Electronic Supplementary Information

Piezoelectric Nanogenerator Promotes Highly Stretchable and Self-chargeable Supercapacitors

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Figure S1  Schematic description of the fabrication processes of the stretchable KNN/PVA/H$_3$PO$_4$ piezo-electrolyte film.
**Figure S2** FE-SEM image of the surface of stretchable graphene/SEBS electrodes.
Figure S3 FE-SEM image of the graphene powders.
Areal specific capacitance, areal energy density and power density of the stretchable SCSC device were calculated from the GCD curves according to the following equations:

\[ C_s = \frac{I \Delta t}{\Delta U S} \]  \hspace{1cm} (1)  
\[ E = \frac{C_s \Delta U^2}{7200} \]  \hspace{1cm} (2)  
\[ P = \frac{3600E}{\Delta t} \]  \hspace{1cm} (3)  

where I, Δt, ΔU, and S are the employed current, the discharge time, the operating potential window, and the practical active area of the device, respectively.
Figure S4 Relationship between the current density and areal capacitance of the stretchable SCSC under a normal state.
Figure S5 Long-term cycling performance of the SCSC under a constant current density of 2 $\mu$A cm$^{-2}$ under a normal state.
Figure S6 Areal capacitance of the stretchable SCSC at 0.5 μA cm$^{-2}$ under various stretching rates.
**Figure S7** Long-term cycling performance of the SCSC under a constant current density of 0.5 $\mu$A cm$^{-2}$ with a 80% elongation.
Figure S8 Voltage curve of a SC device assembled with pure PVA/H₃PO₄ electrolyte film without KNN addition under palm patting for 300 s.