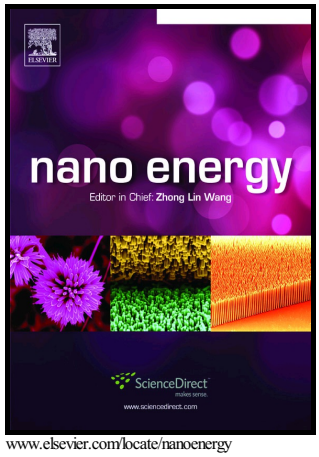

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High-performance piezoelectric composite nanogenerator based on Ag/(K,Na)NbO_3 heterostructure

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Abstract

In this study, Ag/(K,Na)NbO_3 heterostructure constructed by in-situ photoreduction reaction is firstly introduced to fabricate the flexible piezoelectric nanogenerator (p-NG). The chemical heterojunction can improve the partial voltage applied to the KNN particles during poling process, and significantly enhance the orientation of dipole moment under the electric field. The p-NG device with Ag/(K,Na)NbO_3 heterostructure generates two orders of magnitude higher output than the pure KNN-based device (240 VS. 3.5 V; 23 VS. 0.3 μA under mechanical stress of 0.1 MPa). The maximum instantaneous output power (1.13 mW) is higher than the previously reported lead-free composite-based piezoelectric nanogenerators.