Supplementary Information

Disposable molecularly imprinted electrochemical sensor for ultra−trace detection of organophosphorus insecticide phosalone employing monodispersed Pt−doped UiO−66 for signal amplification

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Adsorption dynamics

For the adsorption kinetics experiment, 10 mg of the molecularly imprinted sol−gel was dispersed in 10 mL of 50 mg L^{-1} PAS ethanol solution. The mixture was mechanically shaken for 1, 2, 3, 4, 5, 6, 8, 10, 15, and 20 min at 100 rpm at room temperature, respectively. Then the PAS concentrations in the supernatant at different adsorption time were determined using HPLC method after filtration through 0.22 μm microporous membranes. The results shown in Fig. S1A demonstrate that the binding of target in MIP is rapid, which reaches adsorption equilibrium within 5 min. Further, the mechanism of the adsorption was evaluated by fitting the experimental data with pseudo−second−order model diffusion model (Fig. S1B):

$$\frac{t}{Q_t} = \frac{1}{kQ_e^2} + \frac{t}{Q_e} \qquad (1)$$

where Q_t and Q_e are the uptake amounts at time t and equilibrium, respectively, and k is the adsorption rate constant of second−order. The plot of t/Q_t versus t shows a good linear regression with the linear correlation coefficient of 0.9992, and the Q_e value obtained from the slope is 51.1 mg g^{-1}.

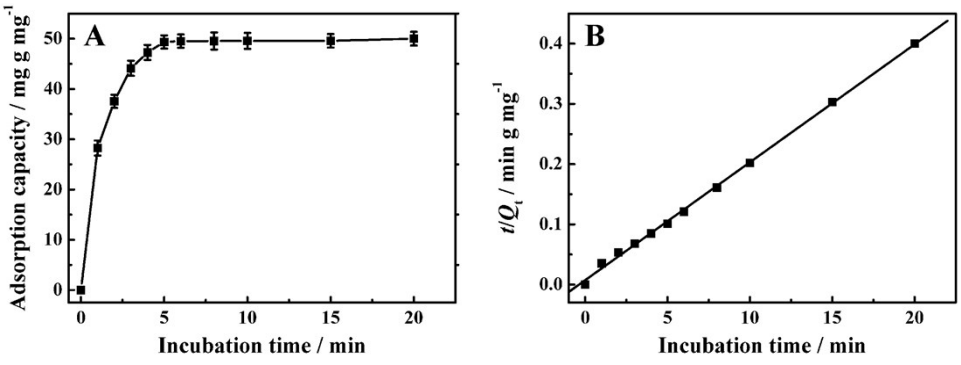

Fig. S1 Uptake kinetics plot of MIP (A) and pseudo−second−order kinetic model for the adsorption of PAS onto MIP (B).

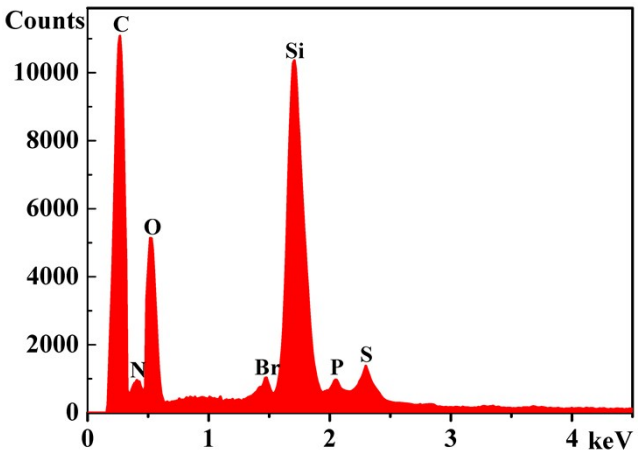

Fig. S2 EDS spectrum of the MIP−PAS sample.