In situ SERS detection of multi-class insecticides on plant surfaces

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\begin{figure}
\centering
\includegraphics[width=\textwidth]{figure_s1.png}
\caption{PCA analysis of Au NPs with isocarbphos. A. different Au NPs concentration (50-2500 ppm) with 10 ppm of isocarbphos B. different incubation method}
\end{figure}
Fig. S2 Different Au NPs concentration was combined with targets. a, phorate; b, imidacloprid; c, deltamethrin (1. Raman spectrum; 2. PCA plots)
Fig. S3 Different incubation method and time of Au NPs and targets. a, phorate; b, imidacloprid; c, deltamethrin (1. Raman spectrum; 2. PCA plots)
Fig. S4 Identified peaks and Second derivative Raman spectra of different concentration for four insecticides. A, identified peaks (a1, Iso; a2, Pho; a3, Imi; a4, Det); B, Second derivative Raman spectra (b1, Iso; b2, Pho; b3, Imi; b4, Det).
Fig. S5 PLS and PCA plots of four insecticides (a, Iso;b, Pho; c,Imi; d, Det)

![PLS and PCA plots](image)

Fig. S5-b2-1 3D figure for phorate.
Fig. S6 LOD of four insecticides with PCA (0.005 ppm showed using 3D Figure)
**Fig. S7** Optical images of selected scan point. A, tea leaf no Au NPs; B, tea leaf was dropped Au NPs and then mixed; C, exposed-insecticide tea leaf was dropped with Au NPs and mixed.
Fig. S8 LOD of four insecticides on tea leaf with PCA