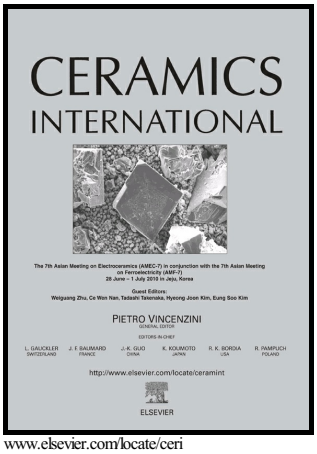

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H.H. Fan, C.C. Jin, Y. Wang*, H.L. Hwang, Y.F. Zhang

Key Laboratory for Thin Film and Microfabrication of Ministry of Education, Research Institute of Micro/Nano Science and Technology, Shanghai Jiao Tong University, Shanghai 200240, P. R. China.

ABSTRACT

Owing to its excellent piezoelectric and ferroelectric properties, $(Ba,Ca)(Ti,Zr)O_3$ (BCTZ) family is considered as one of the most promising piezoelectric materials to replace the lead-based piezoelectrics, such as $Pb(Zr,Ti)O_3$ et al.. In this study, a BCTZ nanowires (NWs) based piezoelectric nanogenerator (NG) was fabricated. BCTZ NWs were prepared by an electrospinning technique. The NG achieved an excellent piezoelectric performance with a maximum open-circuit voltage of 0.65 V and short-circuit current of 2.2 nA by bending periodically. Furthermore, the NG obtained a maximum voltage of 2.2 V and current of 90 nA by tapping it. Results indicate that the lead-free BCTZ has a huge application potential in biomechanical energy harvesting.

Keywords: BCTZ NWs; Nanogenerator; Lead-free; Wearable; dielectrophoresis.

*Corresponding authors: E-mail address: wangying@sjtu.edu.cn (Y. Wang).