The Second Russia-China Workshop on Dielectric and Ferroelectric Materials

ABSTRACT BOOK

September 11 – 14, 2015

RUSSIA, VORONEZH

Antiferroelectric to Ferroelectric Phase Transition of $PbZrO_3$-$Pb(Mg_{1/3}Nb_{2/3})O_3$ ceramics

Jiangtao Zeng,[1*] Wei Ruan, Guorong Li,[1] E.D. Politova,[2] A.V. Mosunov [2] and S.Yu. Stefanovich[2]

[1] Key laboratory of Inorganic Functional Ceramics and Integrated Devices, Shanghai Institute of Ceramics, Chinese Academy of Sciences, Shanghai, 200050, China
[2] L.Ya. Karpov Institute of Physical Chemistry, Moscow,Russia

*Corresponding author.: Jiangtao Zeng
e-mail address: zjt@mail.sic.ac.cn

The $(1-x)PbZrO_3$-$xPb(Mg_{1/3}Nb_{2/3})O_3$ ($0.05 \leq x \leq 0.10$) (PZPMN100x) ceramics were prepared by solid state reaction method, and their crystal structure and electrical properties were studied. The results showed that PZPMN100x ceramics were antiferroelectric with low PMN content ($x \leq 0.05$) and only a phase transition from antiferroelectric to paraelectric could be observed. With the increase of PMN content, there was another phase transition from antiferroelectric to ferroelectric appeared below the Curie temperature. PZPMN100x ceramics were ferroelectric at room temperature with further increase of the PMN content. The phase transition behavior of PZPMN100x in our study was different from previous reports. Electric field induced strain was measured and the mechanism for the phase transition was also discussed in this study.