

# Supporting Information

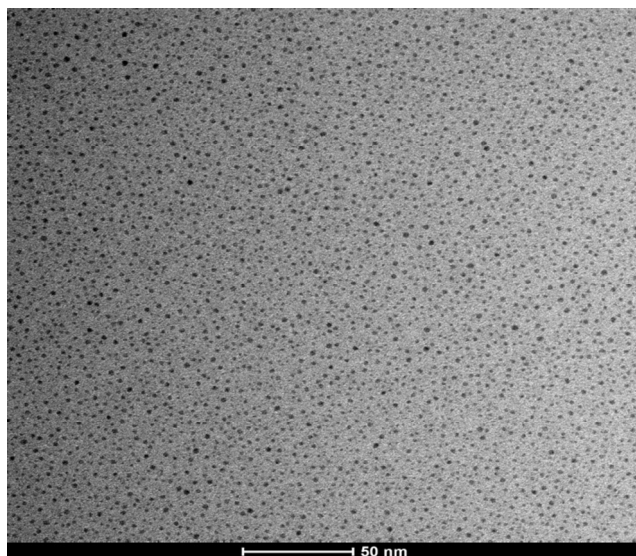
## “Light-on” Sensing of Antioxidants Using Gold Nanoclusters

*Lianzhe Hu, Lin Deng, Shahad Alsaiari, Dingyuan Zhang, and Niveen M. Khashab\**

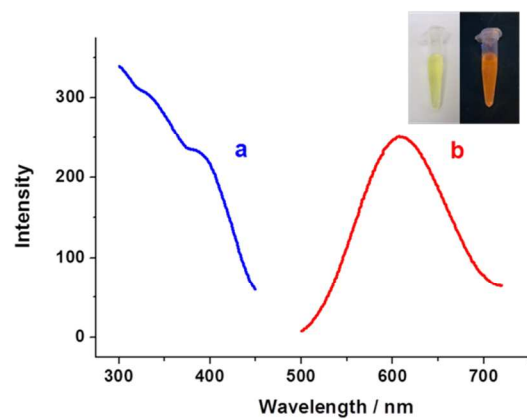
Controlled Release and Delivery Lab, Advanced Membranes and Porous Materials  
Center, King Abdullah University of Science and Technology, Thuwal 23955-6900,  
Kingdom of Saudi Arabia.

### Contents

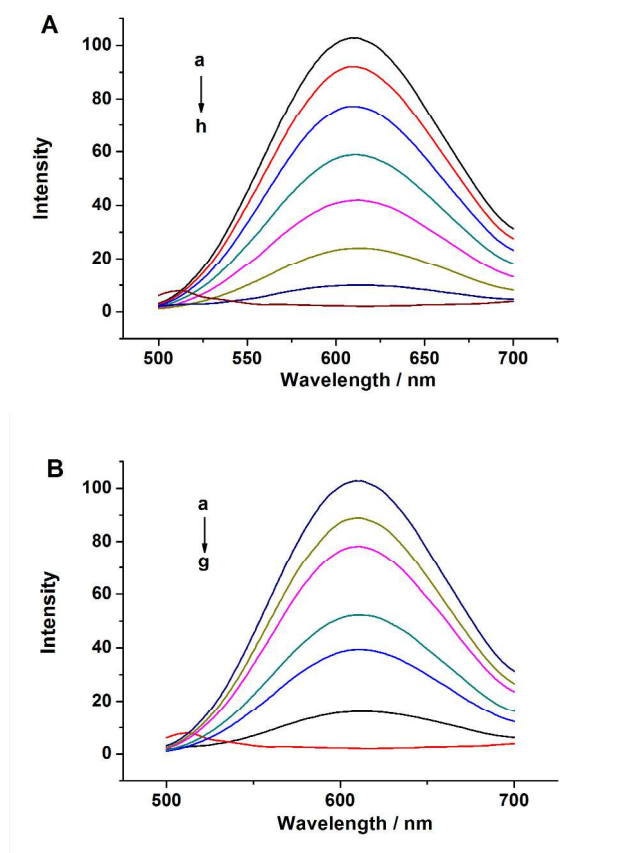
1. TEM of Au NCs.....	S-2
2. Fluorescence spectra of Au NCs.....	S-3
3. Fluorescence response toward $\text{Fe}^{2+}$ and $\text{H}_2\text{O}_2$ .....	S-4
4. UV-Vis spectra.....	S-5
5. Juices determination results.....	S-6
6. Fluorescence response toward $\text{ClO}^-$ and AA.....	S-7
7. Cytotoxicity of Au NCs.....	S-8
8. Fluorescence outputs of logic gates.....	S-9



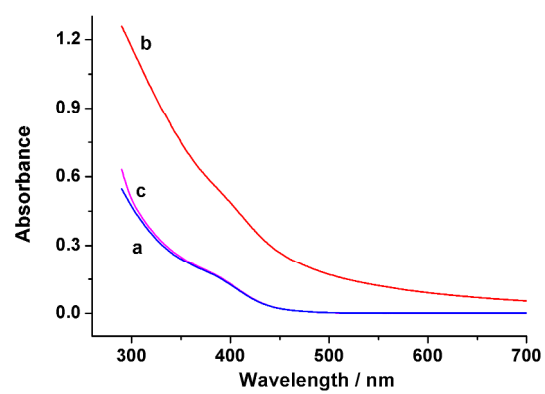
**Figure S1.** The TEM of as-prepared Au NCs.



**Figure S2.** The fluorescence excitation (a) and emission (b) spectra of the obtained Au NCs. Inset: photographs of Au NCs under daylight (left) and 365 nm UV light (right).



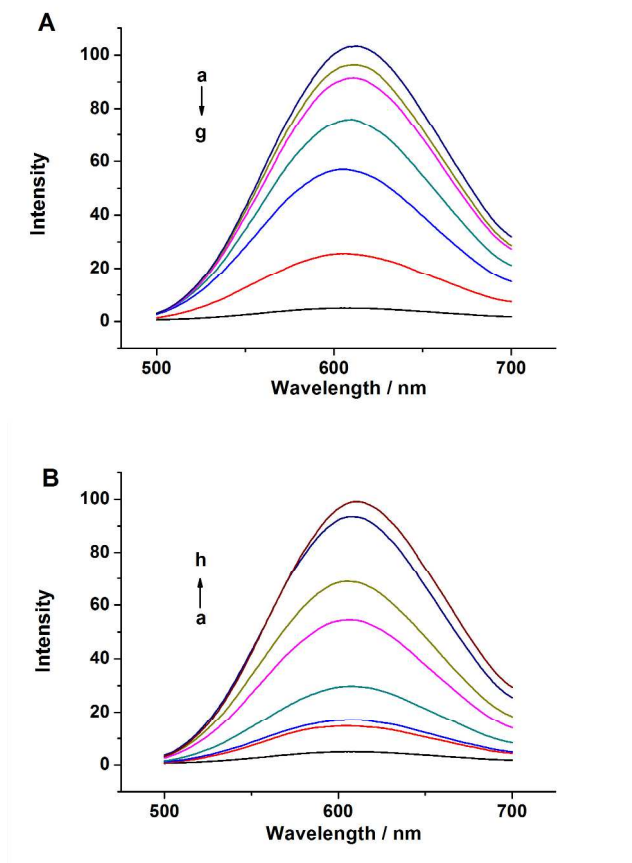
**Figure S3.** (A) The fluorescence intensity of 50  $\mu\text{g/mL}$  Au NCs and 50  $\mu\text{M}$   $\text{H}_2\text{O}_2$  in the presence of  $\text{Fe}^{2+}$  from 0, 1, 2, 3, 5, 10, 20, to 30  $\mu\text{M}$  (a $\rightarrow$ h). (B) The fluorescence intensity of 50  $\mu\text{g/mL}$  Au NCs and 50  $\mu\text{M}$   $\text{Fe}^{2+}$  in the presence of  $\text{H}_2\text{O}_2$  from 0, 0.5, 1, 2, 3, 10, to 20  $\mu\text{M}$  (a $\rightarrow$ g).



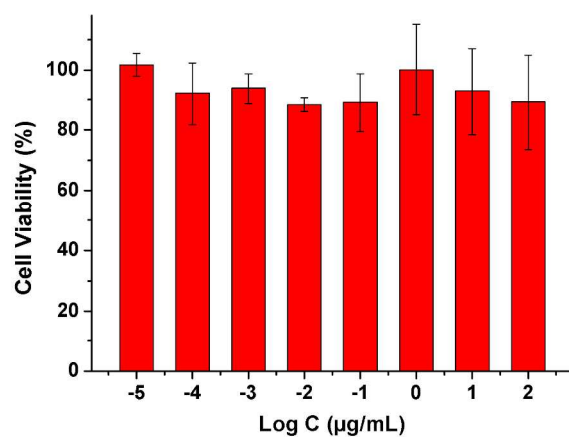
**Figure S4.** The UV-Vis spectra of (a) Au NCs only, (b) Au NCs in the presence of  $\bullet\text{OH}$ , (c) Au NCs in the presence of  $\bullet\text{OH}$  and AA.

Table S1. TAC values of fruit juices (expressed in AA) and AA recovery in the corresponding fruit juices (n=3).

<b>Fruit juices</b>	<b>TAC (mM)</b>	<b>AA added (mM)</b>	<b>AA found (mM)</b>	<b>AA recovery (%)</b>
<b>Orange</b>	49.69	20	68.53	94.2
<b>Apple</b>	17.61	10	26.74	91.3
<b>Mango</b>	11.44	10	20.92	94.8

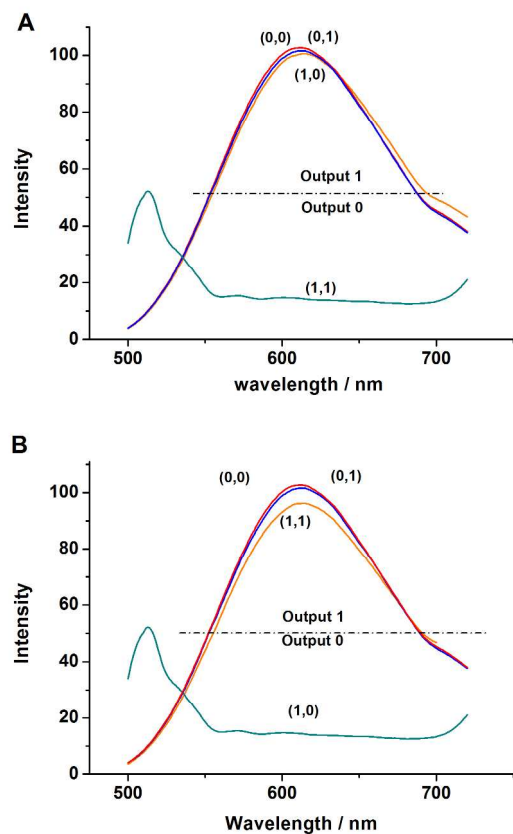


**Figure S5.** (A) The fluorescence intensity of 50  $\mu\text{g/mL}$  Au NCs in the presence of  $\text{ClO}^-$  from 0, 6, 10, 20, 100, 200, to 300  $\mu\text{M}$  (a $\rightarrow$ g). (B) The fluorescence intensity of 50  $\mu\text{g/mL}$  Au NCs and 300  $\mu\text{M}$   $\text{ClO}^-$  in the presence of AA from 0, 2, 5, 10, 30, 50, 100, to 150  $\mu\text{M}$  (a $\rightarrow$ h).



**Figure S6.** Cytotoxicity of different concentrations (0.01 ng/mL – 100 μg/mL) of Au NCs after incubation with HeLa cells for 24h.





**Figure S7.** The fluorescence spectra of 50 µg/mL Au NCs in the presence of different inputs; (A) NAND logic gate with 50 µM  $\text{Fe}^{2+}$  and 50 µM  $\text{H}_2\text{O}_2$  as inputs; (B) IMPLICATION logic gate with  $\bullet\text{OH}$  (generated by 50 µM  $\text{Fe}^{2+}$  and 50 µM  $\text{H}_2\text{O}_2$ ) and 150 µM AA as inputs.