

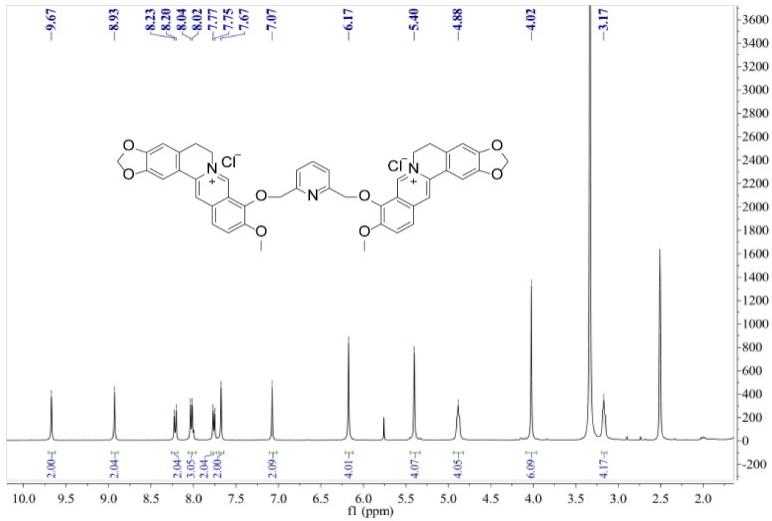
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## AIE-based gold nanostar-berberine dimer nanocomposites for PDT and PTT combination therapy toward breast cancer

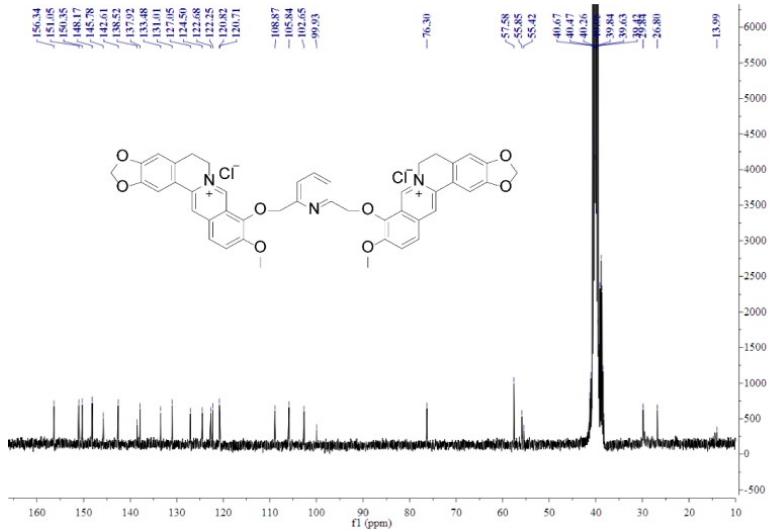
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Wen-Hua Chen,<sup>b,\*</sup> Jun Chen<sup>a,\*</sup> and Jin-Xiang Chen<sup>a,\*</sup>

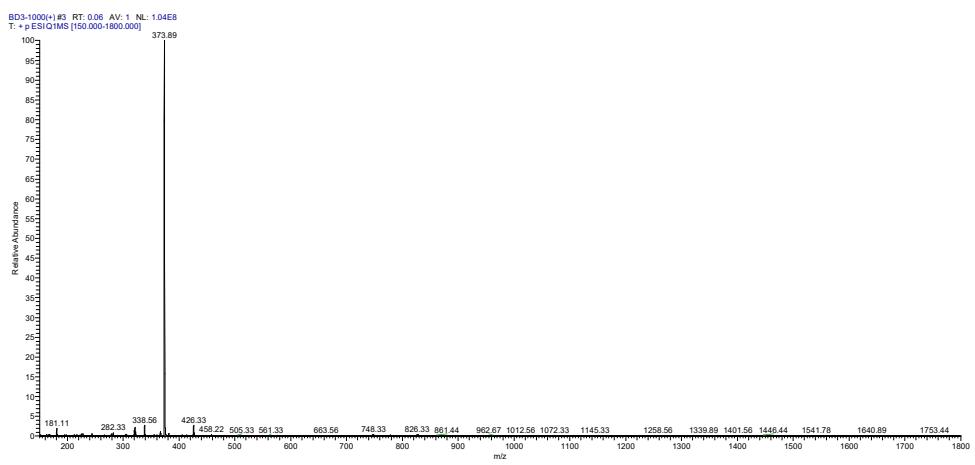
<b>Fig. S1</b> The <sup>1</sup> H-NMR spectra of compound <b>BD1</b> (400 MHz, DMSO-d <sub>6</sub> ).....	S-2
<b>Fig. S2</b> The <sup>13</sup> C-NMR spectra of compound <b>BD1</b> (100 MHz, DMSO-d <sub>6</sub> ).....	S-2
<b>Fig. S3</b> The ESI-MS spectra of compound <b>BD1</b> .....	S-3
<b>Fig. S4</b> The <sup>1</sup> H NMR spectra of compound <b>BD2</b> (400 MHz, DMSO-d <sub>6</sub> ).....	S-3
<b>Fig. S5</b> The <sup>13</sup> C-NMR spectra of compound <b>BD2</b> (100 MHz, DMSO-d <sub>6</sub> ).....	S-3
<b>Fig. S6</b> The ESI-MS spectra of compound <b>BD2</b> .....	S-4
<b>Fig. S7</b> The <sup>1</sup> H-NMR spectra of compound <b>BD4</b> (400 MHz, DMSO-d <sub>6</sub> ).....	S-4
<b>Fig. S8</b> The <sup>13</sup> C-NMR spectra of compound <b>BD4</b> (100 MHz, DMSO-d <sub>6</sub> ).....	S-4
<b>Fig. S9</b> The ESI-MS spectra of compound <b>BD4</b> .....	S-5
<b>Fig. S10</b> The cell viability of 4T1 cells treated with different concentration of <b>BD1-BD4</b> and berberine by LED light irradiation.....	S-5
<b>Fig. S11</b> The standard curve of UV-Vis absorbance of AuNSs (a) and <b>BD3</b> (b).....	S-5
<b>Fig. S12</b> The TEM images of AuNSs- <b>BD3</b> (a) and <b>ABH</b> (b).....	S-6
<b>Fig. S13</b> The long-term stability of <b>ABH</b> in PBS, PBS + 10% FBS, DMEM or DMEM + 10% FBS.....	S-6
<b>Fig. S14</b> The changes in (a) size distribution and (b) UV-Vis spectrum under heating and cooling circles for testing the stability of 25 $\mu$ g/mL <b>ABH</b> exposed to 1.0 W/cm <sup>2</sup> 808 nm laser irradiation.....	S-6



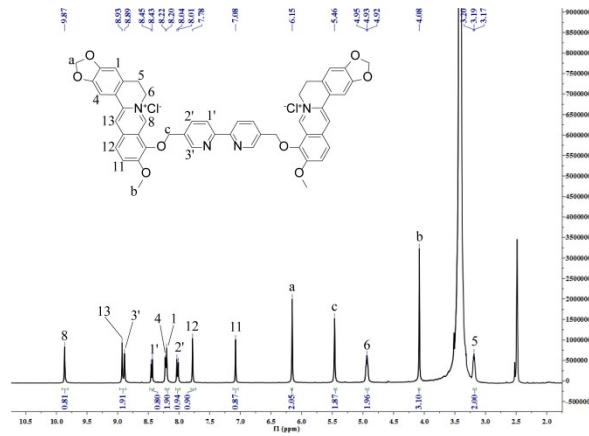
**Fig. S1** The <sup>1</sup>H-NMR spectra of compound **BD1** (400 MHz, DMSO-d<sub>6</sub>).



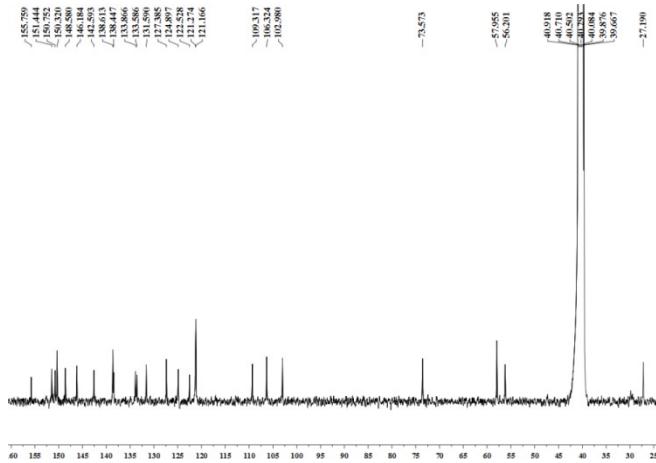
**Fig. S2** The <sup>13</sup>C-NMR spectra of compound **BD1** (100 MHz, DMSO-d<sub>6</sub>).



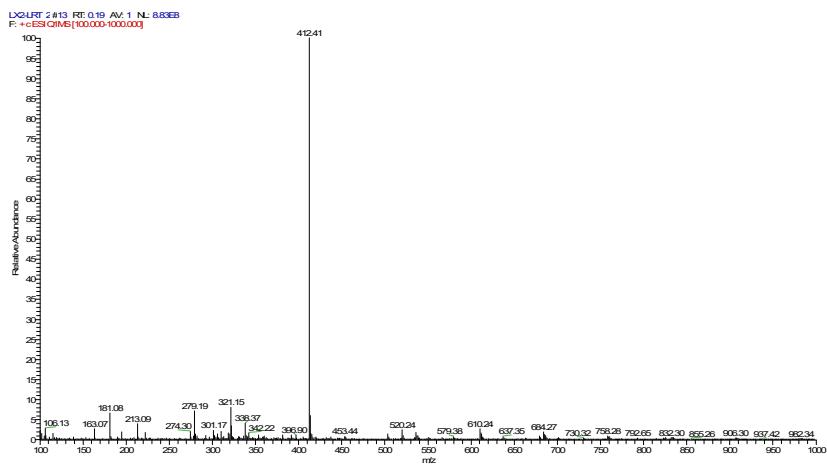
**Fig. S3** The ESI-MS spectra of compound **BD1**.



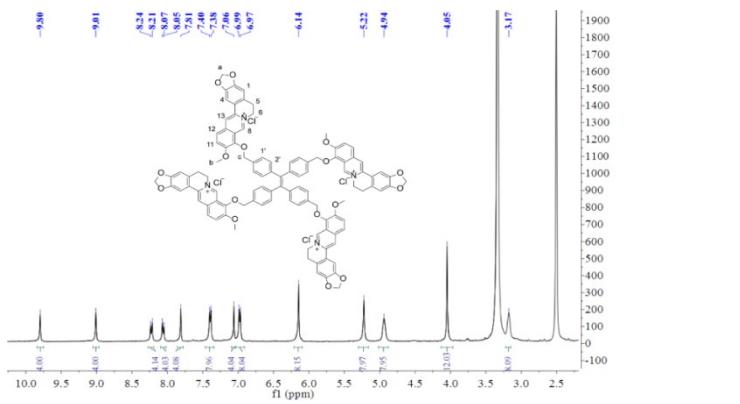
**Fig. S4** The  $^1\text{H}$  NMR spectra of compound **BD2** (400 MHz,  $\text{DMSO}-d_6$ )



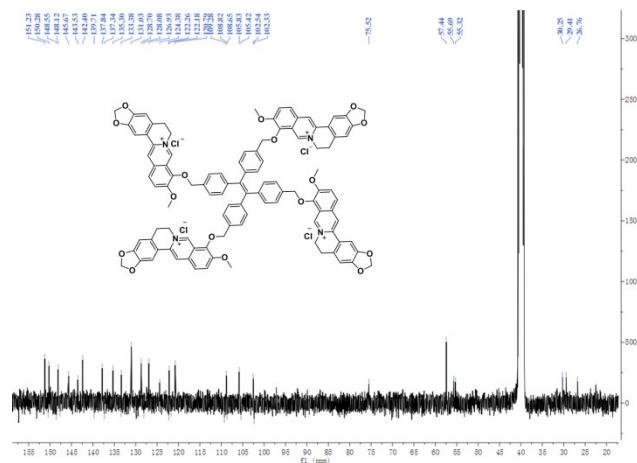
**Fig. S5** The  $^{13}\text{C}$  NMR spectra of compound **BD2** (100 MHz,  $\text{DMSO}-d_6$ ).



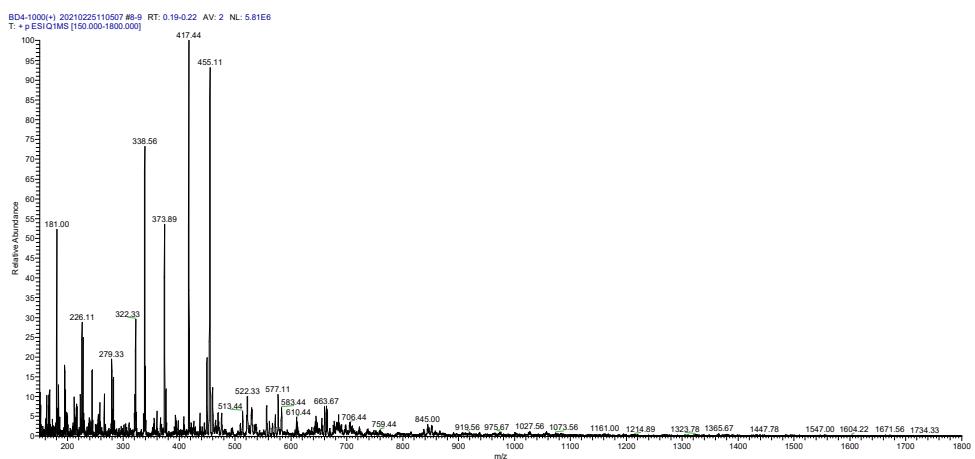
**Fig. S6** The ESI-MS spectra of compound **BD2**.



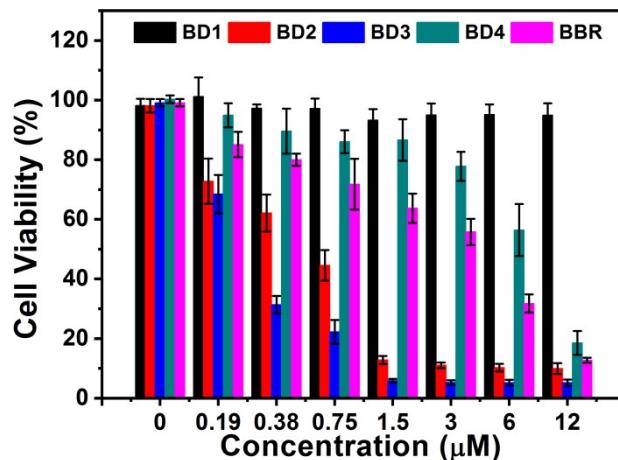
**Fig. S7** The  $^1\text{H}$ -NMR spectra of compound **BD4** (400 MHz,  $\text{DMSO-d}_6$ ).



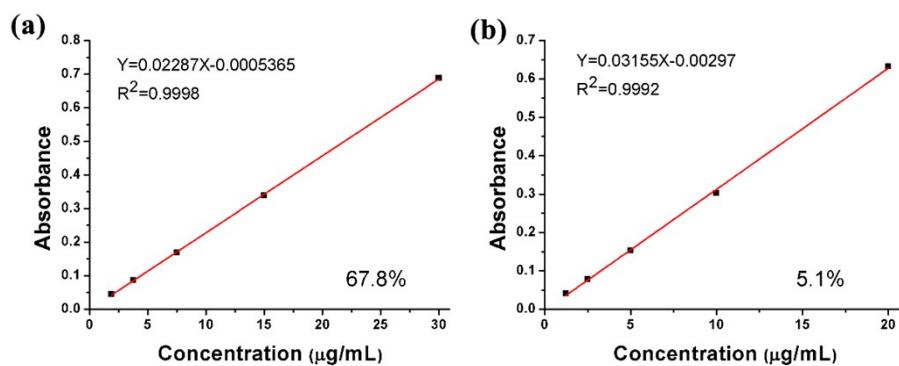
**Fig. S8** The  $^{13}\text{C}$ -NMR spectra of compound **BD4** (100 MHz, DMSO- $\text{d}_6$ ).



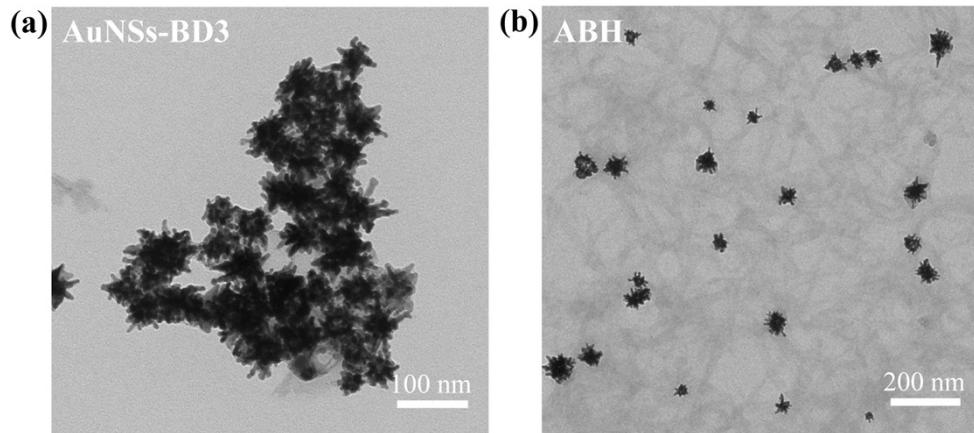
**Fig. S9** The ESI-MS spectra of compound **BD4**.



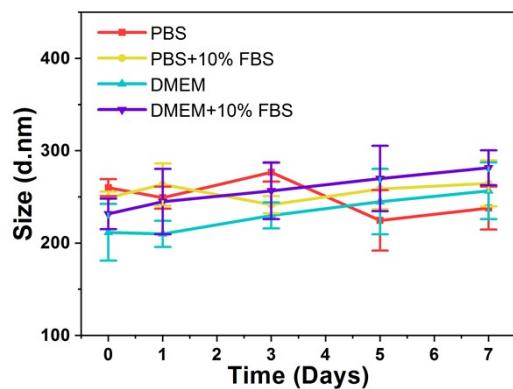
**Fig. S10** The cell viability of 4T1 cells treated with different concentration of **BD1-BD4** and berberine by LED light irradiation.



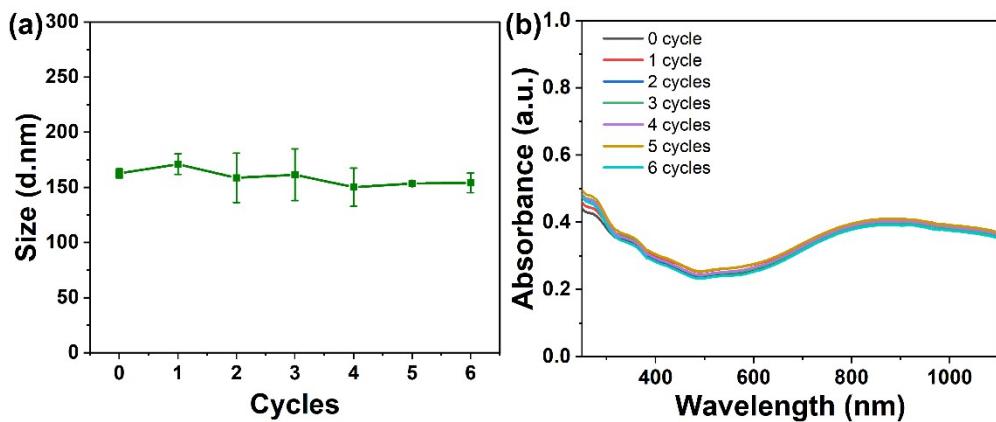
**Fig. S11** The standard curve of UV-Vis absorbance of AuNSs (a) and **BD3** (b).



**Fig. S12** The TEM images of AuNSs-**BD3** (a) and **ABH** (b).



**Fig. S13** The long-term stability of **ABH** in PBS, PBS + 10% FBS, DMEM or DMEM + 10% FBS.



**Fig. S14** The changes in (a) size distribution and (b) the UV-Vis spectrum under heating and cooling circles for testing the stability of 25  $\mu$ g/mL **ABH** exposed to 1.0 W/cm<sup>2</sup> 808 nm laser irradiation.