Supporting information

Bifunctional Flexible Fabrics with Excellent Joule Heating and Electromagnetic Interference Shielding Performance Based on Copper Sulfide/Glass Fiber Composite

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**Figure S1.** XRD patterns of the CuS/GFs-1 wt%, CuS/GFs-2 wt% and CuS/GFs-4 wt%, respectively.
Figure S2. SEM image and elemental mappings of CuS/GFs-1 wt% (a and b), CuS/GFs-2 wt% (c and d) and CuS/GFs-4 wt% (e and f), respectively.
Figure S3. Mass loading for the CuS and electrical resistivity of CuS/GFs obtained at various concentrations. (b) I-V curve of as-prepared each CuS/GFs. (c) Electrical resistivity of CuS/GFs-3 wt% before and after 0.5 h ultrasonic process.
Figure. S4 (a) Joule heating performance of CuS/GFs at the constant supplied voltage of 1.2 V. (b) Corresponding IR camera images of each sample. (c) Experimental data and linear fitting of saturation temperature versus $U^2$ of as-prepared each nanocomposite. (d) the XRD of CuS/GFs after running under 1.5V working voltage. (e) electrical conductivity of CuS/GFs after a long-term stability test. (f) The optical photo of CuS/GFs-3 wt% textile can withstand a weight of 2000 g.
Figure S5. EMI SE performance of CuS/GFs textiles obtained at various concentrations.
Figure S6. (a and b) SEM images, EDX spectrum and element analysis (c) of CuS/GFs-3 wt% textile after long term stability measurement. (d) XRD pattern of CuS/GFs-3 wt% textile before and after long-term stability test. (e) Joule heating performance of CuS/GFs-3 wt% at the constant supplied voltage of 1.2 V before and after 0.5 h ultrasonic process. (f) Corresponding IR camera images before-after
Figure S7. (a) SEM images and electrical resistivity of CuS/GFs-3 wt% textile before-after ultrasonically cleaned. (b) Electrical resistivity of CuS/GFs- 3 wt% textile before and after 0.5 h ultrasonic process. (c) and (d) IR camera images and EMI SE performance of CuS/GFs- 3 wt% textile before and after 0.5 h ultrasonic process.
<table>
<thead>
<tr>
<th>Heaters</th>
<th>Electrical property</th>
<th>Voltage (V)</th>
<th>Temperature (°C)</th>
<th>Response time (s)</th>
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<td>CuS/GFs</td>
<td>2.9 Ω cm⁻¹</td>
<td>1.5</td>
<td>209</td>
<td>10</td>
<td>This work</td>
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<tr>
<td>CNT/cellulose aerogel</td>
<td>0.3 Ω sq⁻¹</td>
<td>1.8</td>
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<td>AgNWs-TPU</td>
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<td>2.5KΩ</td>
<td>40</td>
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<td>40</td>
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<td>GFs graphene films,</td>
<td>6×105S m⁻¹</td>
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<td>424</td>
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<td>4</td>
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<td>0.16Ω cm⁻¹</td>
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<td>133</td>
<td>20</td>
<td>5</td>
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<tr>
<td>rGO/PET fabric</td>
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<td>6</td>
<td>138.64</td>
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<td>6</td>
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<td>3</td>
<td>80</td>
<td>240</td>
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<td>graphene quartzfiber</td>
<td>0.2–10 kΩ/sq</td>
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<td>980</td>
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<td>G/WPU composites</td>
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<td>75.4</td>
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<td>9</td>
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<td>polypyrrole/knitted cotton</td>
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<td>8</td>
<td>51</td>
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<tr>
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<tr>
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<td>162.6</td>
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<td>MXene-decorated textiles</td>
<td>117 S m⁻¹</td>
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<td>174</td>
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<td>SSE/t (dB cm² g⁻¹)</td>
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<td>CuS/GFs</td>
<td>16 wt%</td>
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<td>rGO/PU</td>
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<td>rGO-Fe3O4/PVC</td>
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<td>1.8</td>
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<td>49.5</td>
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<td>rGO/PS</td>
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<td>2.5</td>
<td>45.1</td>
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<td>rGO/PI</td>
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<td>0.08</td>
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<td>937.5</td>
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<td>Graphene/PDMS</td>
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<td>3333</td>
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<td>MWCNTs/Epoxy</td>
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<td>40</td>
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<td>MWCNT/ WPU</td>
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<td>50</td>
<td>881.8</td>
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<td>CNT/PS</td>
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<td>/</td>
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<td>2416</td>
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<td>3867</td>
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<td>MXene/CNF</td>
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References:


