Supporting information

Orientation-controlled crystallization of γ-glycine films with enhanced piezoelectricity

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Table S1. d$_{33}$ and output voltage of glycine-PVA films on different substrates.

<table>
<thead>
<tr>
<th>Substrates</th>
<th>d$_{33}$(pC/N)</th>
<th>Output voltage (V)</th>
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<tbody>
<tr>
<td>PMMA</td>
<td>3.44±0.93</td>
<td>0.93±0.26</td>
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<tr>
<td>PS</td>
<td>4.24±0.75</td>
<td>1.82±0.27</td>
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<tr>
<td>PDMS</td>
<td>1.56±0.65</td>
<td>0.36±0.08</td>
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<tr>
<td>PS+wall</td>
<td>6.18±1.13</td>
<td>2.91±0.32</td>
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Figure S1. Digital photograph of an as-grown film showing edge-nucleation and wafer scale size on PMMA, PS and PDMS substrates.
Figure. S2. Top-view optical microscope and cross-sectional SEM images of (a-b) nucleation site (marked with yellow box) and (c-d) growth front (marked with red box).

Figure. S3. (a) Polarized light microscopy image of glycine-PVA film and (b) SEM image of middle glycine layer on PS+wall substrate. Both images demonstrate that the elongated glycine crystals are 50-150 µm in width, and 100 µm average width.

Figure. S4. Multi-site d33 measurements of PS+wall films with different sizes of nucleation area. The magnitude of number on dynamic force meter (blue) is between 3-5, negative means it is compression force; the d33 meter (white) shows the real-time value of measured d33.
Figure S5. Images of d33 results under force of 3-5 pC/N for PVA-glycine-PVA films grown on PMMA, PS, PDMS and PS+wall substrates. Measurements were taken at different spot of a single film grown on different substrates.

Figure S6. Voltage output of glycine-PVA films on PMMA, PS and PDMS substrates under 30-N force.
Figure. S7. Current output of glycine-PVA films on PS+wall substrates.

Figure. S8. Optical microscope images and d33 measurements of PS+wall films before and after exposing in humid air (room temperature, 80-90% humidity).