

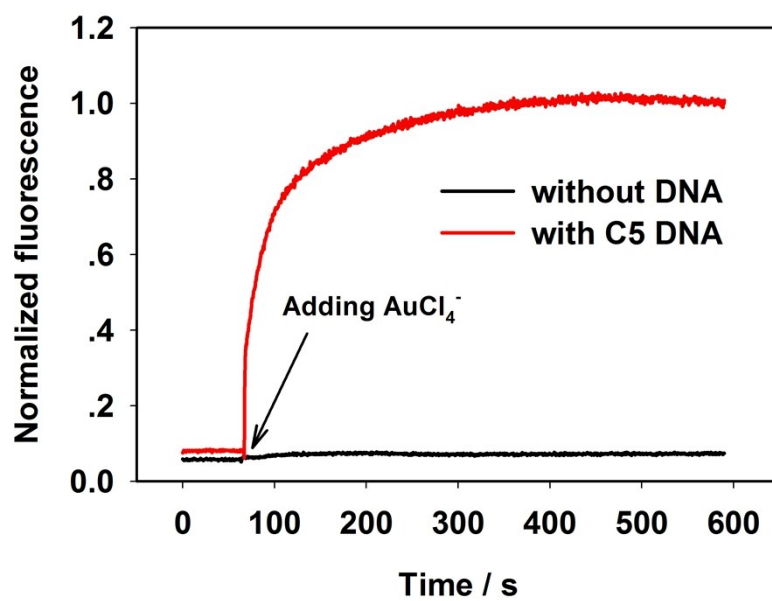
## Supporting information

### **A selective nanosensor for ultrafast detection of Cu<sup>2+</sup> ions based on C5 DNA-templated gold nanoclusters and Fenton-like reaction**

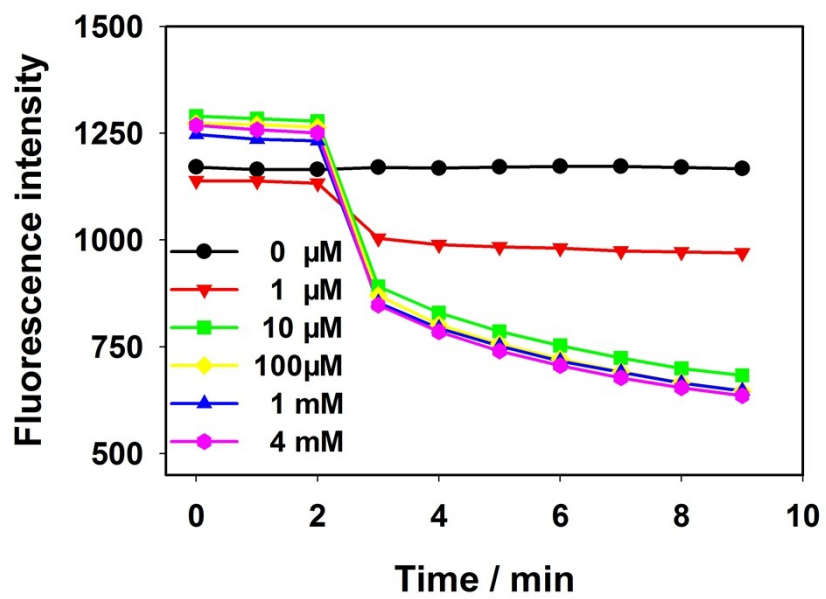
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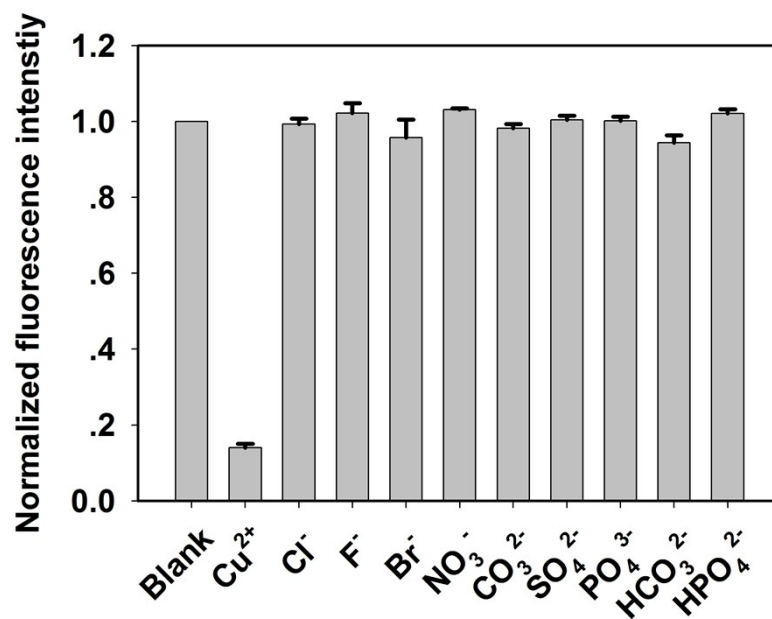
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**Figure S1** Real-time recordings of the fluorescence emission intensity changes of reaction solutions as a function of time in the absence (black line) or presence (red line) of C5 DNA. The arrow marks the addition of AuCl<sub>4</sub><sup>-</sup> to the buffered solutions.



**Figure S2** Impact of Vc on the fluorescence of the C5-AuNCs with 10  $\mu\text{M}$   $\text{Cu}^{2+}$  ions.



**Figure S3** Impact of anions (100  $\mu\text{M}$ ) on the fluorescence of this nanosensor.

**Table S1.** Comparison of sensing performance of different fluorescent probes for Cu<sup>2+</sup> ions detection

Probes	Linear range	LOD	References
PMAA-AgNCs	10 nM – 30 $\mu$ M	10 nM	<i>Nanoscale</i> , 2013, <b>5</b> , 10022-10028.
DNA-AgNCs	15 – 200 nM	8 nM	<i>Chem. Commun.</i> , 2010, <b>46</b> , 1257-1259.
DNA-AgNCs	0 – 1 $\mu$ M	10 nM	<i>Analyst</i> , 2011, <b>136</b> , 5139-5142.
G-enhanced DNA-AgNCs	6 – 240 nM	3.4 nM	<i>Spectrochim. Acta A</i> , 2015, <b>137</b> , 1250-1257.
CdS QDs	/	100 nM	<i>Anal. Chem.</i> , 2002, <b>74</b> , 5132-5138
DNA-CuNPs	/	5.6 $\mu$ M	<i>Biosens. Bioelectron.</i> , 2016, <b>78</b> , 471-476.
DNA-Cu/AgNCs	5 – 200 nM	2.7 nM	<i>Anal. Chem.</i> , 2010, <b>82</b> , 8566–8572
c-mpg-C <sub>3</sub> N <sub>4</sub>	10 – 100 nM	12.336 nM	<i>Angew. Chem., Int. Ed.</i> , 2010, <b>49</b> , 9706-9710.
DNAzyme	0 – 20 $\mu$ M	35 nM	<i>J. Am. Chem. Soc.</i> , 2007, <b>129</b> , 9838-9839.
11-MUA-AuNPs	10 <sup>-8</sup> – 10 <sup>-6</sup> M	87 nM	<i>Analyst</i> , 2012, <b>137</b> , 301-304.
DNA-AuNCs	0.01 – 10 $\mu$ M	10 nM	This work