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Supplementary Materials

Highly Sensitive Electrochemical Detection of Paraquat in Environmental Water Samples Using a Vertically Ordered Mesoporous Silica Film and a Nanocarbon Composite

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S1 CV curves of bare GCE and VMSF/3DG-CNT/GCE in deoxygenated PBS

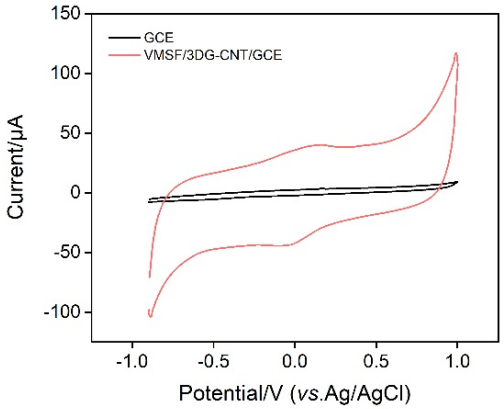

Figure S1. CV curves of bare GCE (black) and VMSF/3DG-CNT/GCE (red) in deoxygenated PBS (0.1 M, pH = 6).

S2 Optimization of experimental conditions

S2.1 Electrodeposition time of 3DG-CNT

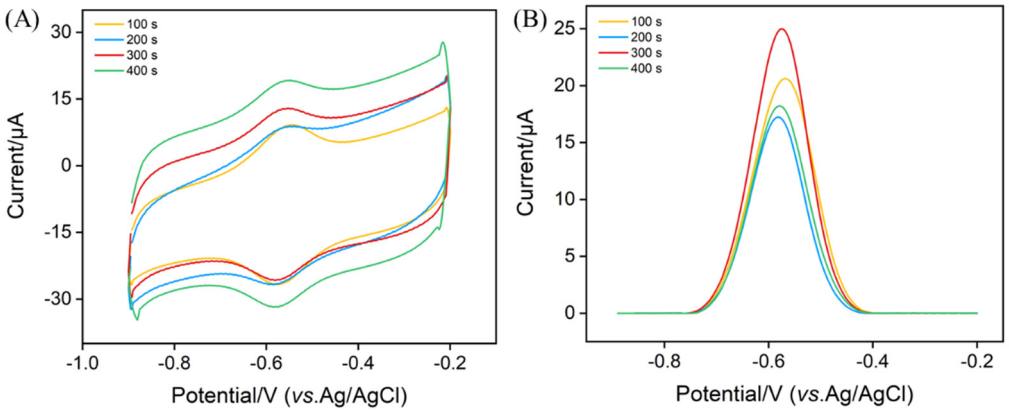

Figure S2.1 (**A**) CVs and (**B**) DPVs obtained at the 3DG-CNT/GCE electrodeposited under the potential of –1.2 V for various times in 0.1 M PBS (pH = 6) containing 3.5 μM PQ.

S2.2 Growth time of VMSF

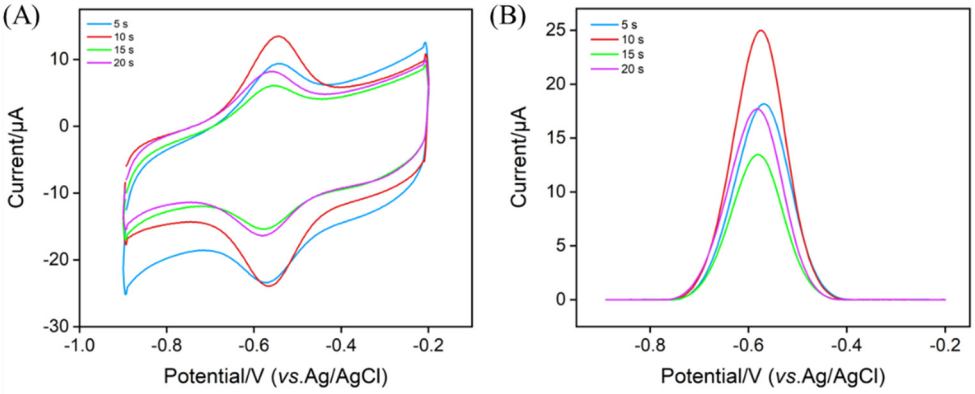

Figure S2.2 (**A**) CVs and (**B**) DPVs obtained at the VMSF/3DG-CNT/GCE under different growth times of VMSF in 0.1 M PBS (pH = 6) containing 3.5 μM PQ.

S2.3 pH of supporting electrolyte

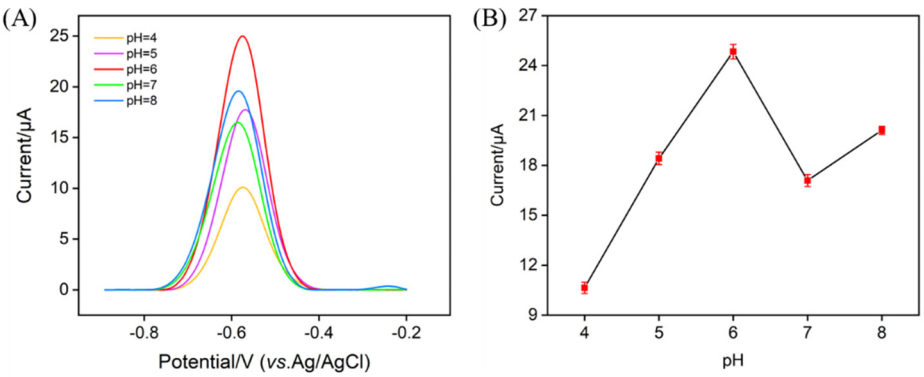

Figure S2.3 (**A**) DPV curves obtained at the VMSF/3DG-CNT/GCE in 0.1 M PBS containing 3.5 μM PQ at various pH values. (**B**) Effect of the pH value of PBS on the detection of PQ. The error bars represent the SD of three measurements.

S2.4 Concentration of supporting electrolyte

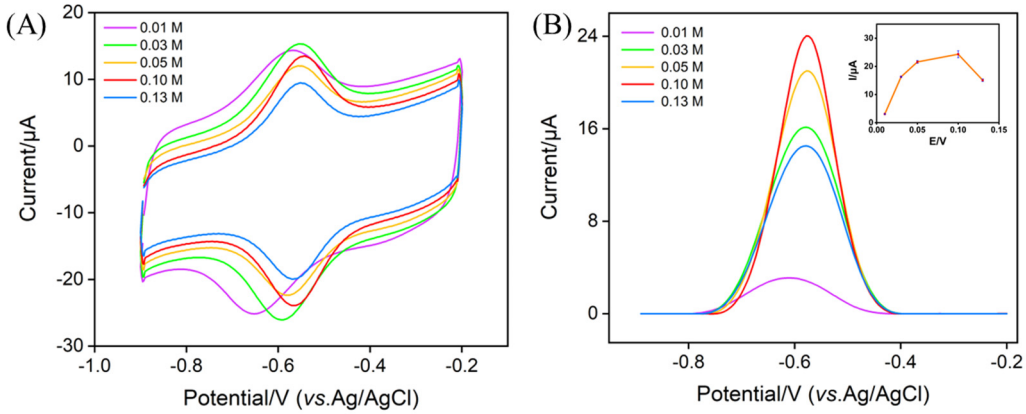

Figure S2.4 (**A**) CVs and (**B**) DPVs obtained at the VMSF/3DG-CNT/GCE in response to 3.5 μM PQ at various concentrations of PBS (pH = 6). Inset is the concentration of PBS on the detection of PQ. The error bars represent the SD of three measurements.

S2.5 Preconcentration time

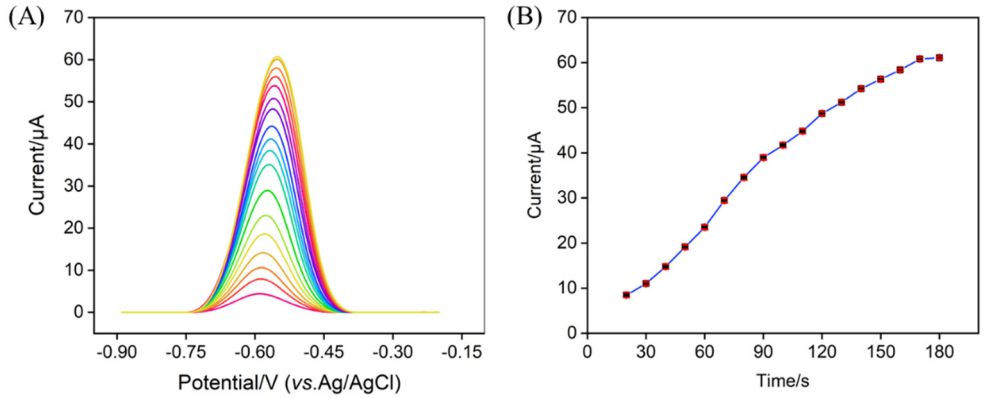

Figure S2.5 (**A**) DPVs obtained at the VMSF/3DG-CNT/GCE in 0.1 M PBS (pH = 6) containing 10 μM PQ at various mechanical stirring time. (**B**) The dependence of anodic peak current on the preconcentration time.

S3 Anti-interference ability, repeatability and stability of VMSF/3DG-CNT/GCE

S3.1 Anti-interference ability of VMSF/3DG-CNT/GCE

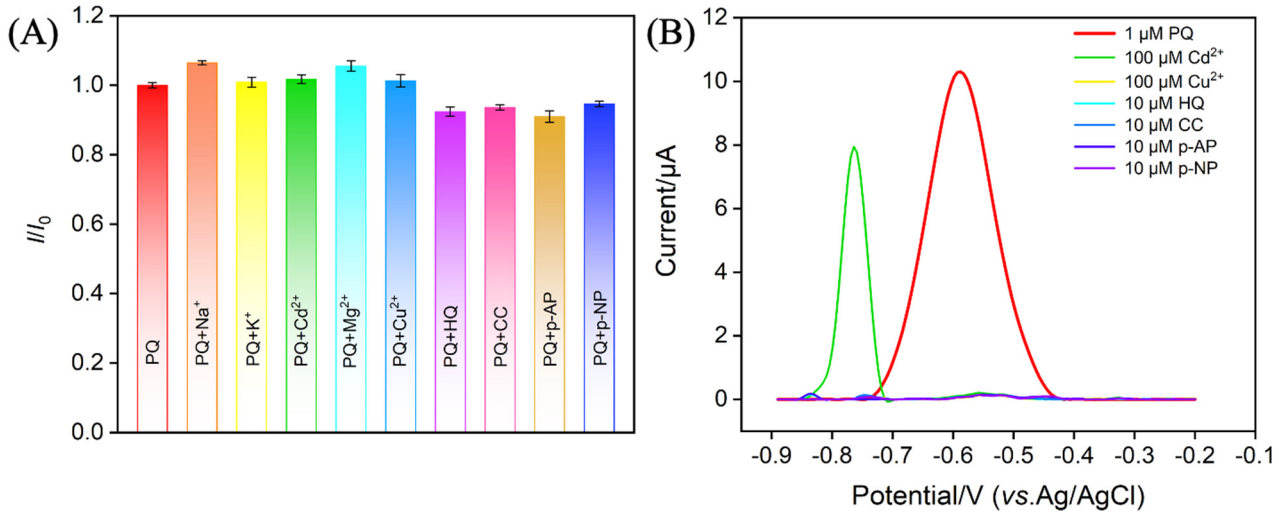

Figure S3.1 (**A**) The current ratio (I/I_0) obtained from VMSF/3DG-CNT/GCE for detection of PQ (1 μM) in the absence (I_0) and presence (I) of 100-fold (Na^+, K^+, Cd^{2+}, Mg^{2+}, and Cu^{2+}) or 10-fold of HQ, CC, *p*-AP and *p*-NP. The error bars represent the SD of three measurements. (**B**) DPV curves of the VMSF/3DG-CNT/GCE for detection of PQ, Cd^{2+}, Cu^{2+}, HQ, CC, *p*-AP or *p*-NP.

S3.2 Repeatability of VMSF/3DG-CNT/GCE

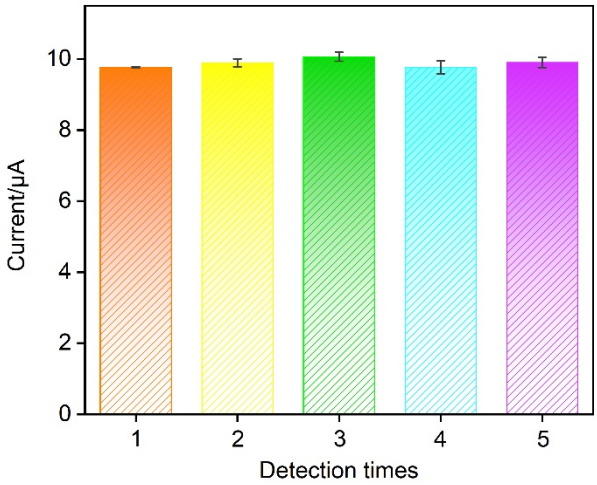

Figure S3.2 Repeatability of VMSF/3DG-CNT/GCE in the presence of 1 μM PQ.

S3.3 Stability of VMSF/3DG-CNT/GCE

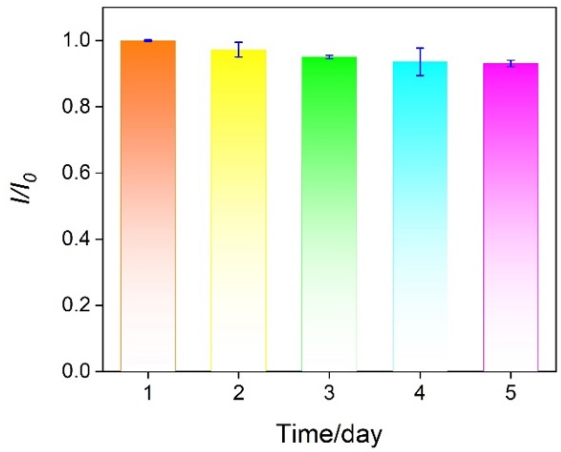

Figure S3.3 Stability of the VMSF/3DG-CNT/GCE. *I* and I_0 denote the anodic peak current measured at various days and initial measured value, respectively.