

## Supplementary data

### **Recyclable label-free SERS-based immunoassay of PSA in human serum mediated by enhanced photocatalysis arising from Ag nanoparticles and external magnetic field**

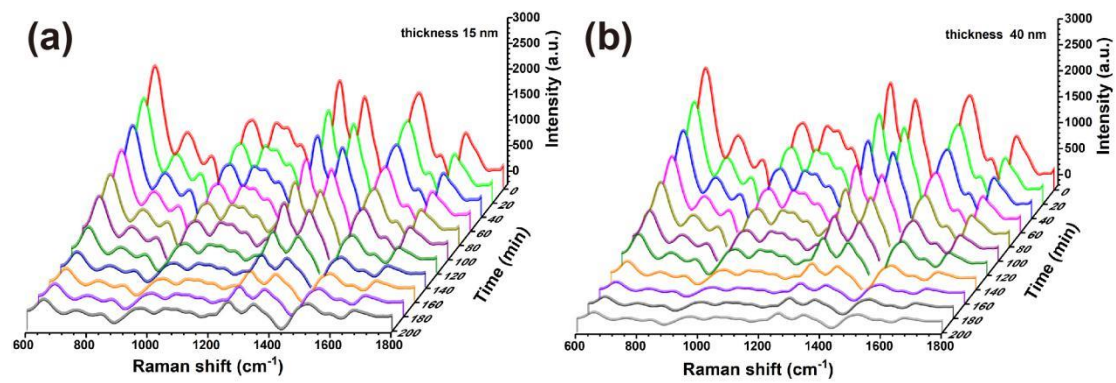
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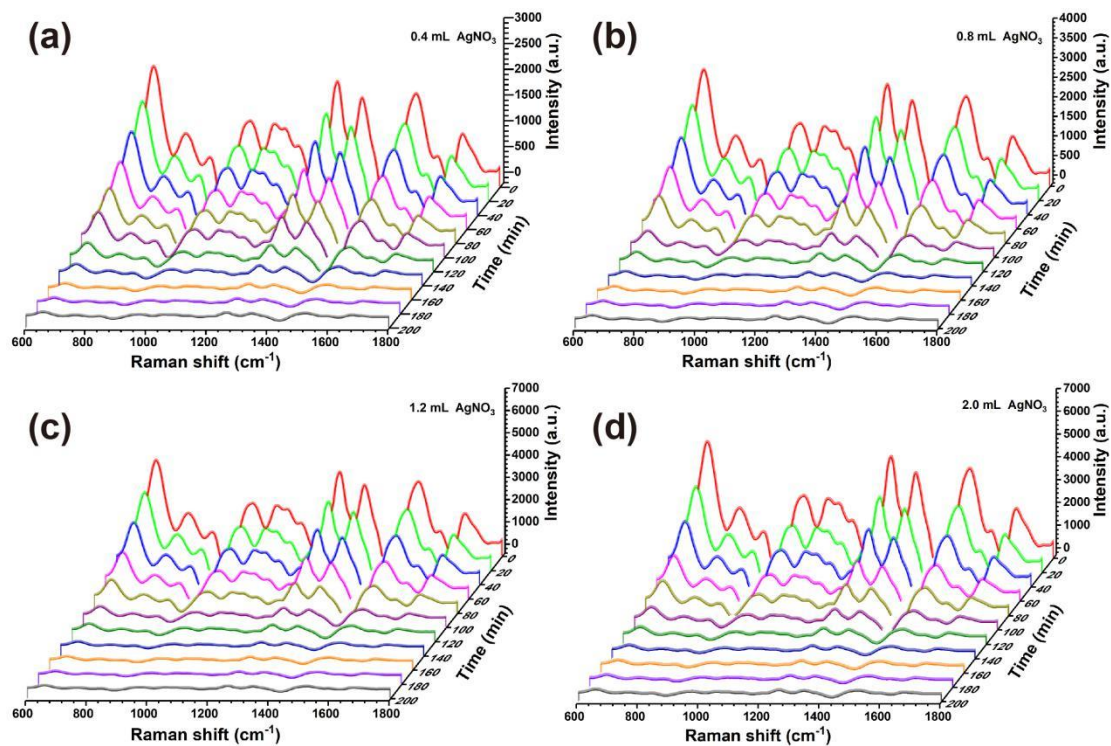
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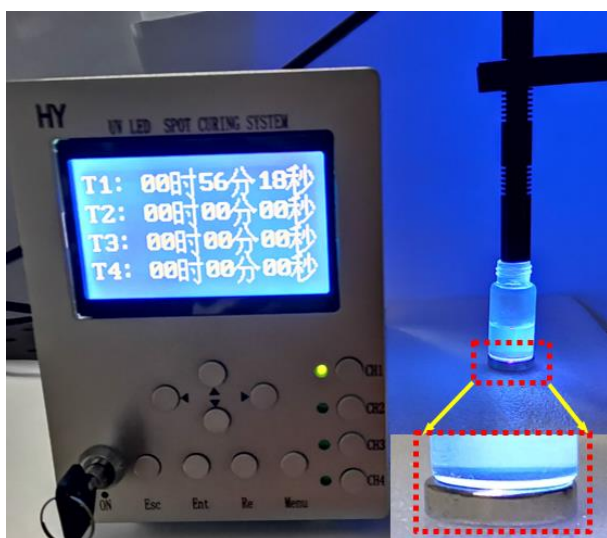
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**Fig. S1.** SERS spectral change of PSA on Fe<sub>3</sub>O<sub>4</sub>@TiO<sub>2</sub>@Ag MPs with (a) 15 and (b) 40 nm TiO<sub>2</sub> shell during UV light irradiation.



**Fig. S2.** SERS spectral change of PSA on  $\text{Fe}_3\text{O}_4@\text{TiO}_2@\text{Ag}$  MPs synthesized with (a) 0.4, (b) 0.8, (c) 1.2, and (d) 2.0 mL of  $\text{AgNO}_3$  during UV light irradiation without magnetic field.



**Fig. S3.** A photograph of photocatalysis reaction.