Electronic Supplementary Material (ESI) for Nanoscale Advances.

Supporting information

Nickel Sulfide incorporated sulfur-doped graphitic carbon nitride nanohybrid interface for non-enzymatic electrochemical sensing of glucose

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2.3. Characterization techniques

HR-TEM, Tecnai G^2 TF20 higher resolution transmission electron microscopy operating at an accelerating voltage of 200 kV was used to study the structure and size of the sample. BRUKER D8 ADVANCE X-ray Diffractometer with Cu K_α radiation (α=1.5418 Å) used to investigated the crystalline nature of the sample. Surface elemental analysis and oxidation state of the prepared sample was investigated using X-ray photoelectron spectroscopy (XPS) with Mg Kα (1253.6 eV) as X-ray source (Thermo Scientific, MULTILAB 2000). Fourier transform infrared (FTIR) spectrum was measured using Bruker Optik GmbH, Germany (Model: TENSOR 27). Thermogravimetric analysis (TGA) was studied in TGA/DTA analyzer (SDT Q 600) in nitrogen atmosphere. The electrochemical measurements such as cyclic voltammetry (CV), linear sweep voltammetry (LSV) and chronoamperometry (CA) were demonstrated with a PalmSens electrochemical instrument using a conventional three-electrode system consist of S-gC_3N_4-NiS modified glassy carbon electrode (GCE; 3 mm in diameter) as working electrode, a Ag/AgCl (3 M KCl) as the reference electrode and platinum foil as auxiliary electrode. The electrochemical measurements were recorded at room temperature in 0.1 M NaOH solution.

Figures and Captions

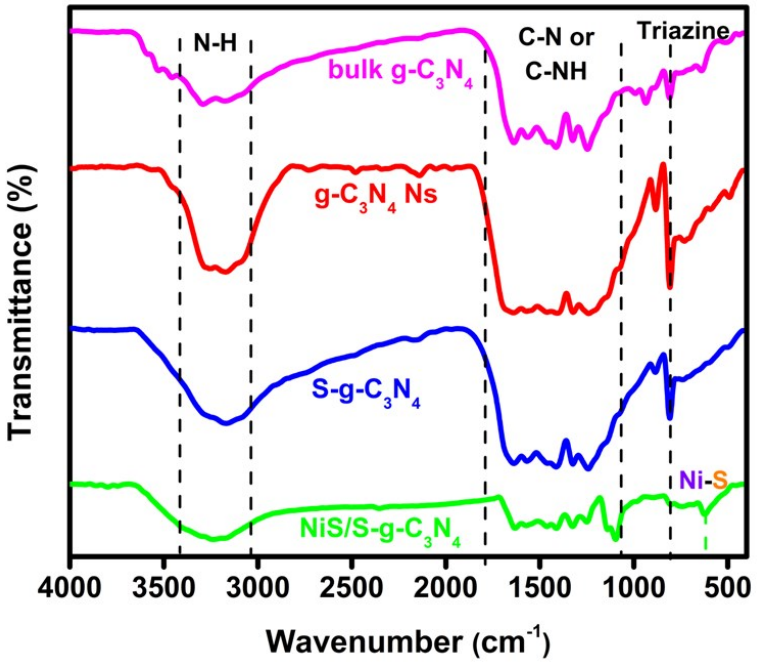

Fig. S1. FT-IR spectra obtained for bulk g-C_3N_4, g-C_3N_4 nanosheet, S-g-C_3N_4, and NiS/g-C_3N_4

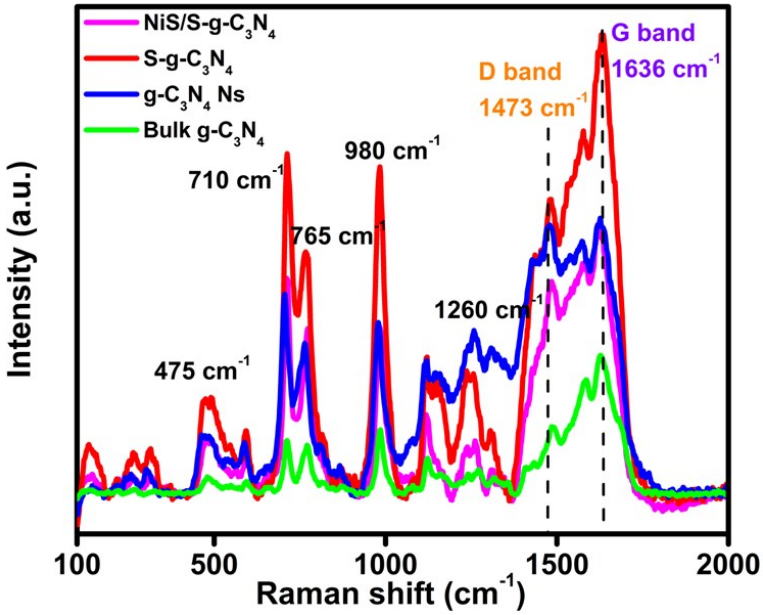

Fig. S2. Raman spectra obtained for bulk g-C_3N_4, g-C_3N_4 nanosheet, S-g-C_3N_4, and NiS/g-C_3N_4

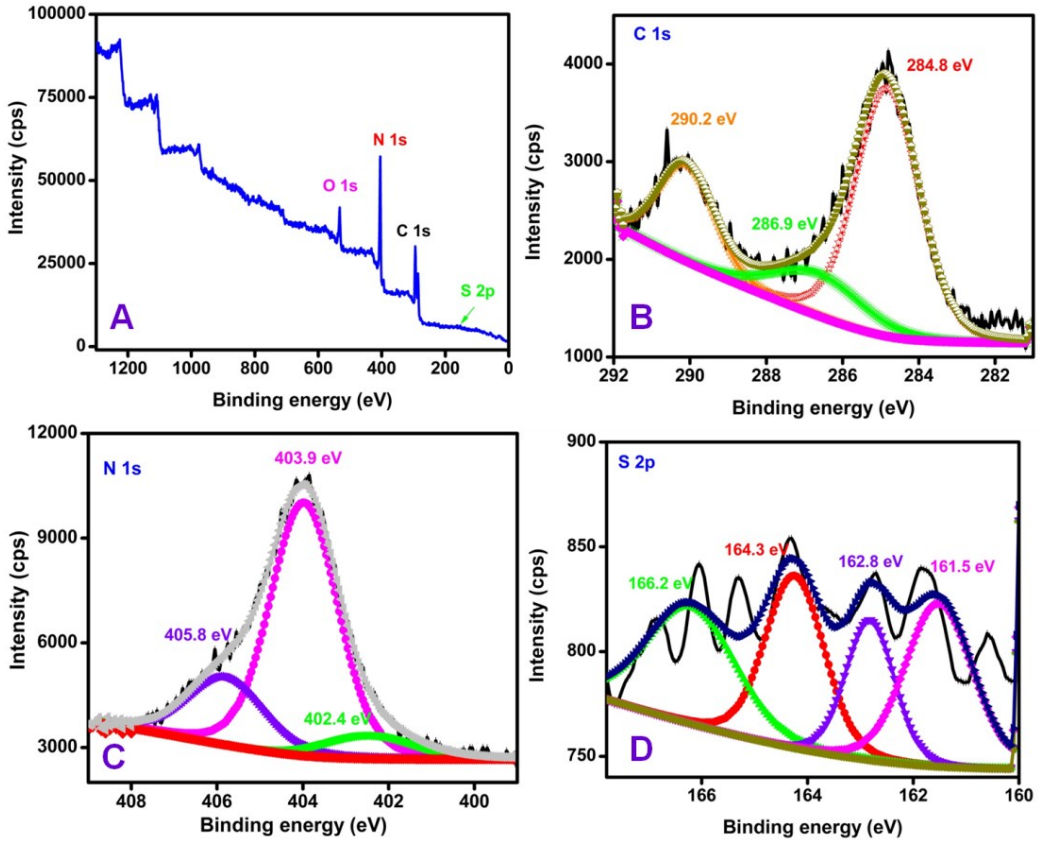

Fig. S3. XPS spectra for S-gCN nanosheet (A) survey scan, (B) C 1s, (C) N 1s, and (D) S 2p core-level spectra.

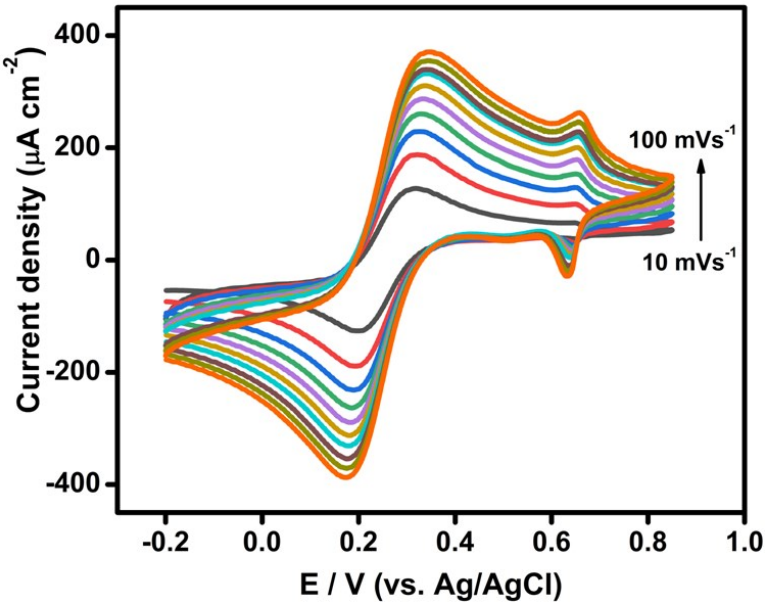

Fig. S4. Voltammetric responses of different scan rates (10 to 100 mV s^{-1}) in presence of $Fe(CN)_6^{3-/4-}$ at NiS/S-g-C_3N_4/GCE modified electrode in 0.1 M KCl solution.

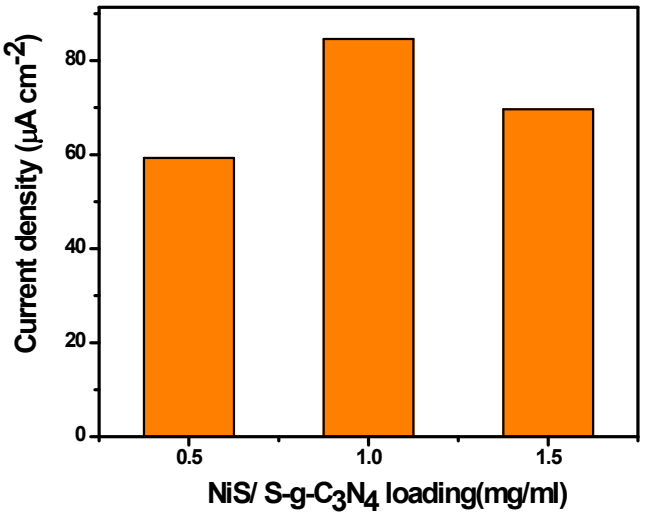

Fig S5. Plot of current density vs. various loading of NiS/S-g-C_3N_4/GCE with 0.5 mM of glucose

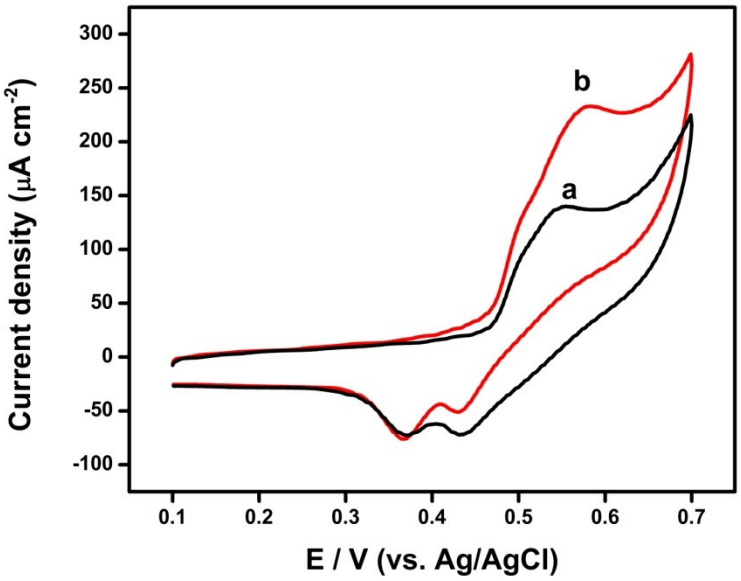

Fig. S6. Cyclic voltammograms response of Bare NiS/GC in 0.1M NaOH (a) without glucose (b) with 0.5 mM glucose.

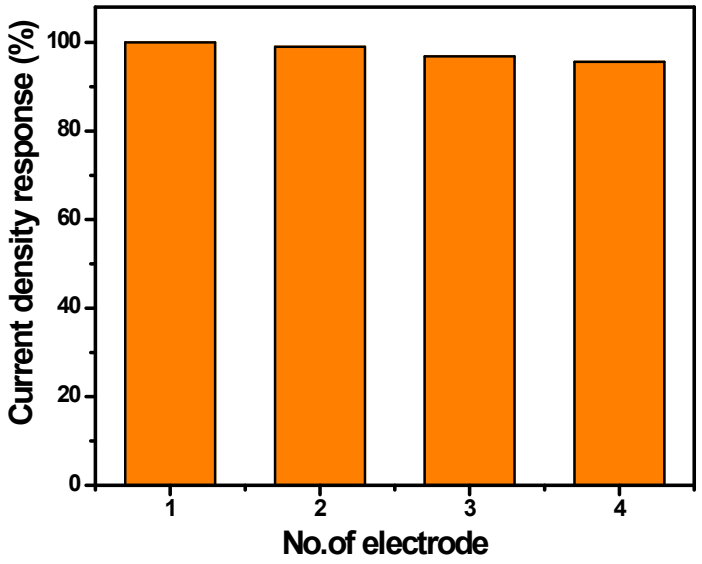

Fig S7. Reproducibility of four different NiS/S-g-C_3N_4 modified GCE with 0.3 mM of glucose

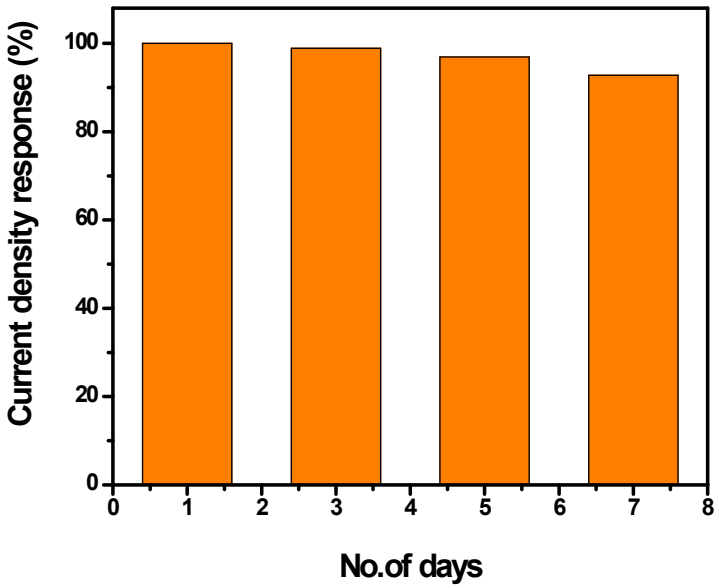

Fig S8. Sustainability of NiS/S-g-C_3N_4 modified nanohybrid with 0.3 mM of glucose for 7 days