

Supplementary Information

Enhanced electrochemical sensing of methyl parathion using AgNPs@IL/GO nanocomposites in aqueous matrices

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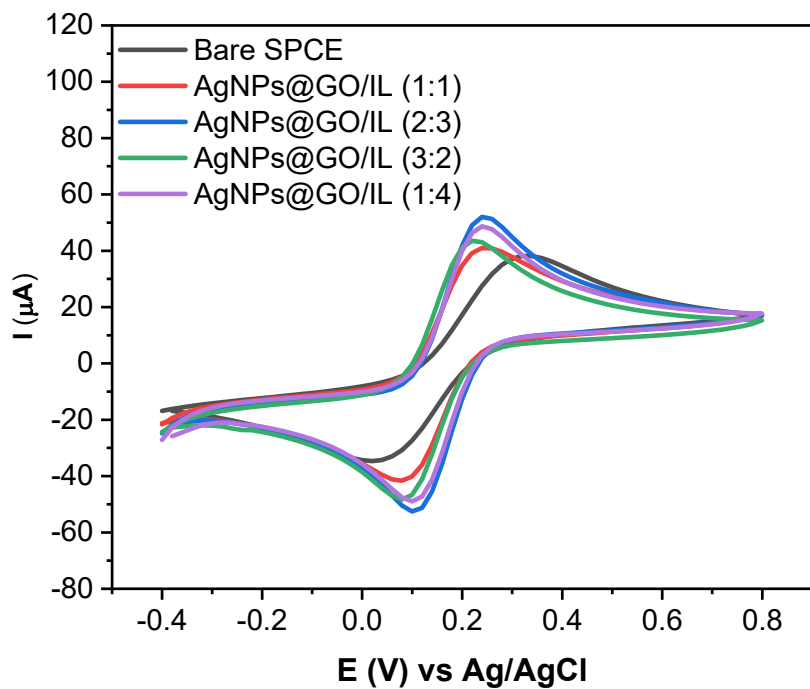


Figure S1. Optimization AgNP@GO/IL composite ratio in presence of $5.0 \text{ mmol L}^{-1} [\text{Fe}(\text{CN})_6]^{3-/4-}$ in 0.1 M KCl ; scan rate 25 mV .

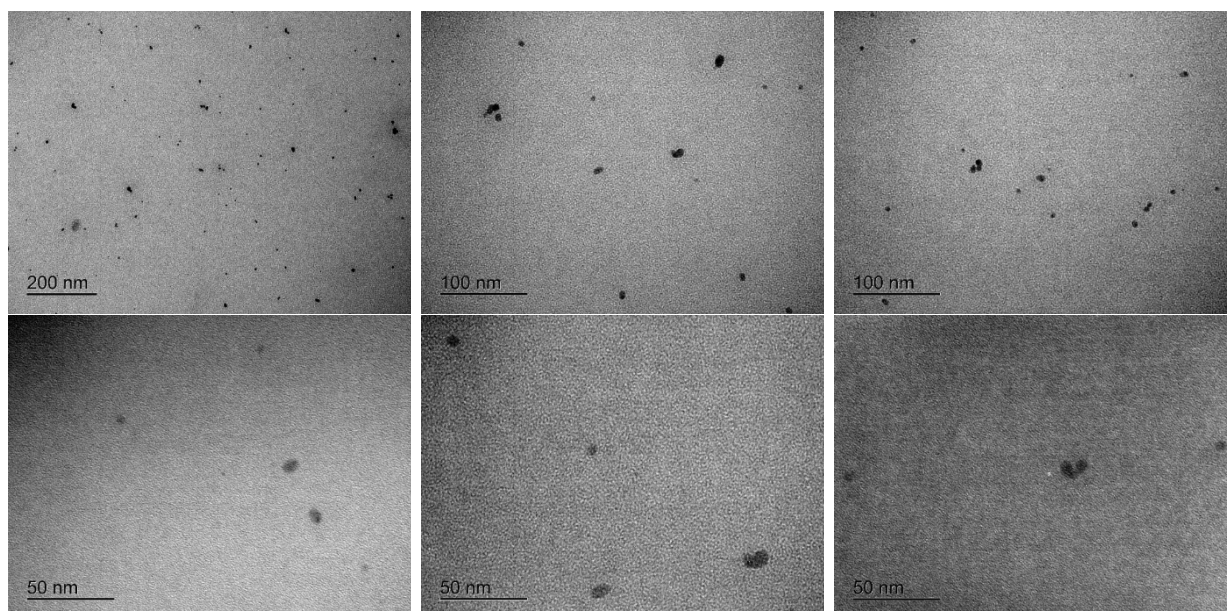


Figure S2. Representative TEM images of AgNPs obtained from different synthesis and different regions of the grid.

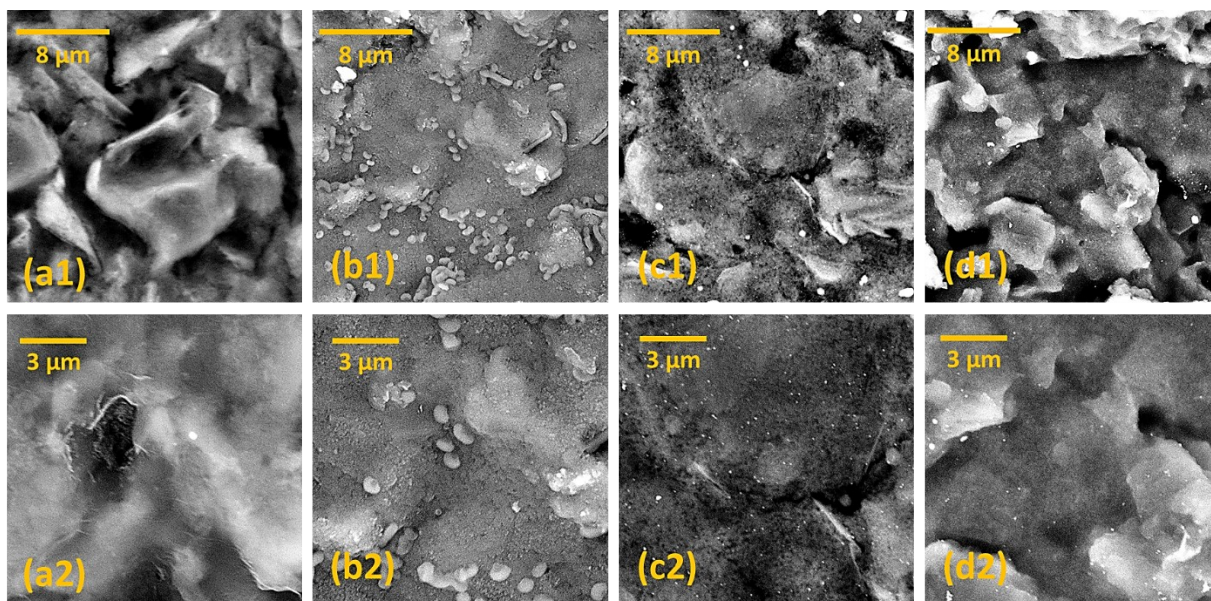


Figure S3. SEM images at magnifications $\times 10,000$ (marked 1) and $\times 20,000$ (marked 2), of the (a) GO@SPCE, (b) GO/IL@SPCE, (c) AgNPs@SPCE, and (d) AgNPs@GO/IL@SPCE. GO@SPCE and GO/IL@SPCE are covered with a Cu layer using a plasma coating procedure.

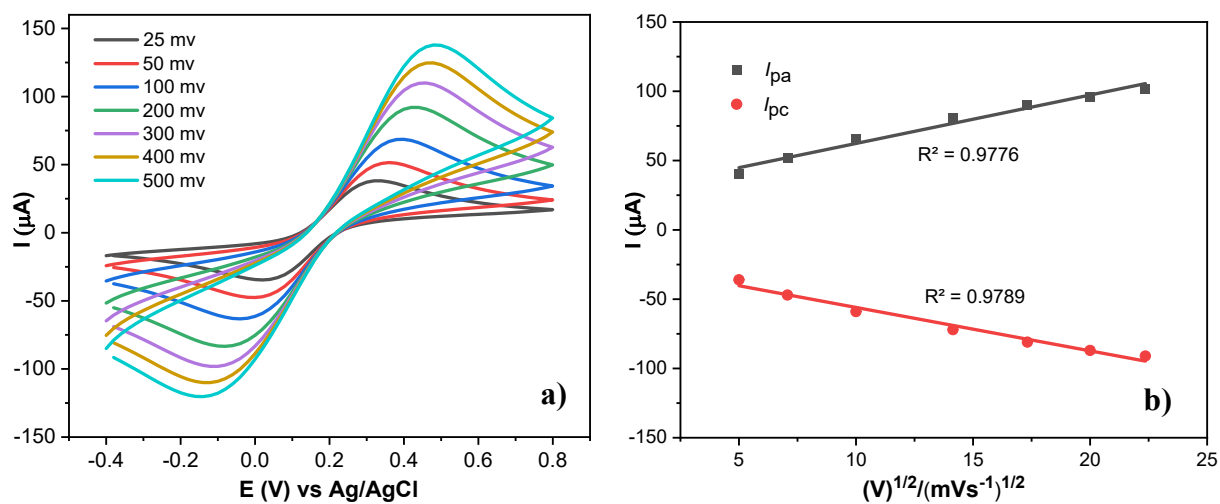


Figure S4. a) Cyclic voltammograms of $5.0 \text{ mmol L}^{-1} [\text{Fe}(\text{CN})_6]^{3-/4-}$ in 0.1 M KCl obtained with a bare SPCE at different scan rates. b) Anodic current and cathodic current vs. sq. root of scan rates.

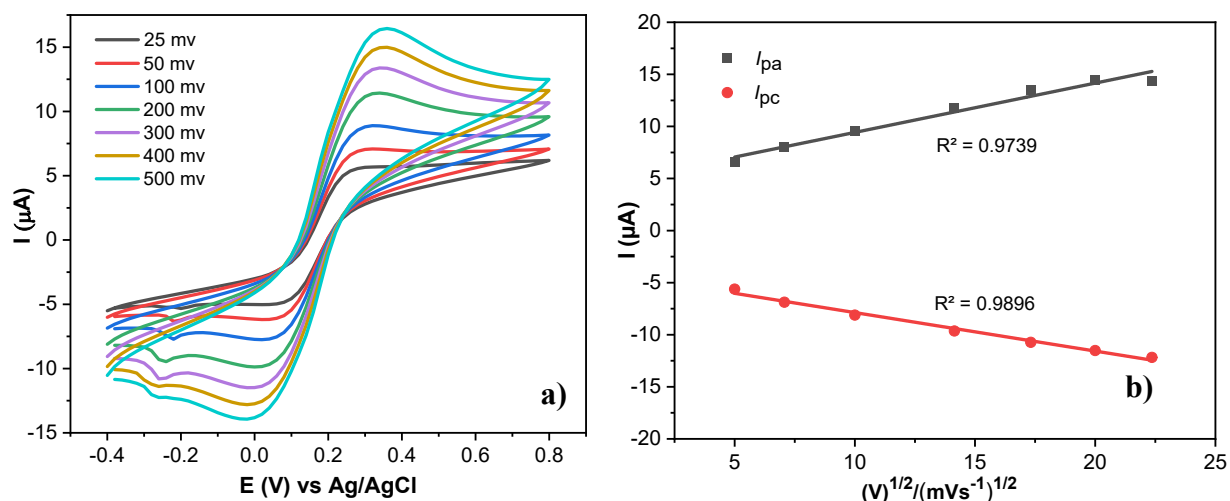


Figure S5. a) Cyclic voltammograms of $5.0 \text{ mmol L}^{-1} [\text{Fe}(\text{CN})_6]^{3-/4-}$ in 0.1 M KCl obtained with GO@SPCE at different scan rates. b) Anodic current and cathodic current vs. sq. root of scan rates.

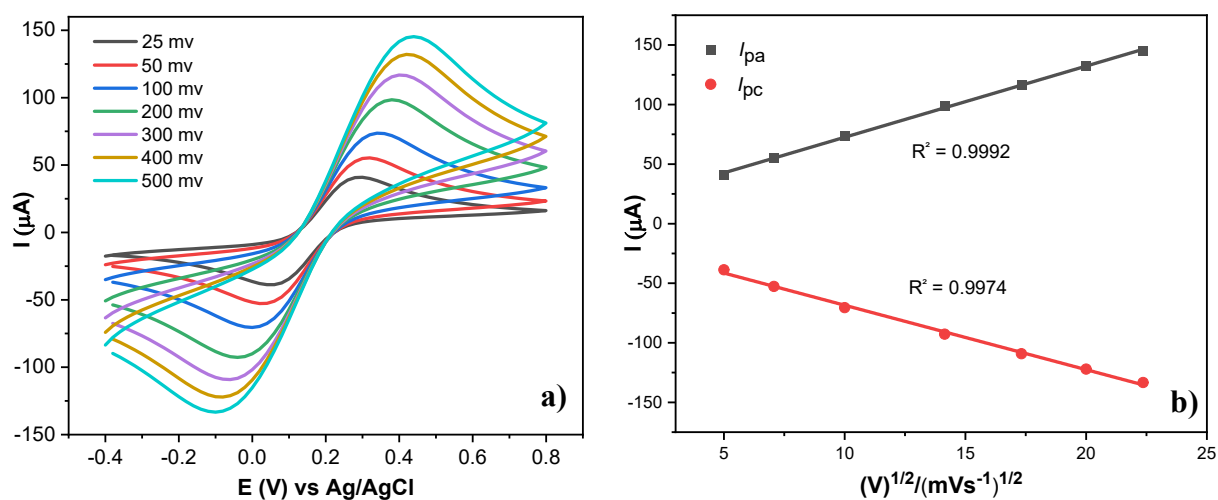


Figure S6. a) Cyclic voltammograms of $5.0 \text{ mmol L}^{-1} [\text{Fe}(\text{CN})_6]^{3-/4-}$ in 0.1 M KCl obtained with AgNPs@SPCE at different scan rate. b) Anodic current and cathodic current vs. sq. root of scan rates.

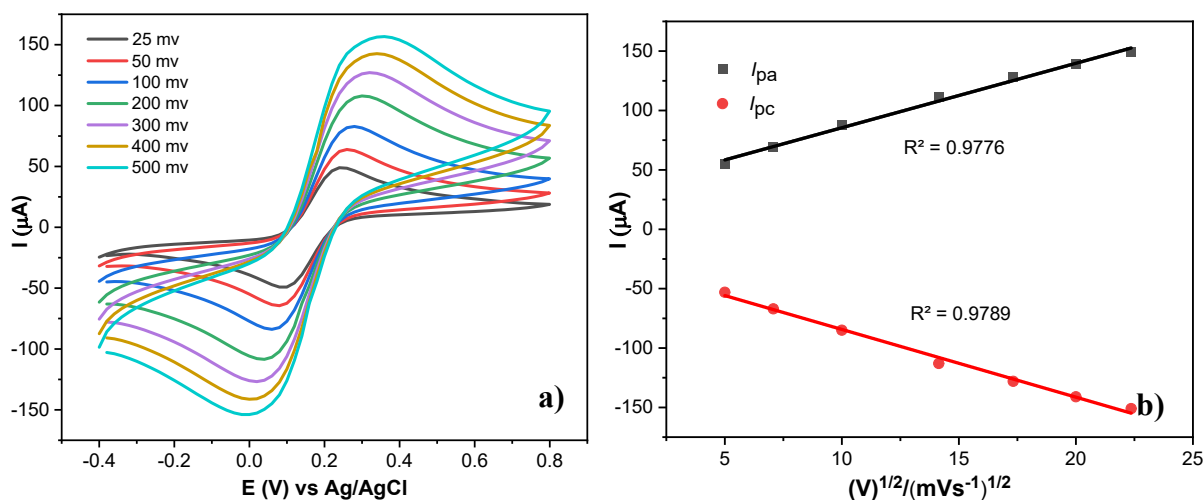


Figure S7. a) Cyclic voltammograms of $5.0 \text{ mmol L}^{-1} [\text{Fe}(\text{CN})_6]^{3-/4-}$ in 0.1 M KCl obtained with GO/IL@SPCE at different scan rate. b) Anodic current and cathodic current vs. sq. root of scan rates

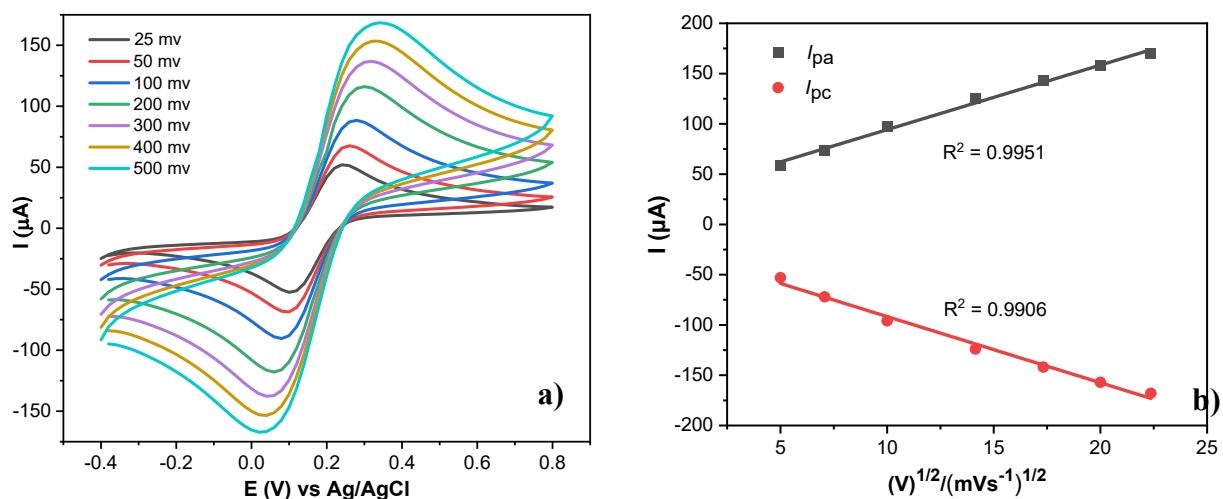


Figure S8. a) Cyclic voltammograms of $5.0 \text{ mmol L}^{-1} [\text{Fe}(\text{CN})_6]^{3-/4-}$ in 0.1 M KCl obtained with AgNPs@GO/IL@SPCE at different scan rate. b) Anodic current and cathodic current vs. sq. root of scan rates.

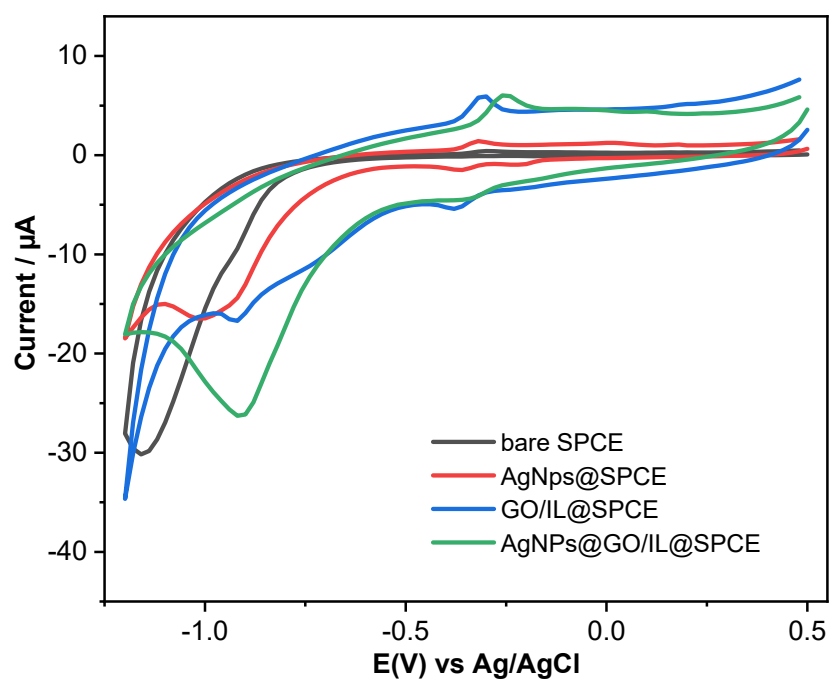


Figure S9. Electrochemical behavior of MP at different eletodes ($20 \mu\text{mol L}^{-1}$ MP; in 0.1 M PBS pH 7 ; Scan rate 100 mV^{-1})

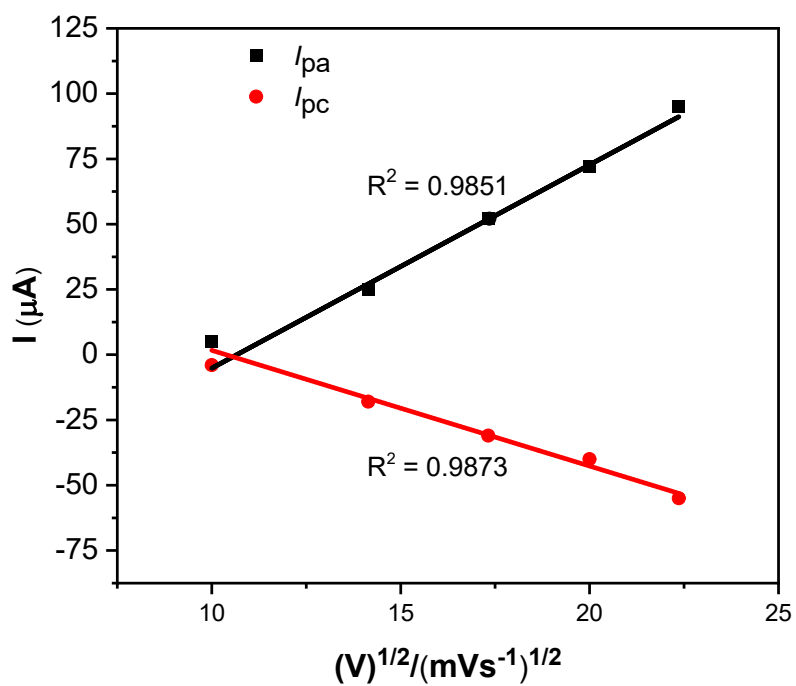


Figure S10. Anodic current and cathodic current vs. sq. root of scan rates of MP at AgNPs@GO/IL@SPCE (E5) electrode (Ox_1 and R_2 processes).

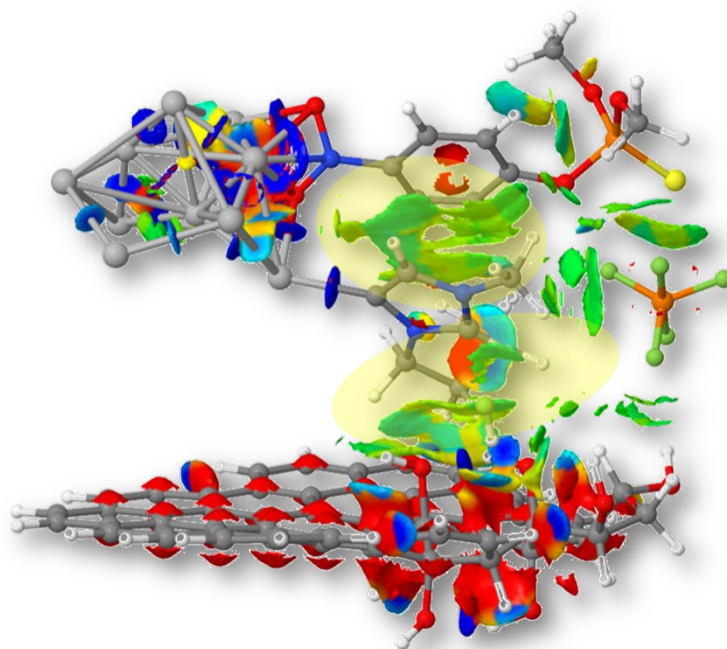


Figure S11. Non-covalent interaction domains in the (MP + Ag@GO/IL) system.