Electronic supplementary information (ESI)

Structural phase transition, depolarization and enhanced pyroelectric properties of $(Pb_{1-1.5x}La_x)(Zr_{0.66}Sn_{0.23}Ti_{0.11})O_3$ solid solution

Fangping Zhuo[a], Qiang Li[*a], Jinghan Gao[a], Yujie Wang[a], Qingfeng Yan[a], Zhiguo Xia[b], Yiling Zhang[c] and Xiangcheng Chu[c]

[a]*Department of Chemistry, Tsinghua University, Beijing 100084, China. E-mail: qiangli@mail.tsinghua.edu.cn. Fax: +86-10-62771179; Tel: +86-10-62797871*

[b]*School of Materials Sciences and Engineering, University of Science and Technology Beijing, Beijing 100083, China*

[c]*State Key Laboratory of New Ceramics and Fine Processing, Tsinghua University, Beijing 100084, China*

The SEM images of the fracture surfaces of selected PLZST ceramics are presented in Fig. S1. The well-grown grains and well-defined grain boundaries are observed for all the selected ceramics with non-uniform grain size distribution. It can be clearly seen that the grain size is strongly influenced by the amount of La^{3+} content. The L0 sample has an average grain size of about 7 μm. As the content of La^{3+} increases, the grain size decreases to 5, 3 and 2 μm for L1, L2 and L2.4 samples, respectively. This reduction in grain size reveals that the aliovalent additives of La^{3+} ions can restrain grain growth in the PLZST ceramics.

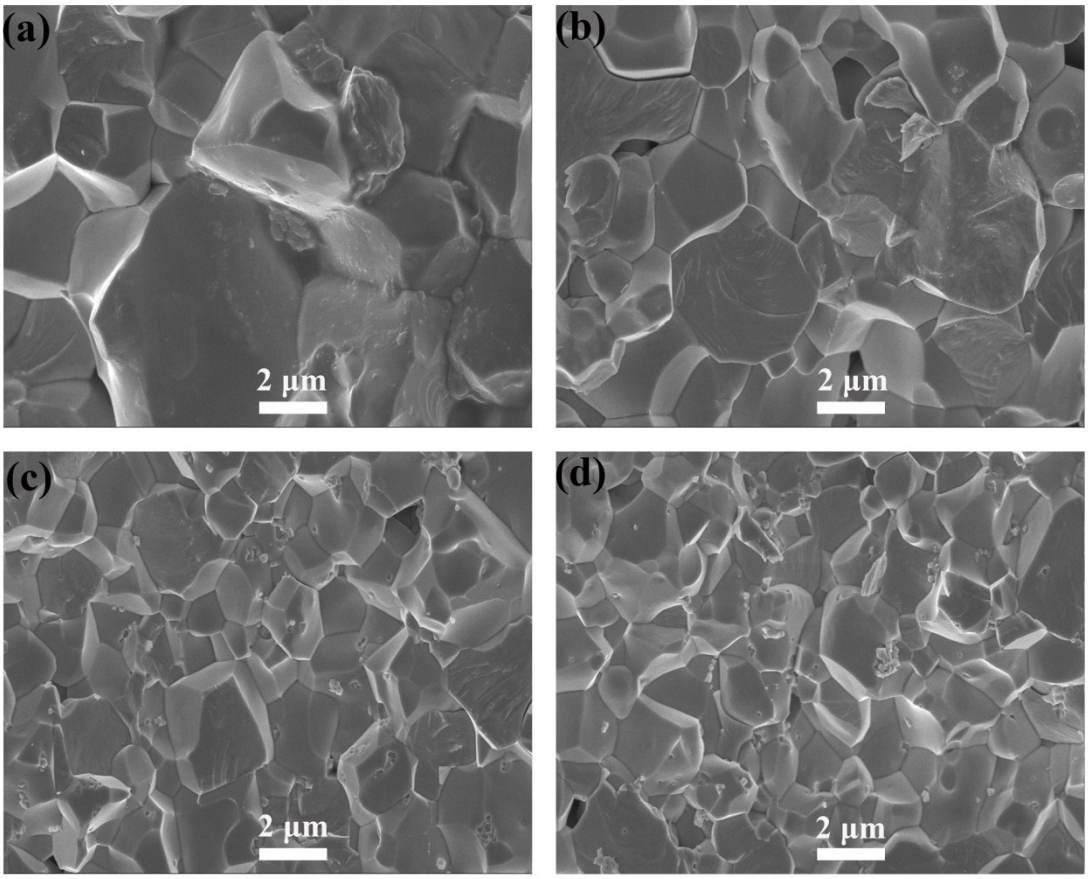

Fig. S1. SEM photographs of the fracture surfaces for part of the as-prepared ceramics. (a) $x = 0$, (b) $x = 0.01$, (c) $x = 0.02$, (d) $x = 0.024$.