Supplementary Information

Core-Shell Cu@rGO Hybrids Filled in Epoxy Composites with High Thermal Conduction

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Figure S1. Digital photographs of (a) GO, (b) modified Cu and (c) modified Cu and GO mixture solution under pH=2, 4, 6, 8, 10, 12; (d) Zeta potentials of GO, modified Cu and modified Cu and GO mixture in aqueous solutions under different pH conditions.

Figure S2. Images of the electrostatic assembly of GO with Cu-NH$_2$ at different mass ratios, (a) exfoliated GO sheets; (b) GO:Cu=1:10; (c)GO:Cu=1:30; (d) GO:Cu=1:50 (inserts are photographs of the corresponding aqueous suspension).
**Figure S3.** Photograph of the electrostatic assembly process of Cu@GO

**Figure S4.** XPS survey spectra of the as-prepared Cu@rGO, Cu@rGO-60 and Cu@rGO-1.5h.

**Figure S5.** Optical morphologies of (a) Pure epoxy, (b) Cu@rGO/epoxy composites and c) Cu@rGO/epoxy composites.
Figure S6. Thermal conductivity of rGO/epoxy composites with different mass fractions.

Figure S7. Comparison of the thermal conductivity of the epoxy composites with three kinds of filler.
<table>
<thead>
<tr>
<th>Samples</th>
<th>CTE1 (ppm °C⁻¹)</th>
<th>CTE2 (ppm °C⁻¹)</th>
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<tbody>
<tr>
<td>Pure epoxy</td>
<td>74.4</td>
<td>200.5</td>
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<tr>
<td>80 wt% Cu/epoxy</td>
<td>51.6</td>
<td>128.6</td>
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<tr>
<td>80 wt% Cu@rGO/epoxy</td>
<td>48</td>
<td>124.3</td>
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