Electrochemical Monitoring of sulfadiazine via La@CeO incorporated with Reduced Graphene Oxide

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S1. Chemicals and reagents

Sulfadiazine (SZ) (≥ 99.0 – 101.0 %), Ammonium cerium (IV) nitrate $(NH_4)_2[Ce(NO_3)_6]$ (≥ 98 %), Lanthanum chloride hexahydrate $LaCl_3.6H_2O$ (≥ 98 %) and Polyethylene glycol (PG) (≥ 99.0 %) all the chemicals are received from Sigma-Aldrich. The above chemicals are in analytical grade so used without purification. Mixing of Na_2HPO_4 (≥ 99.0 %) and NaH_2PO_4 (≥ 99.0 %) dissolved in deionized water (DI) to prepare 0.1 M of phosphate buffer solution (PBS) the pH was adjusted using NaOH (≥ 85 %) or HCl (≥ 37 %) were procured from Sigma Aldrich used without purification. Double distilled water is collected and used for all the electrochemical characterization.

S2. Material characterization

The structural conformation of the synthesized nanocomposite was studied by Field Emission scanning electron microscopy (FESEM, Hitachi s-3000H). The chemical formation and the quantity of the element were studied by Energy-dispersive X-ray spectrometer bond Field emission scanning electron microscopy. The chemical composition and the individual elemental percentage were investigated through an energy-dispersive X-ray (EDX, HORIBA EMAX X-ACT, Sensor +24 V = 16 W, resolution at 5.9 k eV) attached to the HRTEM. The crystallinity nature of the synthesized material was analyzed by X-ray diffraction (XRD, X'Pert-PRO, PAN analytical B.V., The Netherlands) and a diffractometer with Cu Kαradiation(k=1.54Å). Then the materials' vibrational bands are examined by a Micro-Raman spectrometer. Electrochemical studies of the prepared material were performed under Electrochemical impedance spectroscopy (EIS), and the material's electrochemical measurements were analyzed in electrochemical apparatus such as cyclic voltammetry (CV CHI 1205B) and differential pulse voltammetry (DPV, CHI 900, CH instruments). These all experiments were carried out in a conventional three-electrode setup.

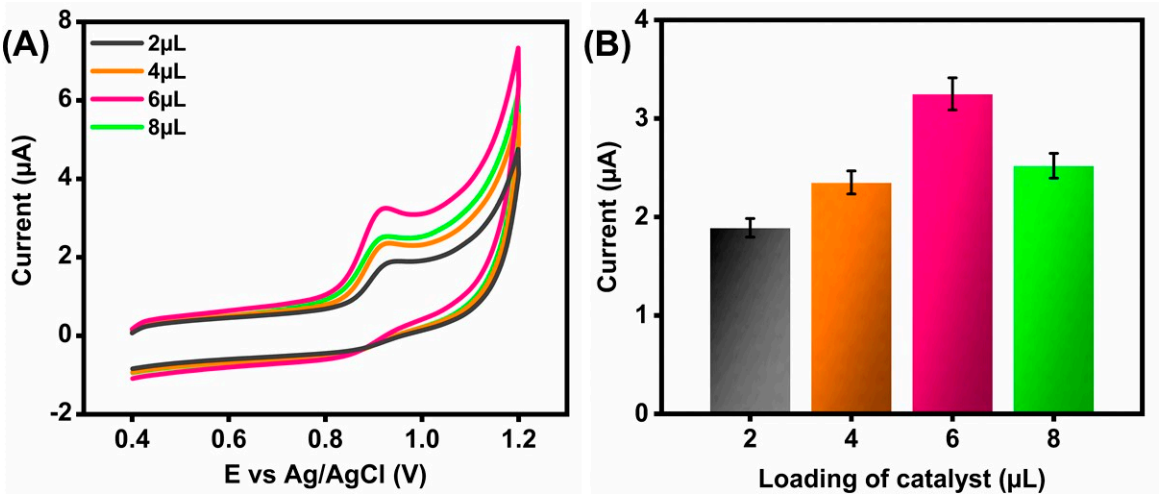

Fig. S1. (A) depicts the CV redox current response of different loading concentrations of LCO@RGO/GCE in 0.1 M PBS of pH 7 with 100 μM of SZ. (B) the corresponding bar diagram for anodic current response vs different loading concentrations of LCO@RGO/GCE

Table. S1. Determination of SZ in human blood serum and river water in front of fabricated LCO@RGO/GCE

Sample	Added (μM)	Found (μM)	Recovery (%)
Blood serum	10	9.89	98.9
	20	19.86	99.3
	30	28.95	96.5
River water	10	9.96	99.6
	20	19.92	99.6
	30	28.97	96.5