulus and ac conductivity analysis, the relaxor-like-dielectric behavior results from the long-range conduction associated with ionized vacancies and mixed state of Ti^{3+/4+} and Ce^{3+/4+} cations.

Keywords: Perovskite solid solution; Electric Modulus; Relaxations and dielectric properties

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