## Zero-Power Consumed Intruder Identification System by Enhanced Piezoelectricity of K<sub>0.5</sub>Na<sub>0.5</sub>NbO<sub>3</sub> using Substitutional Doping of BTO NPs

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**Figure S1** (a) and (b) XRD and Raman spectroscopy analysis of KNN and (1-x) KNN- x BTO Nanoparticles (c) hysteresis analysis of KNN and (1-x) KNN- x BTO pellets



**Figure S2** (a-e) FE-SEM morphology analysis of KNN and (1-*x*) KNN-*x* BTO Nanoparticles

(f) FE-SEM surface morphology of plain PDMS film



**Figure S3** (a) and (b) Output voltage comparison with respect to weight ratio of FPCF-PNG 2 device before and after poling (c) and (d) ) Output current comparison with respect to weight ratio of FPCF-PNG 2 device before and after poling



Figure S4 (a) and (b) Output voltage and current comparison of all FPCF-PNG devices



**Figure S5** Working mechanism of FPCF-PNG device (i) under no force condition there is no flow of electrons (ii) when a compressive force is applied on the device the electrons starts to flow from top to bottom electrodes and (iii) when the force gets released the electrons starts flowing in the opposite direction



Figure S6 (a) Energy stored in the commercial capacitors using FPCF-PNG 2 device (b)

Solid Composition	a (nm)	b (nm)	c (nm)	Volume (nm <sup>3</sup> )
KNN	0.7968	0.802	0.7966	0.5090
0.98 KNN-0.02BTO	0.4574	0.79164	0.5600	0.20278
0.96 KNN-0.04BTO	0.4593	0.8014	0.5640	0.2076
0.94 KNN-0.06BTO	0.4580	0.7940	0.5600	0.20365
0.92 KNN-0.08BTO	0.4589	0.8020	0.5640	0.20757

Lattice parameters and unit cell volume:

**Table S1**: Lattice parameter and unit cell volume of various compositions of KNN and (1-x) KNNxBTO NPs, where x = 0.02, 0.04, 0.06 and 0.08.