

**Electronic Supplementary Information**

**Fe<sub>5</sub>C<sub>2</sub> nanoparticles: a reusable bactericidal material with  
photothermal effect under near-infrared irradiation**

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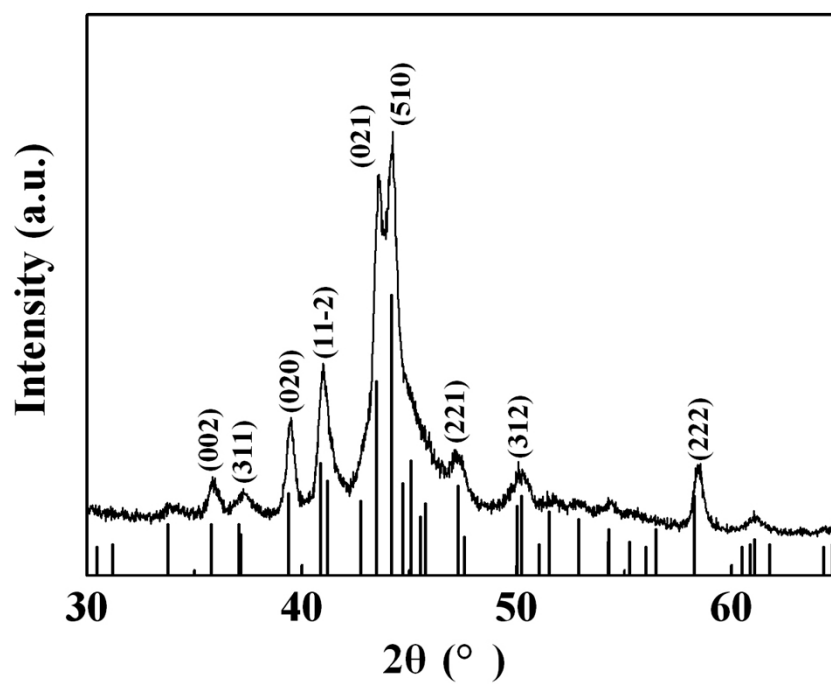
**NUMBER OF FIGURES: 6**

**Figure S1. XRD spectra of Fe<sub>5</sub>C<sub>2</sub> nanoparticles.**

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- 1 **Figure S2.** XPS spectra of Fe<sub>5</sub>C<sub>2</sub> nanoparticles.
- 2 **Figure S3.** XPS spectra of Fe 2p (a) and C 1s (b) of Fe<sub>5</sub>C<sub>2</sub> nanoparticles.
- 3 **Figure S4.** Raman spectra of Fe<sub>5</sub>C<sub>2</sub> nanoparticles.
- 4 **Figure S5.** Magnetism curve (a) and magnetic separation photo (b) of Fe<sub>5</sub>C<sub>2</sub>
- 5 nanoparticles.
- 6 **Figure S6.** Temperature variations of Fe<sub>5</sub>C<sub>2</sub> nanoparticles suspension in the presence
- 7 of 10 mg/L of HA under the NIR irradiation. Error bars represent standard deviations
- 8 from triplicate experiments (n=3).
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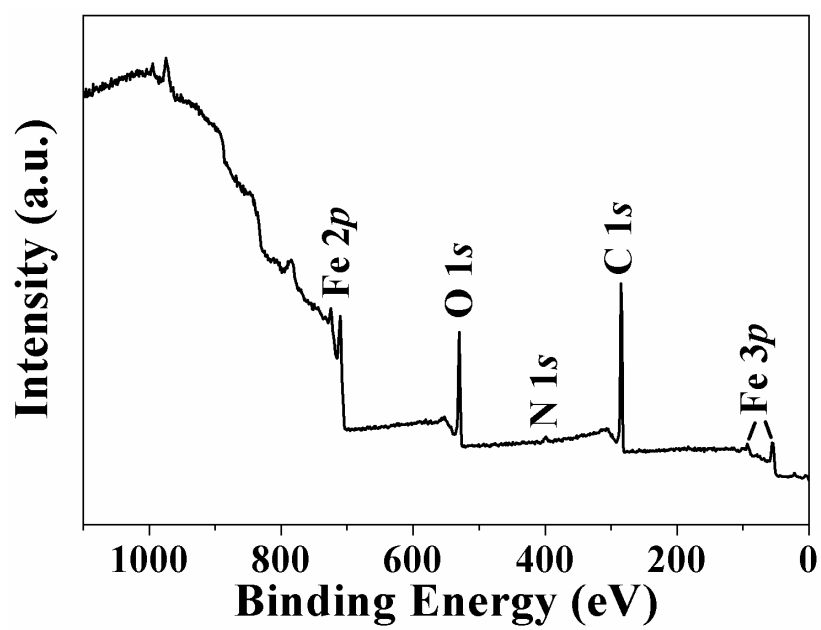


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4 **Figure S1.** XRD spectra of Fe<sub>5</sub>C<sub>2</sub> nanoparticles.

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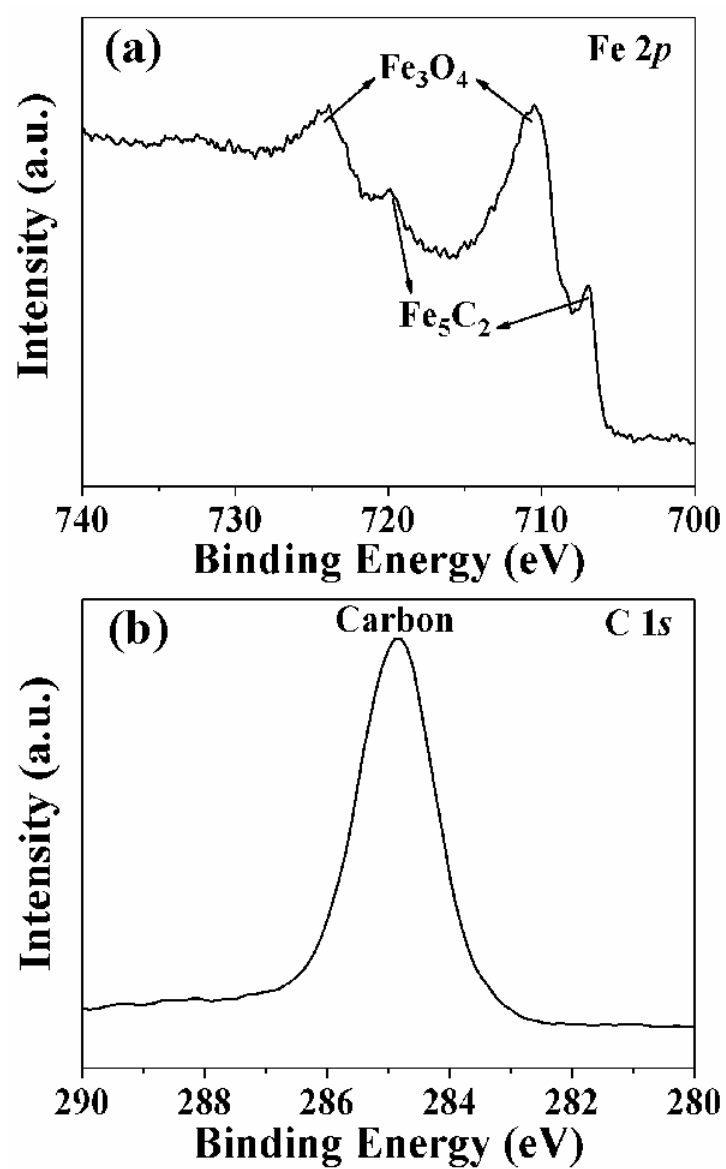


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4 **Figure S2.** XPS spectra of Fe<sub>5</sub>C<sub>2</sub> nanoparticles.

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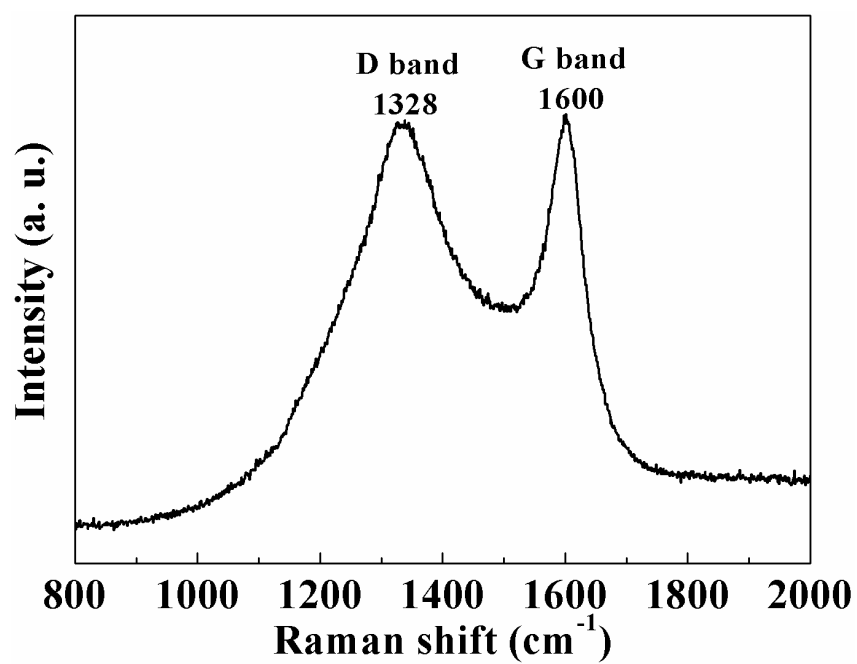


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4 **Figure S3.** XPS spectra of Fe 2p (a) and C 1s (b) of  $\text{Fe}_5\text{C}_2$  nanoparticles.

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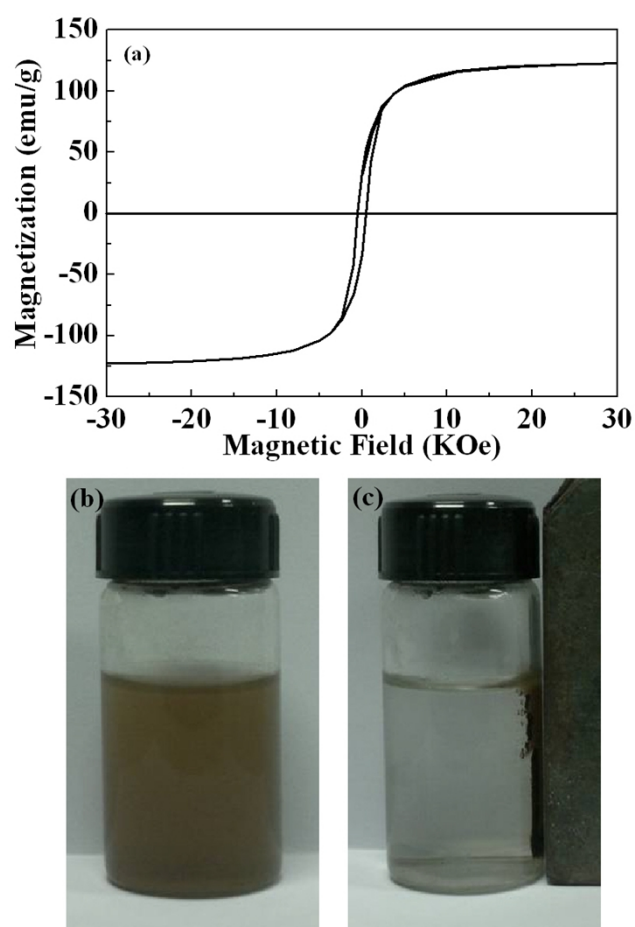


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4 **Figure S4.** Raman spectra of Fe<sub>5</sub>C<sub>2</sub> nanoparticles.

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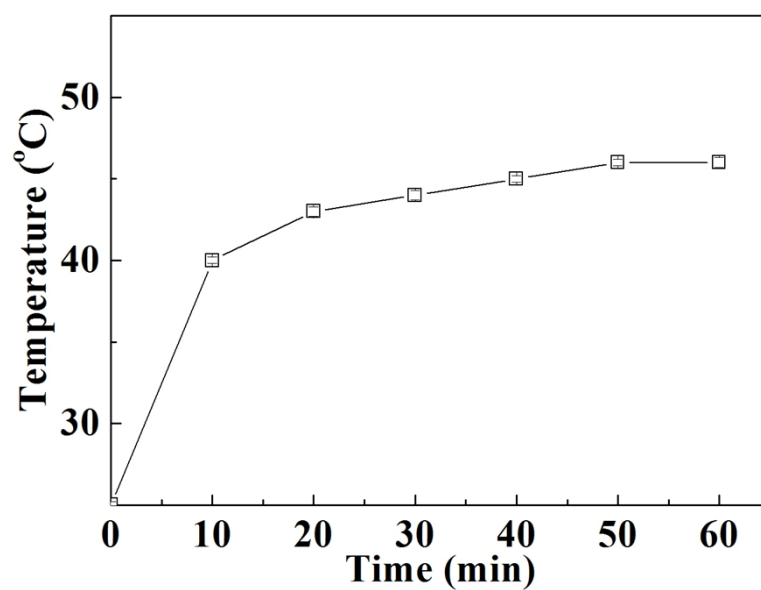
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4 **Figure S5.** Magnetism curve (a) and magnetic separation photo (b) of  $\text{Fe}_5\text{C}_2$

5 nanoparticles.

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3 **Figure S6.** Temperature variations of  $\text{Fe}_5\text{C}_2$  nanoparticles suspension in the presence  
4 of 10 mg/L of HA under the NIR irradiation. Error bars represent standard deviations  
5 from triplicate experiments (n=3).