Electronic Supplementary Information for

**Anomalous Nanoinclusion Effects of 2D MoS$_2$ and WS$_2$ Nanosheets on Mechanical Properties of Polymer Nanocomposites**

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Fig. S1 E X-ray diffraction patterns of (a) bulk MoS$_2$ and 2D MoS$_2$ and (b) bulk WS$_2$ and 2D WS$_2$.

Fig. S2 TEM images of 2D (a, b) MoS$_2$ and (c, d) WS$_2$ flakes. (Inset) fast-Fourier transform (FFT) patterns.
Fig. S3 SEM micrographs of fracture surface of (a) PVA, (b) PM-0.9, and (c) PW-2.0.
<table>
<thead>
<tr>
<th></th>
<th>Tensile Modulus (GPa)</th>
<th>Ultimate Tensile Strength (MPa)</th>
<th>Strain-to-failure (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neat PVA</td>
<td>1.93 ± 0.28</td>
<td>60.4 ± 12.4</td>
<td>8.2 ± 3.4</td>
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<tr>
<td>PM-0.3</td>
<td>2.24 ± 0.08</td>
<td>31.3 ± 8.2</td>
<td>2.0 ± 1.1</td>
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<tr>
<td>PM-0.6</td>
<td>2.91 ± 0.21</td>
<td>33.9 ± 2.7</td>
<td>1.4 ± 0.1</td>
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<tr>
<td>PM-0.9</td>
<td>3.18 ± 0.14</td>
<td>42.4 ± 7.2</td>
<td>1.6 ± 0.3</td>
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<tr>
<td>PM-1.2</td>
<td>2.27 ± 0.08</td>
<td>21.3 ± 5.4</td>
<td>1.0 ± 0.3</td>
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<tr>
<td>PW-0.3</td>
<td>2.13 ± 0.20</td>
<td>28.1 ± 4.4</td>
<td>1.7 ± 0.4</td>
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<tr>
<td>PW-0.6</td>
<td>2.17 ± 0.23</td>
<td>22.9 ± 12.6</td>
<td>2.2 ± 1.8</td>
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<tr>
<td>PW-0.9</td>
<td>2.48 ± 0.21</td>
<td>25.0 ± 8.8</td>
<td>1.1 ± 0.3</td>
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<tr>
<td>PW-1.2</td>
<td>2.66 ± 0.14</td>
<td>23.8 ± 7.6</td>
<td>1.0 ± 0.3</td>
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<td>PW-1.5</td>
<td>2.86 ± 0.40</td>
<td>28.9 ± 14.1</td>
<td>1.2 ± 0.4</td>
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<td>PW-2.0</td>
<td>2.93 ± 0.34</td>
<td>32.2 ± 20.6</td>
<td>1.4 ± 1.0</td>
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<tr>
<td>PW-2.5</td>
<td>1.64 ± 0.31</td>
<td>20.6 ± 2.6</td>
<td>1.6 ± 0.5</td>
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