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Influence of polarization on the electromechanical properties of GaN piezoelectric semiconductive ceramics

Minghao Zhao^{a,b,c,*}, Shuaijie Ma^a, Chunsheng Lu^d, Cuiying Fan^a, Guoshuai Qin^{b,*}

^a*School of Mechanical Engineering, Zhengzhou University, Zhengzhou, Henan 450001, China*

^b*School of Mechanics and Engineering Science, Zhengzhou University, Zhengzhou, Henan 450001, China*

^c*Henan Key Engineering Laboratory for Anti-fatigue Manufacturing Technology, Zhengzhou University, Zhengzhou, Henan 450001, China*

^d*School of Civil and Mechanical Engineering, Curtin University, Perth, WA 6845, Australia*

* Corresponding author: School of Mechanical Engineering, Zhengzhou University, Zhengzhou, Henan 450001, China.

E-mail address: memhzhao@zzu.edu.cn (M. H. Zhao).

* Corresponding author: School of Mechanics and Engineering Science, Zhengzhou University, Zhengzhou, Henan 450001, China.

E-mail address: gsqin0404@163.com (G. S. Qin).

ABSTRACT

By using three-point bending tests and numerical simulation, influence of polarization on the electromechanical properties of GaN piezoelectric semiconductive ceramics (PSCs) were investigated in this paper. The results show that the piezoelectricity of GaN PSCs can be attained through a special polarization treatment. For polarized samples under loading, because piezoelectric polarization charges and the electric field are concentrated at high-strain positions, their bending strength increases by 7%. Polarization results in a nearly 55% improvement of the electrical current transport capacity. Due to piezoelectricity, the electric displacement of polarized samples is also largely changed. It is shown that there is a strong correlation

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