Supplementary Material

Rapid analysis of trace volatile formaldehyde in aquatic products by a derivatization reaction-based surface enhanced Raman spectroscopy

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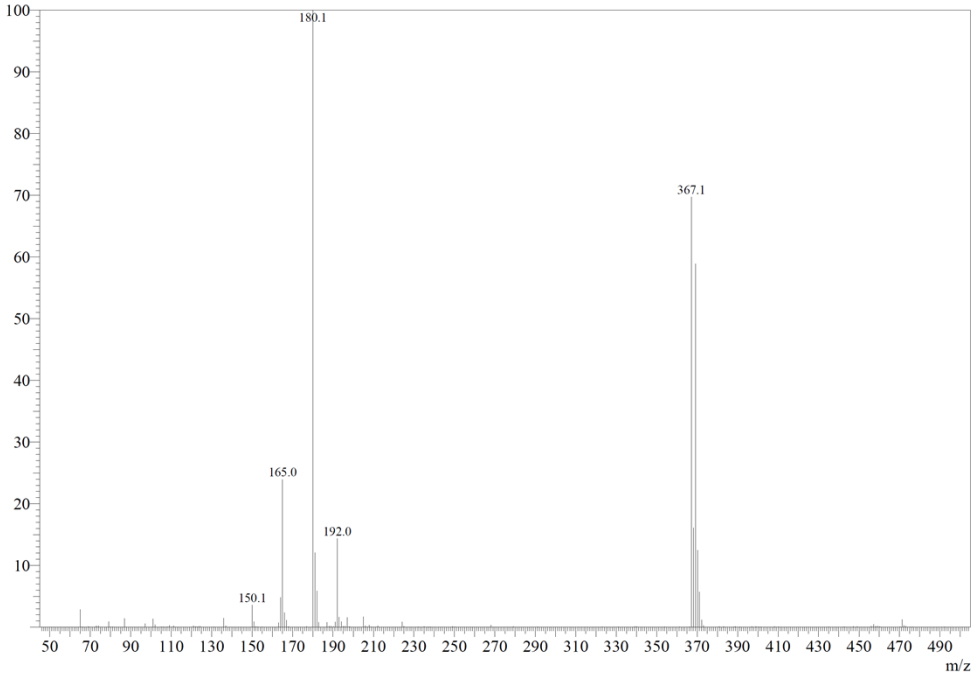

Fig. 1s The mass spectrum for formaldehyde derivative by electrospray ionization (ESI)-LC/MS. The molecular ion peak of formaldehyde-MBTH derivative was observed at m/z 367.1. Mobile phase was methanol. MS spectrum was acquired across the mass range of 10–2000.

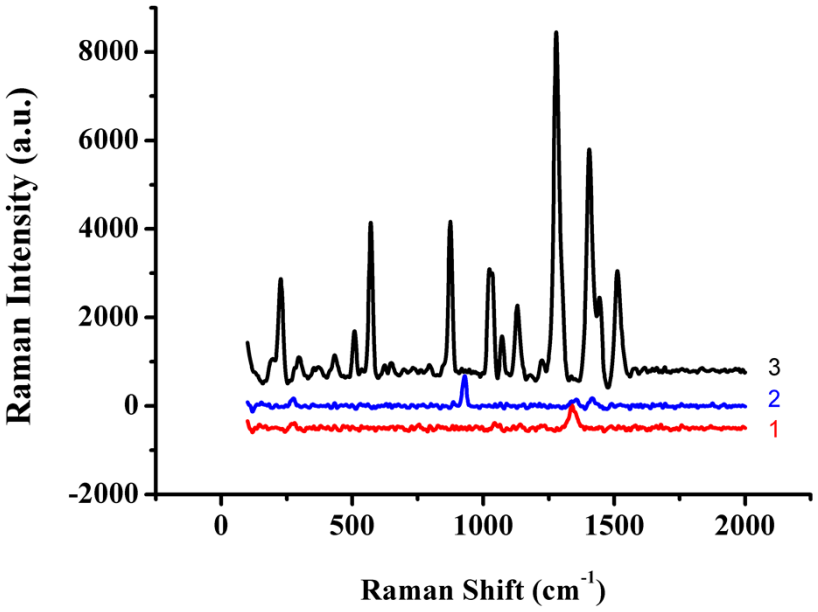

Fig. 2s Raman spectra of different formaldehyde derivatives with different derivatization reagents including 2,4-dinitrophenylhydrazine (1), acetylacetone (2) and MBTH (3). Concentrations of all derivatization reagents were set as 1 mg/mL. Detection conditions were as follows: Raman shift, 1275 cm^{-1}; laser intensity, 48 mW; integration time, 7 s; Au/SiO_2 NPs, 10 μL.

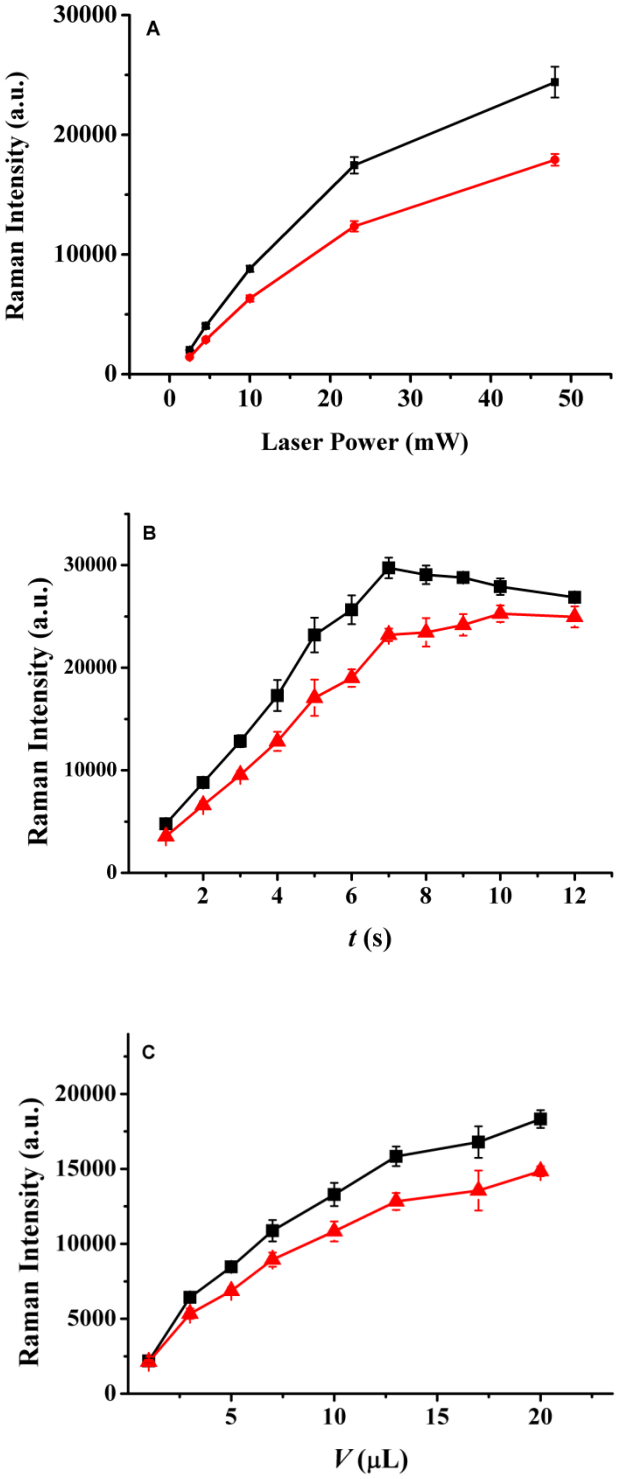

Fig. 3s The effect of the laser intensity (A), integration time (B) and the amount of Au/SiO_2 NPs (C) on the SHINERS detection. Formaldehyde concentration was set at 1.2 μg/L.

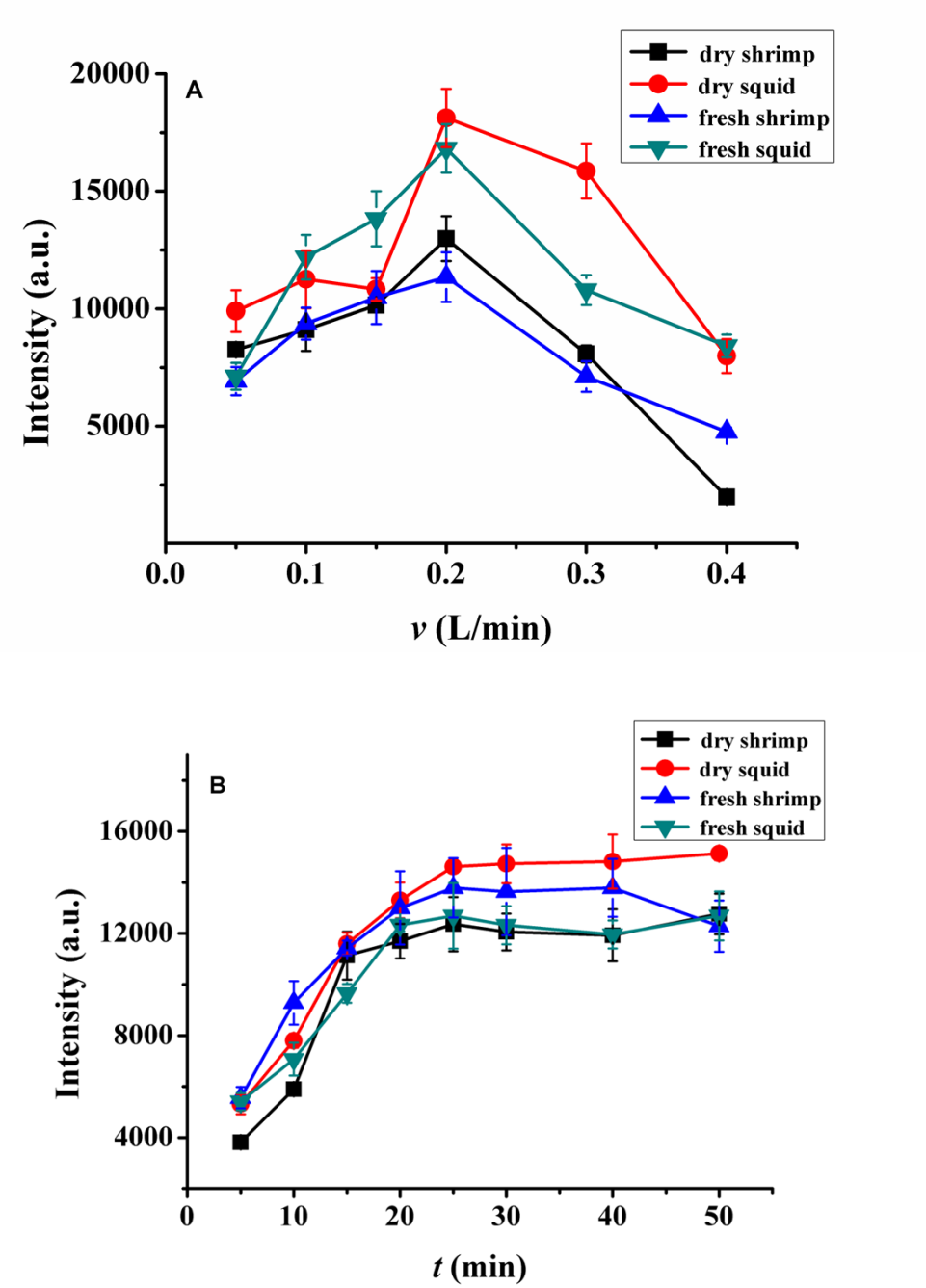

Fig. 4s The effect of the flow speed (A) and sampling time (B) on the adsorption of formaldehyde in aquatic products; Detection conditions were as follows: Raman shift, 1275 cm^{-1}; laser intensity, 48 mW; integration time, 7 s; Au/SiO_2 NPs, 10 μL.

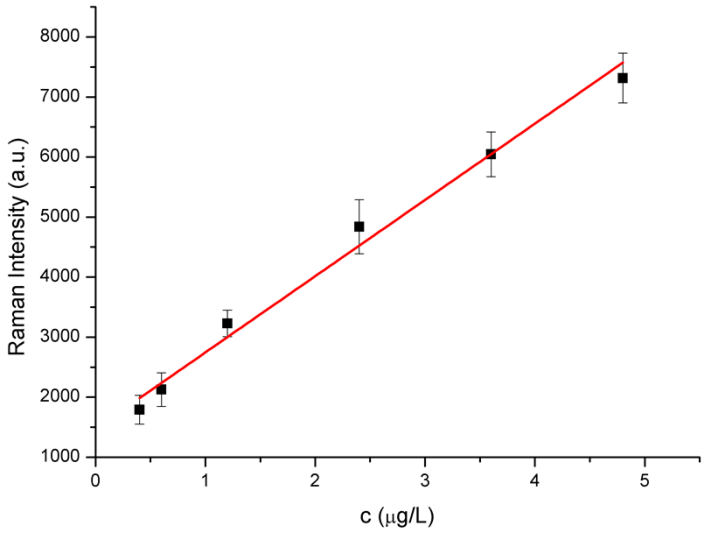

Fig. 5s The standard curve for the determination of formaldehyde. Detection conditions were as follows: Raman shift, 1275 cm^{-1}; laser intensity, 48 mW; integration time, 7 s; Au/SiO_2 NPs, 10 μL.