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## Supporting Information

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Glowing gold nanoparticles coating: Retrieving a

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lost property from bulk gold

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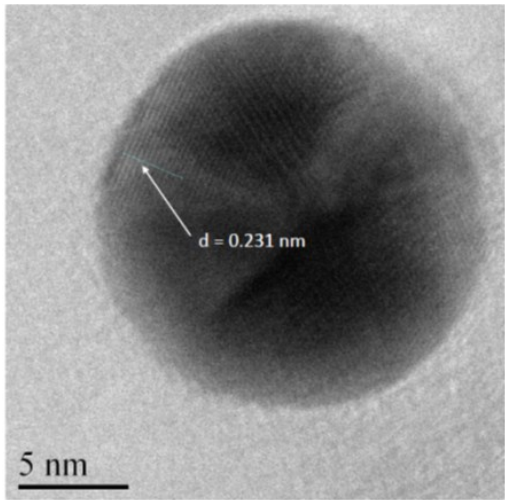
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26 **1. TEM image of the AuNPs of the Au/PG/CF.**

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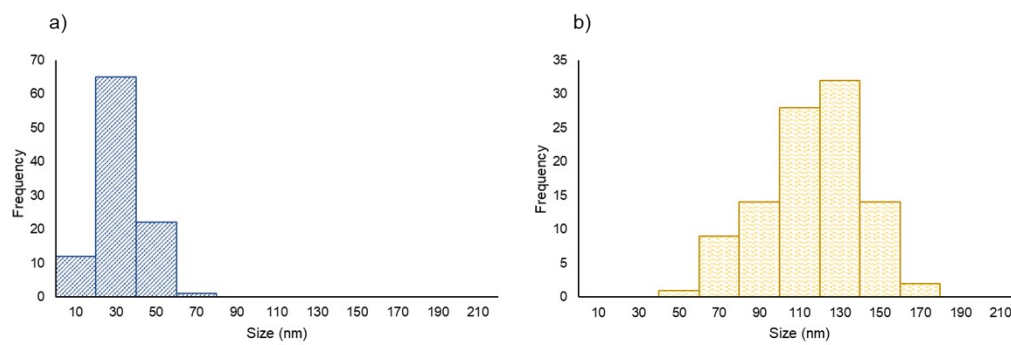
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29 **Fig.S1** TEM image of the AuNPs of the Au/PG/CF

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31 **2. Size distribution of the AuNPs of the Au/PG/CF and Au/CF.**

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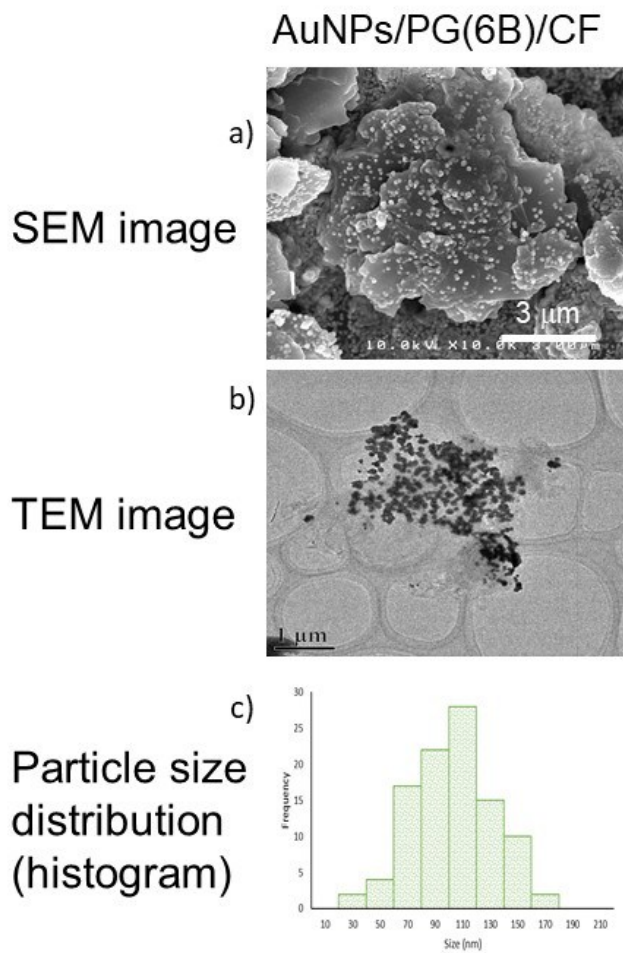
34 **Fig.S2** Size distribution of the AuNPs of the Au/PG/CF (a) and Au/CF (b).

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37 **3. Results of Au/PG(6B)/CF**

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40 **Fig. S3** FE-SEM image (a), TEM image (b), and size distribution (c) of the Au/PG(6B)/CF.

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**Table S1.** Amount of attached PG and deposited AuNPs, diameter of the formed AuNPs, and electric resistivity of Au/PG(6B)/CF.

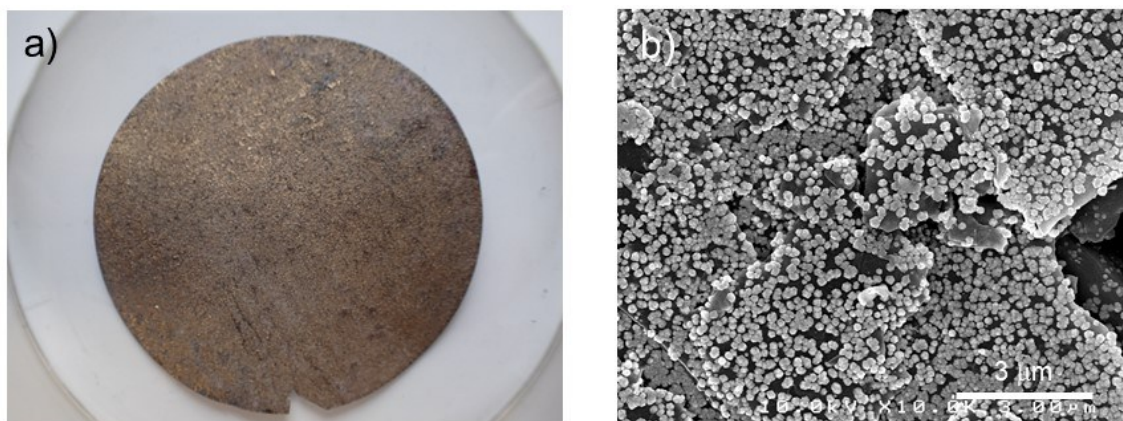
Sample	Au/PG(6B)/CF
Attached amount of PG (mg/cm <sup>2</sup> )	1.2
Deposited amount of Au (mg/cm <sup>2</sup> )	0.159
Au particle diameter <sup>a</sup> (nm)	103 ± 26.3
Electric resistivity log <sub>10</sub> (Ω/□ )	1.9

46 <sup>a</sup> Diameter was calculated from TEM images (n=100).

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#### 48 4. Results of Au/graphite/CF

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51 **Fig.S4** Photograph (a) and FE-SEM image (b) of Au/graphite/CF. Instead of graphite powder, PG

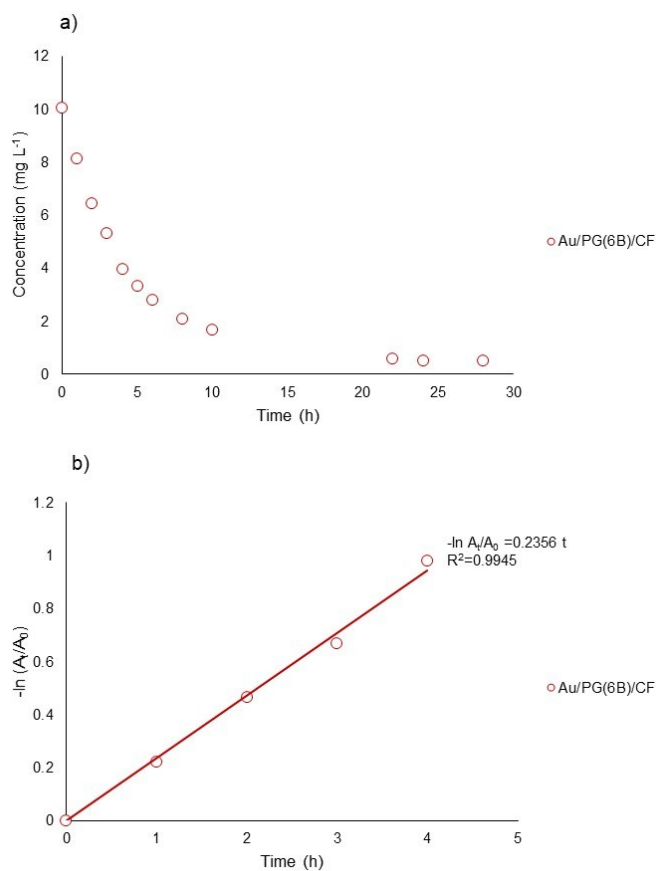
52 powder (pre-ground by a mortar) or mixture of graphite/kaolinite was also tried in the same manner.

53 Both gave the golden color surface (data not shown).

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56 **5. Reduction of *p*-NP with NaBH<sub>4</sub> in the presence of Au/PG(6B)/CF**



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58 **Fig.S5** Reduction of *p*-NP with NaBH<sub>4</sub> in the presence of Au/PG(6B)/CF, (a) Remaining  
59 concentration of *p*-NP with reaction time (n=3). (b) Pseudo-first order plots of the degradation of  
60 *p*-NP vs reaction time. A<sub>0</sub> is the initial absorbance at 400 nm, and A<sub>t</sub> is the absorbance at t h.

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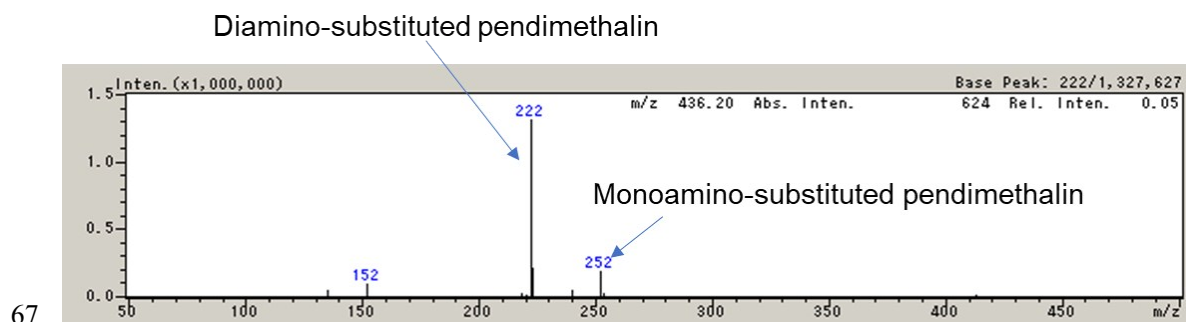
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66 **6. Catalytic reduction of pendimethalin with Au/PG/CF.**



68 **Fig.S6** Catalytic reduction of pendimethalin with Au/PG/CF.

69 Positive ion electrospray ionization (ESI) mass spectrum of the solution after the reaction of

70 pendimethalin with Au/PG/CF and NaBH<sub>4</sub> for 5 h. The initial concentration of pendimethalin and

71 NaBH<sub>4</sub> were 80 μg mL<sup>-1</sup> and 0.2% in methanol/H<sub>2</sub>O (v/v=100/25), respectively.

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