Supporting Information

Simultaneous detection of squamous cell carcinoma antigen and cancer antigen 125 in cervical cancer serum using nano-Ag polydopamine nanospheres in a SERS-based lateral flow immunoassay

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Results and discussion

SERS imaging of SERS-based LFA

In order to investigate the uniformity of the surface SERS signal, a mapping experiment of T line was carried out after adding 4-ATP and DTNB on the surface. As displayed in Fig. S1A and B, the scanning range on the T line was 40×40 μm^2, the intensity of characteristic peak at 1083 cm^{-1} and 1330 cm^{-1} were displayed by the color of SERS mapping signal according to a color scheme ranging from blue (lowest intensity) to red (highest intensity). Although some polymers can still be found, the SERS-based LFA strip had an uniform SERS enhancement effect.

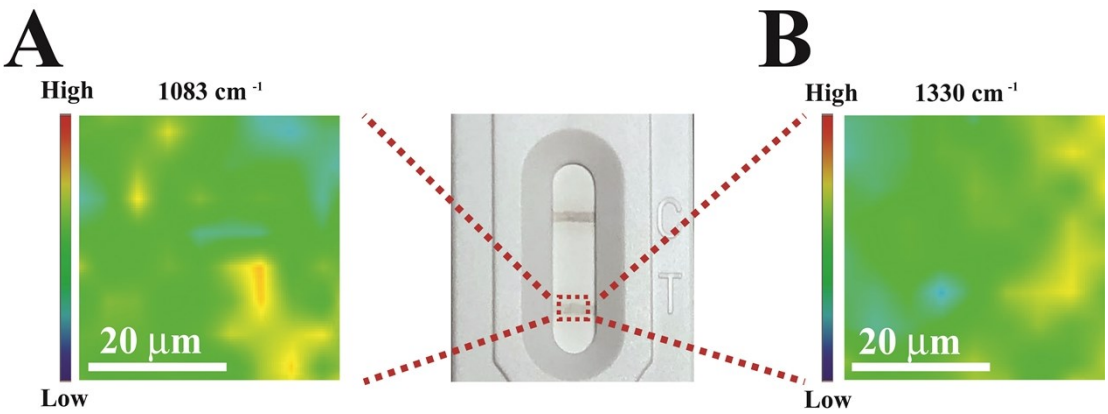

Fig. S1 (A) SERS mapping of 4-ATP measured at 1083 cm^{-1} using the T line of SERS-based LFA strip. (B) SERS mapping of DTNB measured at 1330 cm^{-1} using the T line of SERS-based LFA strip.

The stability of SERS-based LFA.

Fig. S2 showed the stability of SERS-based LFA strip. The SERS-based LFA strips were stored at room temperature for 0 day, 2 days, 4 days, 6 days, 8 days and 10 days. Fig. S2A showed the stability of SERS-based LFA strip, no obvious changes were observed in both of the SERS spectral peak and shape. Fig. S2B displayed corresponding scattergram of the peak intensity at 1330 cm^{-1}, the peak intensity at 10 days only reduced by 9.32% compared with the one at 0 day. These results indicated SERS-based LFA strip has a stable SERS enhancement effect.

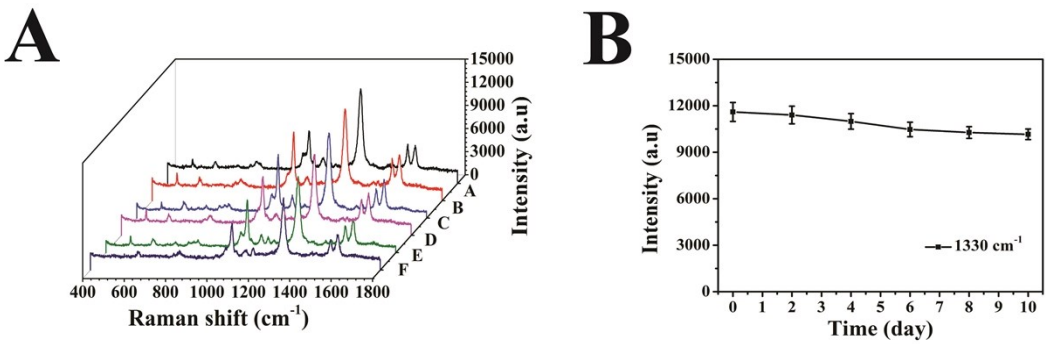

Fig. S2 Stability of the SERS-based LFA strip. (A) Corresponding SERS spectra of SERS-based LFA strips (0 day, 2 days, 4 days, 6 days, 8 days and 10 days). (B) Corresponding scattergram of the peak intensity at 1330 cm^{-1}.

The stability of the PDA@Ag-NPs

Fig. S3A illustrated the stability of PDA@Ag-NPs. The PDA@Ag-NPs made at different times (0 day, 1 day, 3 days, 5 days and 7 days), which was labeled with the mixture of 4-ATP and DTNB were detected by SERS. As shown in Fig. S3B, with 1330 cm^{-1} as the reference peak, the small deviation of the five peak intensities (8.74%) indicated that the good stability of PDA@Ag-NPs preparation.

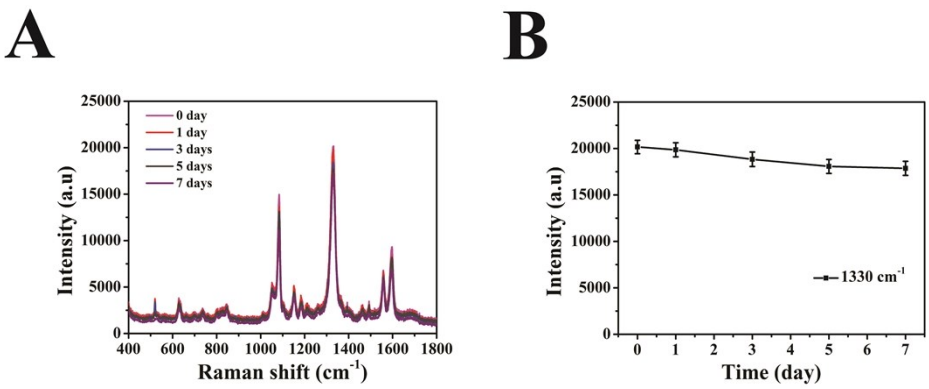

Fig. S3 (A) The stability of the PDA@Ag-NPs labeled by the mixture of 4-ATP and DTNB. (B) SERS intensities at 1330 cm^{-1} of PDA@Ag-NPs for 0 day, 1 day, 3 days, 5 days and 7 days.