

## Electronic Supporting Information

### Electrochemical sensor for the determination of dimetridazole using a 3D Cu<sub>2</sub>O/ErGO-modified electrode

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## DPV measurement of the electrode kinetics of DMZ on the modified electrode

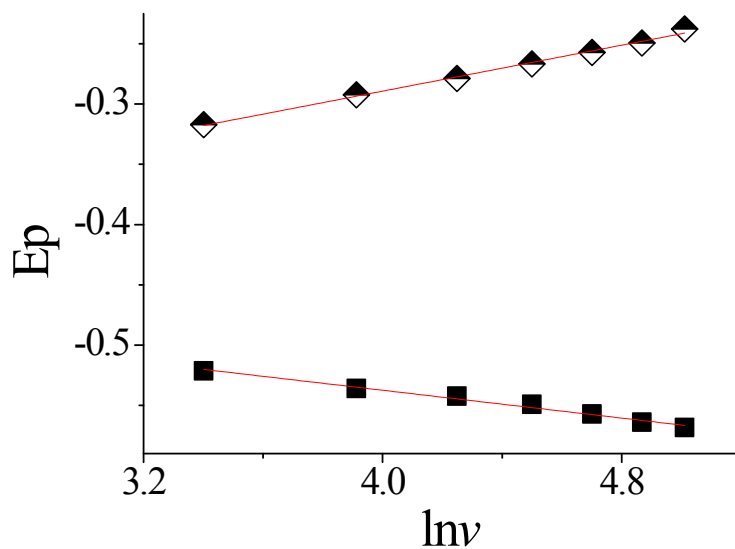


Fig. S1 Plot of  $\ln v$  vs.  $E_p$ .

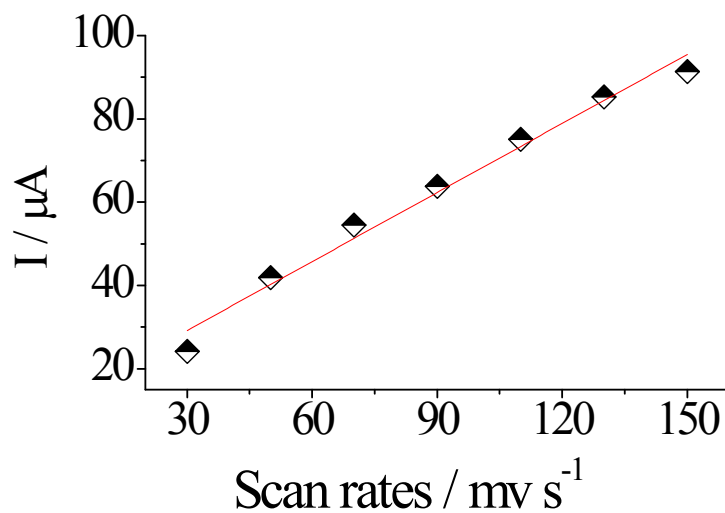


Fig. S2 Plot of the peak current vs. the scan rate.

## Optimization of the electrolyte pH

The pH of the supporting electrolyte is known to influence the reduction rate of DMZ. In this study, the response of the modified electrode to a  $10^{-7}$  mol/L solution of DMZ was taken as a reference, and 0.02 mol/L PBS buffer was selected as the working

buffer. The various pH values employed to give the desired acidity gradient were as follows: 6.5, 6.8, 7.2, 7.4, 7.6, 7.8, 8.0, and 8.2. The results outlined in Fig. S3 show that the optimum pH for this process was 6.8, thereby indicating that a weakly acidic environment is most suitable for the reduction of DMZ on Cu<sub>2</sub>O/ErGO/GCE. This result further confirmed that the nitro group (R-NO) was reduced to give the hydroxylamine (R-NHOH) moiety, a process that involved four electrons and four protons followed by a two-electron reduction of hydroxylamine to yield the corresponding amine.

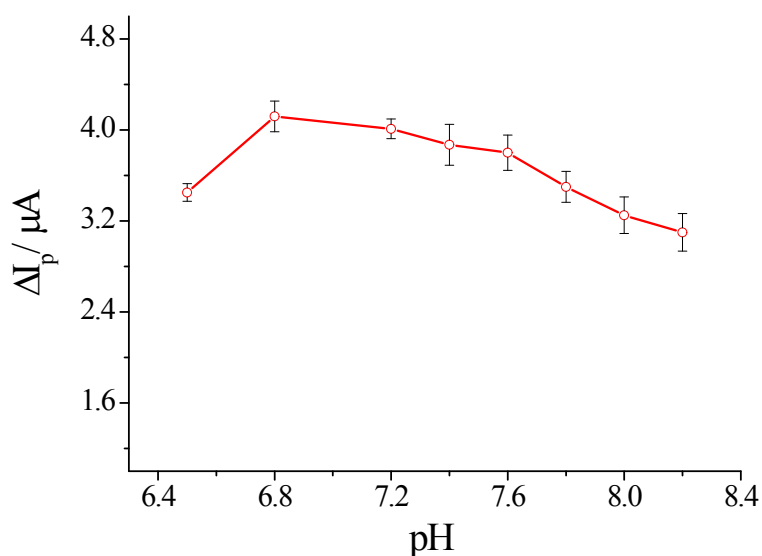


Fig. S3 Optimization of the electrolyte pH (pH = 6.5, 6.8, 7.2, 7.4, 7.6, 7.8, 8.0, or 8.2 in 0.02 mol/L PBS buffer, error bars: n = 3)

### Optimization of the electrodeposition time

As the electrodeposition time has a significant effect on the thickness and conductivity of the resulting Cu<sub>2</sub>O/ErGO nanocomposites, its influence on the reduction peak current value was measured. Upon increasing the electrodeposition time, the response current increased gradually, reaching a maximum value at 20 s (Fig. S4, C<sub>DMZ</sub> = 1 × 10<sup>-7</sup> mol/L). At this stage, the abundance of the nanomaterials on the electrode surface is a major factor affecting the response current. Upon further increasing the electrodeposition time, the thickness of the material restricts the electron

transfer of DMZ on the electrode surface, thereby decreasing the current. Based on the obtained results, 20 s was selected as the optimal electrodeposition time for subsequent experiments.

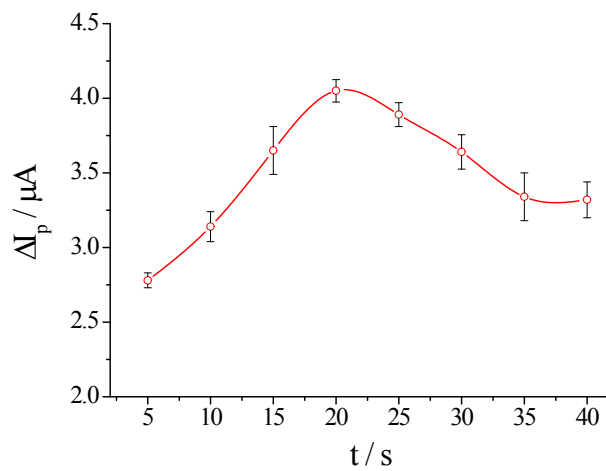


Fig. S4 Optimization of the electrodeposition time in the range of 5–40 s (error bars: n = 3).