Electronic Supplementary Material (ESI) for Journal of Materials Chemistry C.

Supporting Information

Effect of Composition Gradient on Domain Structure and Piezoelectric Properties in Mn-doped KNN Single Crystals

Yao Zhang,[a] Chengpeng Hu,*[a] Yu Wang,*[a] Xiaolin Huang,[a] Xuejie Sun,[a] Mingxuan Liu,[a] Bohan Xing,[a] Xing Wen,[a] and Hao Tian[a,b,c,d]

[a]School of Physics, Harbin Institute of Technology, Harbin 150001, China
[b]Key Laboratory of Micro-Nano Optoelectronic Information System, Ministry of Industry and Information Technology, Harbin 150001, China
[c]Collaborative Innovation Center of Extreme Optics, Shanxi University, Taiyuan, Shanxi 030006, China
[d]Heilongjiang Provincial Key Laboratory of Plasma Physics and Application Technology, Harbin 150001, China
*Corresponding Author:huchengpeng1988@163.com and wangyuphysics@hit.edu.cn

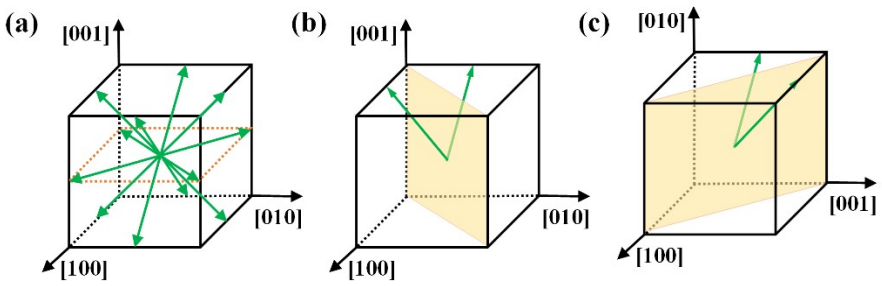

Figure S1. The spontaneous polarization of KNN single crystal at orthogonal phase. (a). A schematic of the domain wall of orthorhombic phase domains was observed from $[001]_C$ (b) and $[010]_C$ (c).

Table S1 The Composition gradients of Mn: KNN single crystals.

	point	Na（At %）	K（At%）	Na/(Na+K)	$CG=\frac{(\lvert c\text{-}a\rvert+\lvert d\text{-}b\rvert)}{2\cdot\Delta l}$ （mol% mm^{-1}）
$[001]_C$	a	12.64	13.36	0.486	0.005
	c	12.94	13.42	0.491	
	b	12.64	13.31	0.487	
	d	12.71	13.14	0.492	
$[010]_C$	a	12.44	13.32	0.483	0.018
	c	12.05	13.84	0.465	
	b	12.64	13.10	0.491	
	d	12.38	13.79	0.473	

Note: At% is the atomic percentage.