

## Electronic Supporting Information

*For*

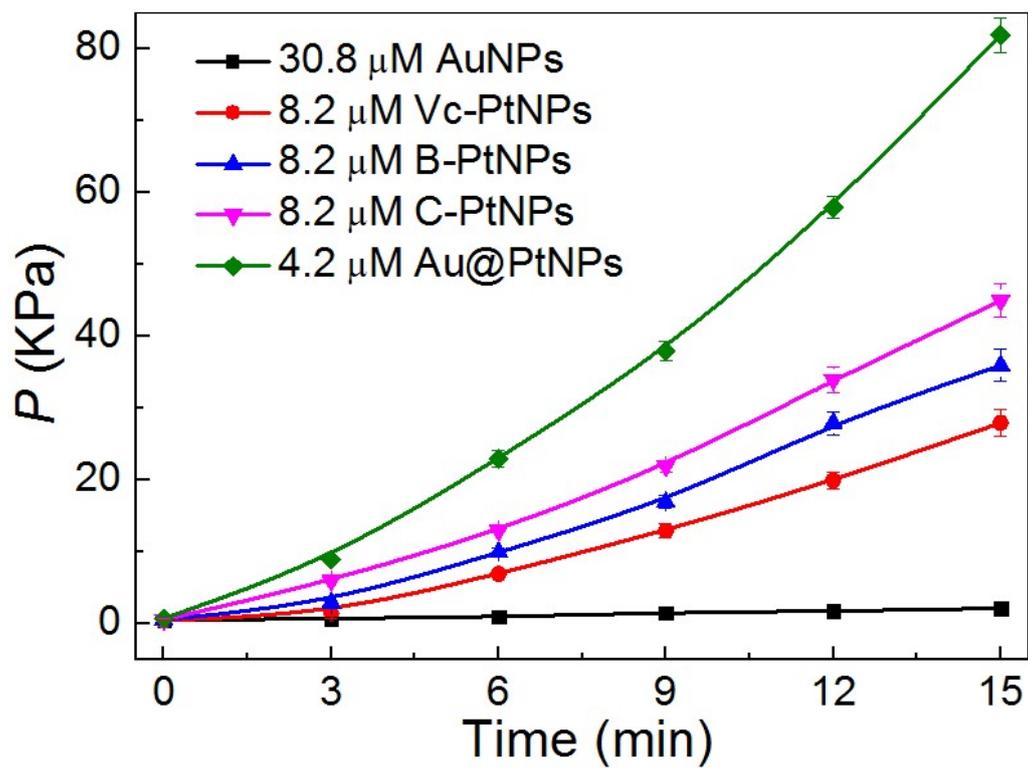
### **Point-of-care testing of melamine via gas pressure readout using polythymine-coated Au@Pt nanoparticles through specific triple hydrogen-bonding recognition**

Ling Li, Han Wen Deng, Zhong Shuai Zhao, and Zhong De Liu \*

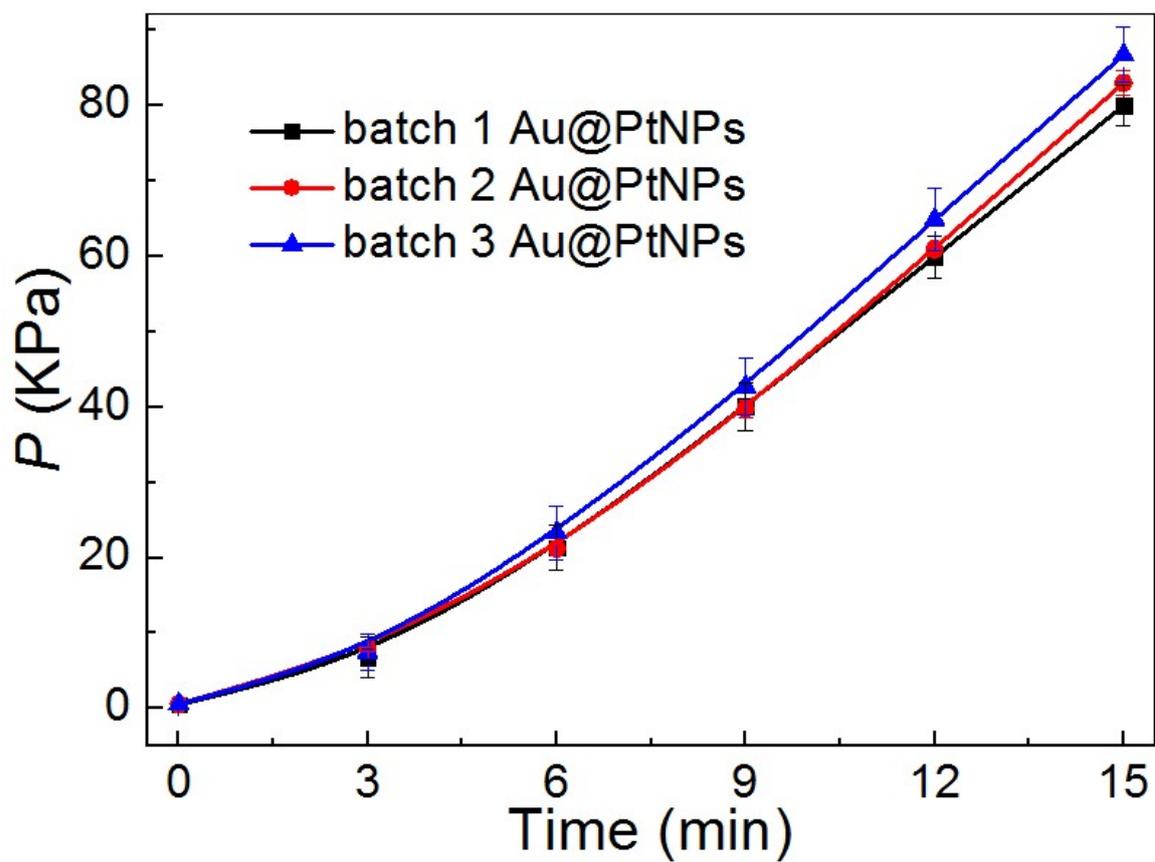
*Key Laboratory of Luminescence and Real-Time Analytical Chemistry (Southwest University), Education Ministry, College of Pharmaceutical Sciences, Southwest University, Chongqing 400715, China.*

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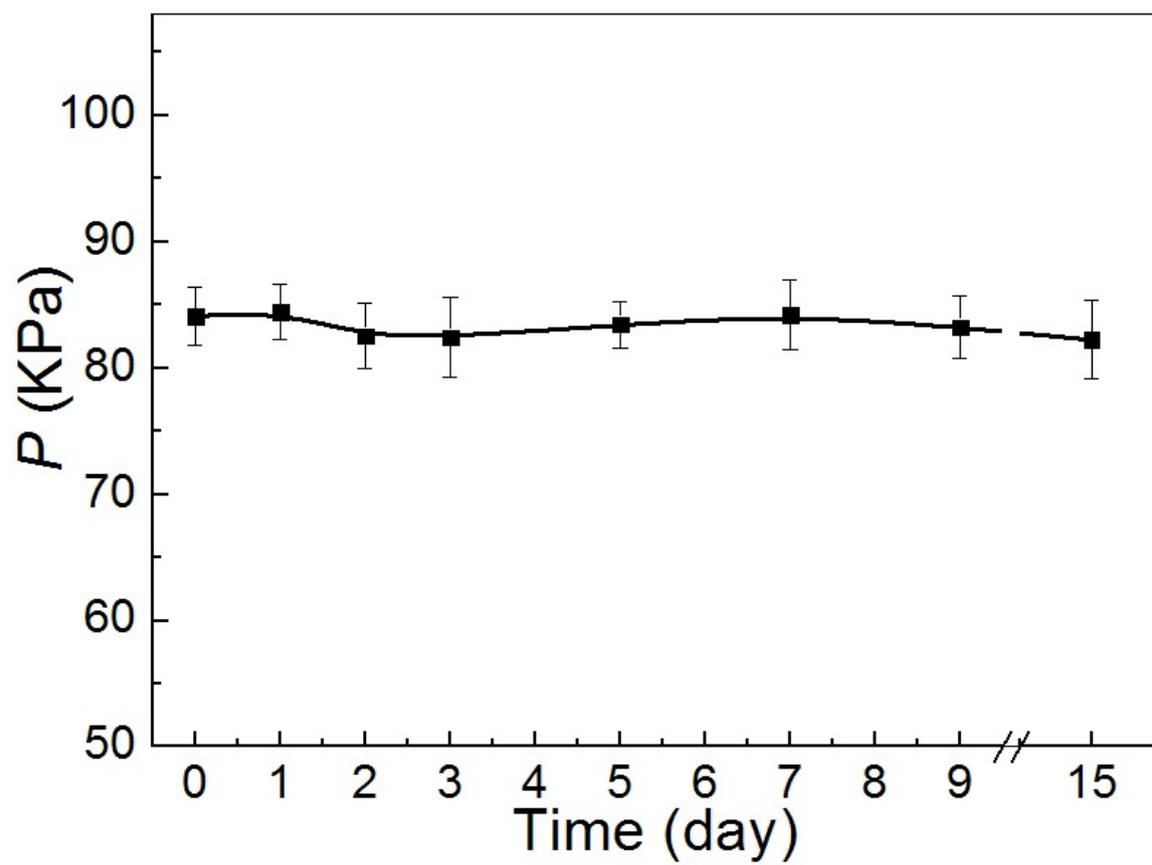
\* To whom all correspondence should be addressed. Tel: 86-23-68251910; Fax: 86-23-68251048; orcid.org/0000-0001-9638-7163; E-mail: 2297225390@qq.com



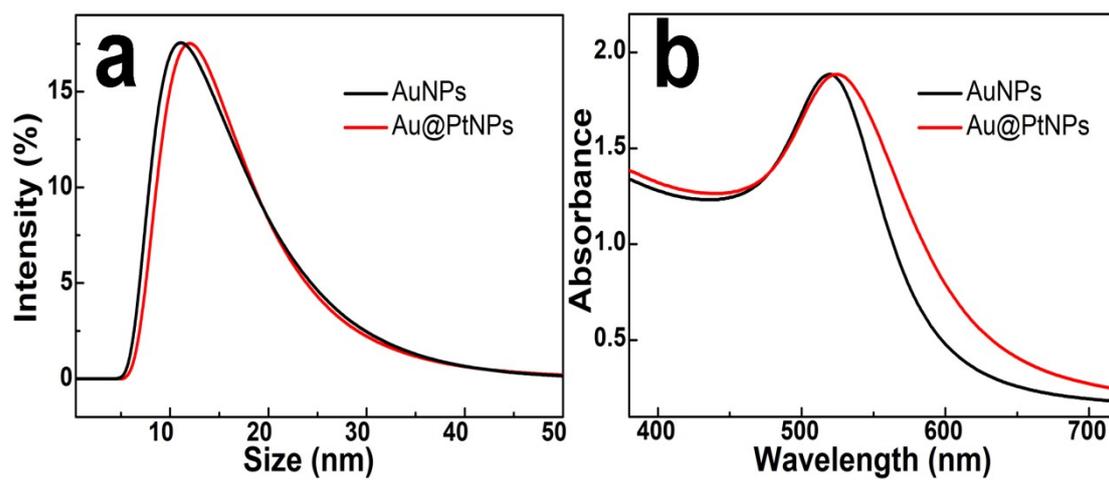
**Figure S1** Pressure ( $P$ ) profiles of the  $\text{H}_2\text{O}_2$  decomposition reaction against the measure time in the presence of different platinum nanozymes. Concentrations: 200  $\mu\text{L}$  of 30% (w/v)  $\text{H}_2\text{O}_2$ .



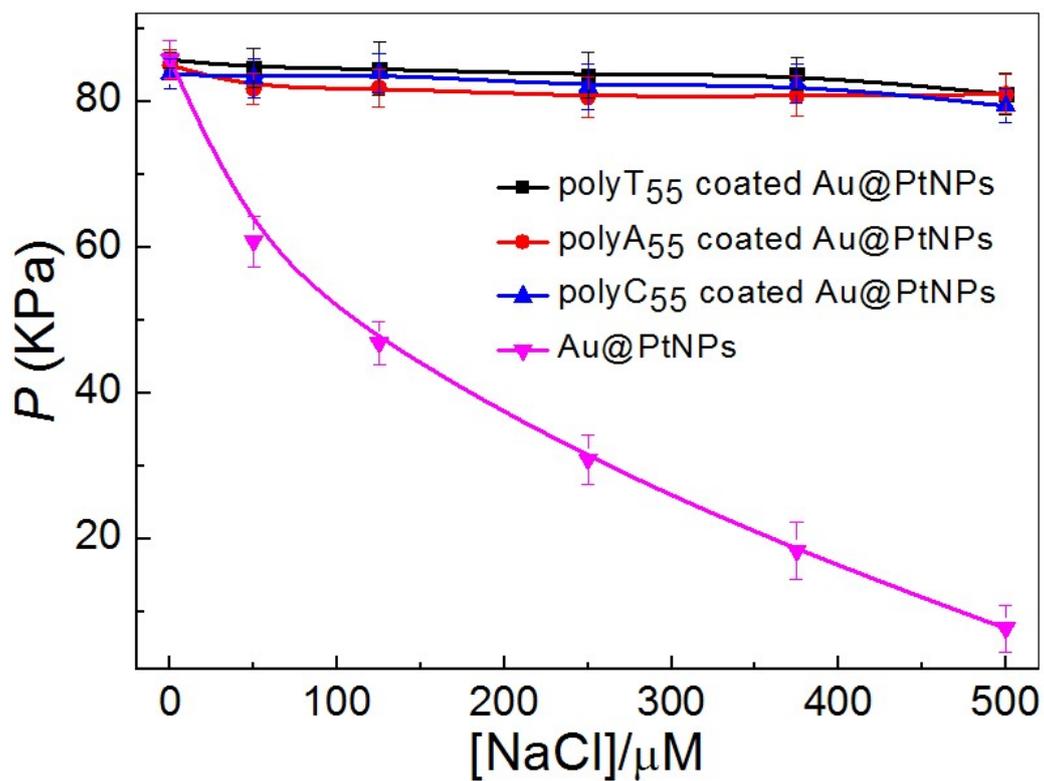
**Figure S2** The catalytic activity determination of the Au@PtNPs between different batches. Concentration: Au@PtNPs, 4.2  $\mu$ M; 200  $\mu$ L of 30% (w/v)  $H_2O_2$ .



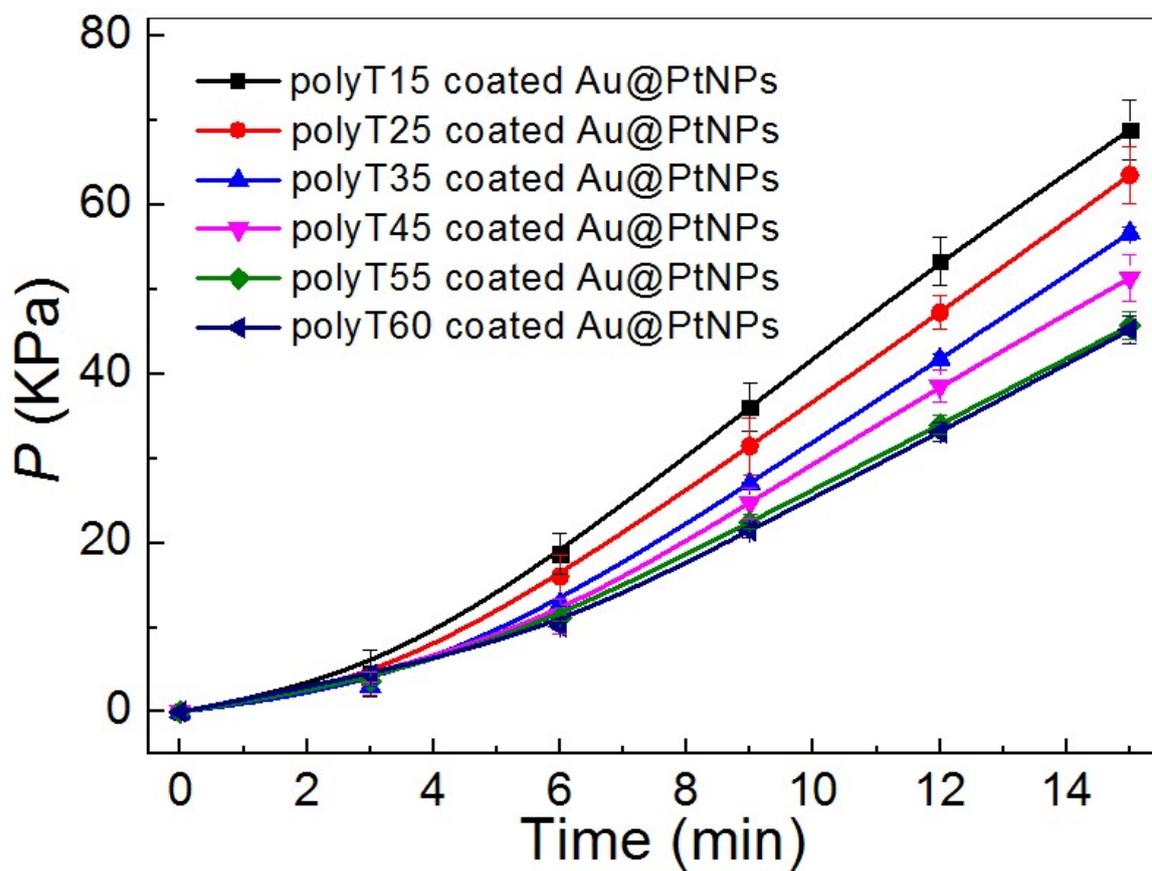
**Figure S3** The stability of catalytic activity of the poly-T<sub>55</sub> coated Au@PtNPs. Concentration: Au@PtNPs, 4.2  $\mu$ M; Poly-T<sub>55</sub>, 50.0 nM; 200  $\mu$ L of 30% (w/v) H<sub>2</sub>O<sub>2</sub>.



**Figure S4** (a) The particle size information of AuNPs before and after deposition of a thin Pt layer; (b) UV-vis absorbance spectra of the AuNPs and Au@PtNPs.



**Figure S5** Pressure change profiles of the  $\text{H}_2\text{O}_2$  decomposition reaction for 15 min with the increasing concentrations of NaCl in the absence (purplish red curve) and presence of the single-stranded DNA oligomers including polyT<sub>55</sub> (black curve), polyA<sub>55</sub> (red curve) and polyC<sub>55</sub> (blue curve). Au@PtNPs, 4.2  $\mu\text{M}$ ; polyT<sub>55</sub>, polyA<sub>55</sub> and polyC<sub>55</sub>, 50 nM; 200  $\mu\text{L}$  of 30% (w/v)  $\text{H}_2\text{O}_2$ .



**Figure S6** Influence of sequence length of polyT<sub>n</sub> on the pressure change profiles of the H<sub>2</sub>O<sub>2</sub> decomposition reaction against the measure time in the presence of the same concentration of melamine. Concentration: melamine, 2.5 μM; 200 μL of 30% (w/v) H<sub>2</sub>O<sub>2</sub>.