

Supplementary information

Non-enzymatic determination of purine nucleotide using carbon dots modified glassy carbon electrode

R. Karthikeyan, D. James Nelson and S. Abraham John*

Centre for Nanoscience and Nanotechnology
Department of Chemistry, The Gandhigram Rural Institute
Gandhigram-624 302, Dindigul, Tamilnadu, India
E-mail : abrajohn@yahoo.co.in

*Corresponding author: Tel: +91 451 245 2371; Fax : + 91 451 245 3031

E-mail: abrajohn@yahoo.co.in , s.abrahamjohn@ruraluniv.ac.in

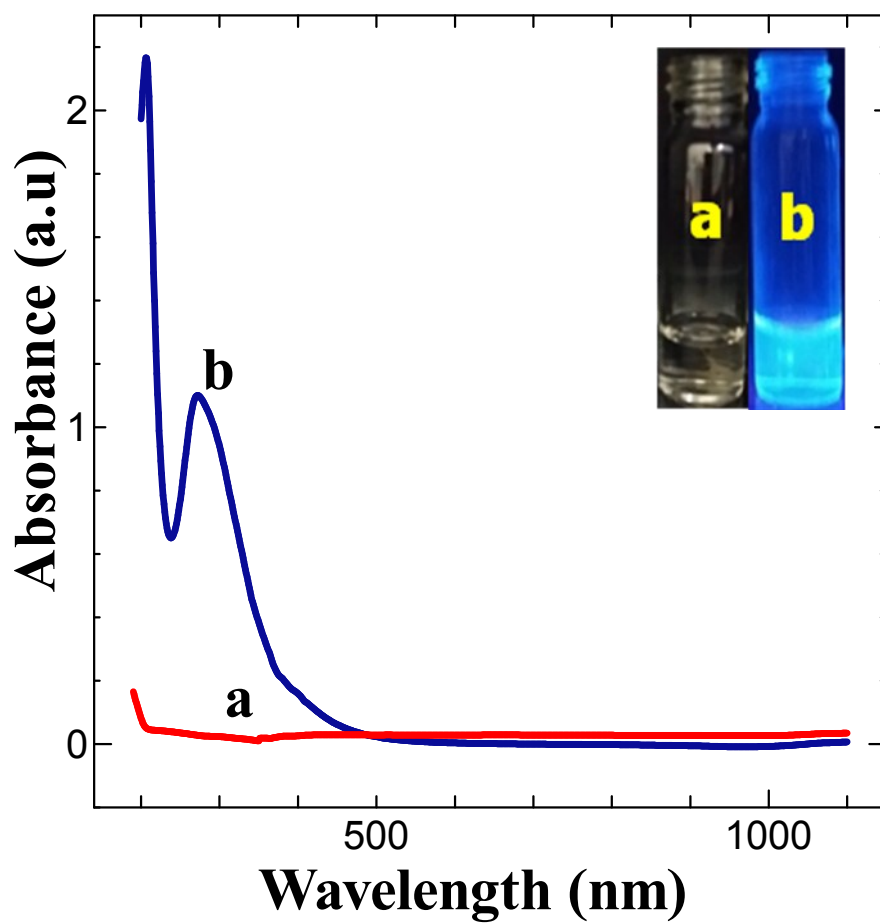


Fig. S1.(A) UV-visible spectra obtained for aqueous solution of (a) glucose and (b) CDs.

Inset: photographs obtained for CDs (a) under ambient light and (b) under UV light.

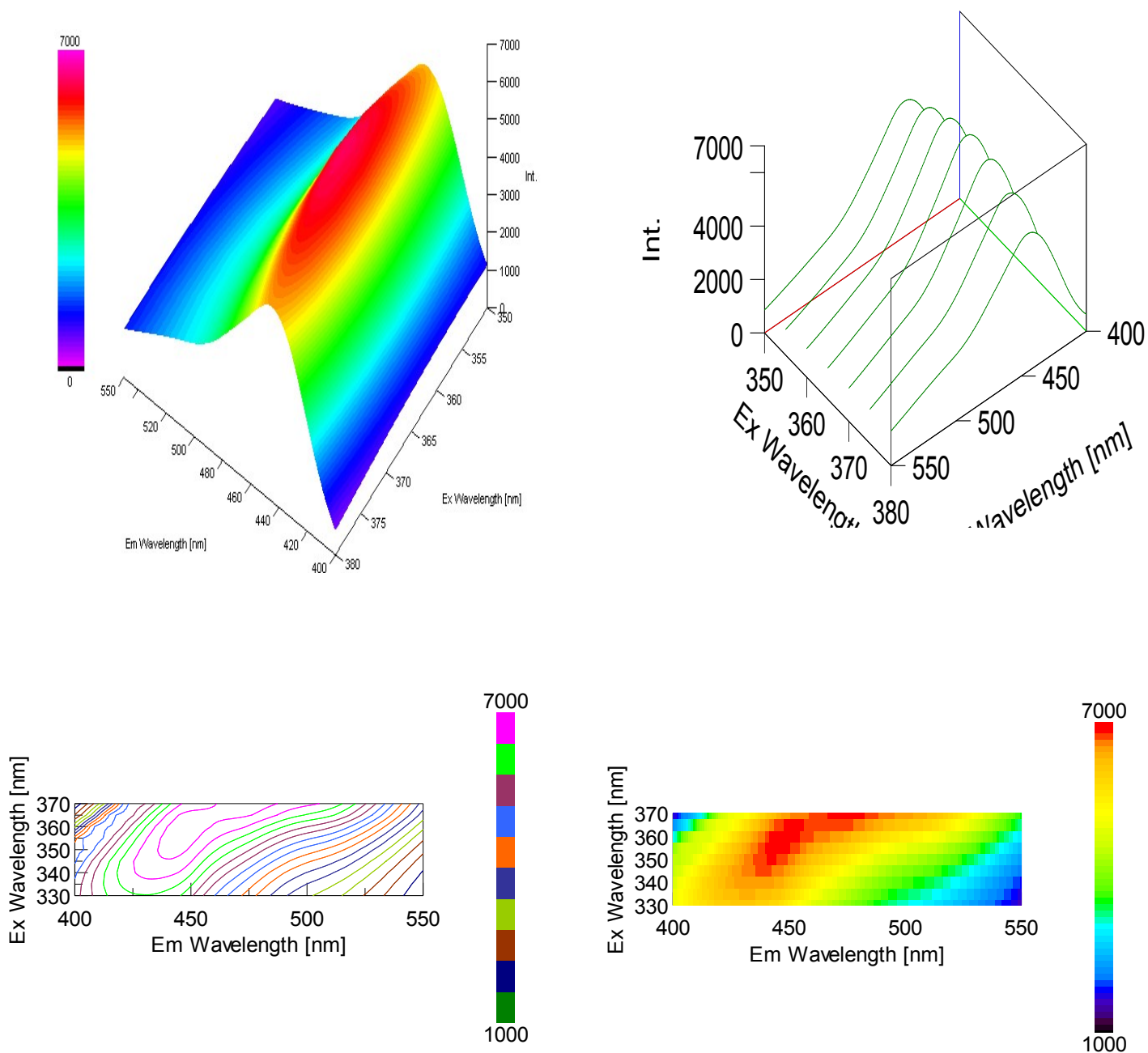


Fig. S2. 3D fluorescence spectra recorded for the colloidal solution of CDs.

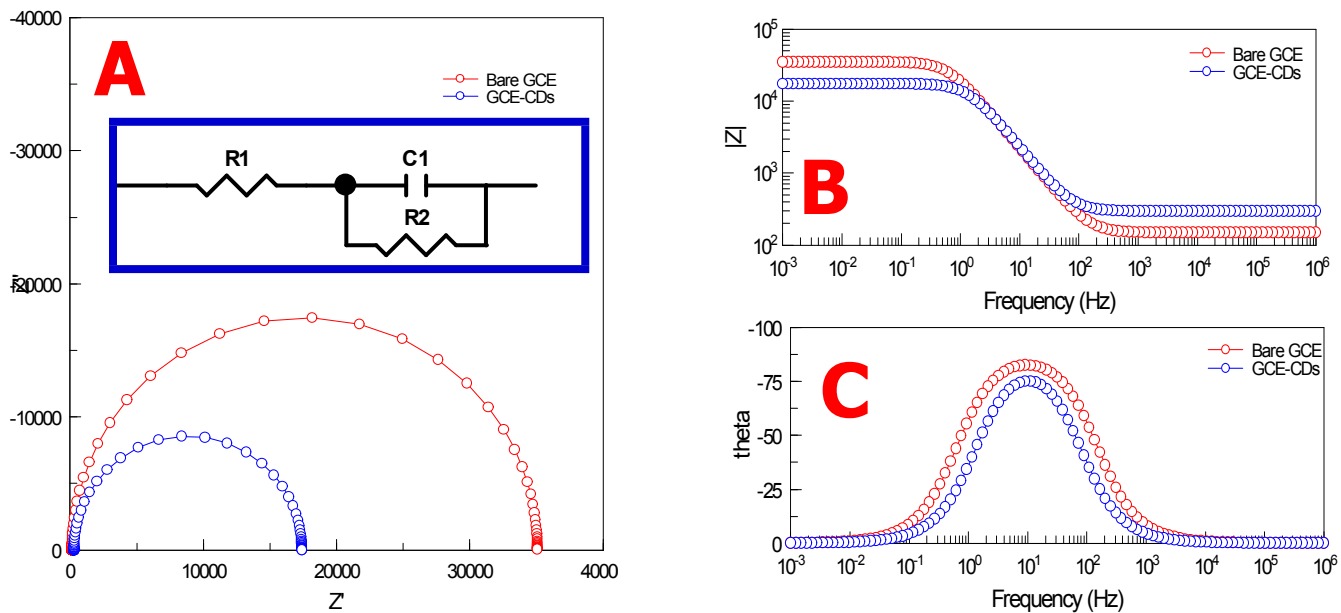


Fig.S3. (A) Nyquist , (B) Bode-amplitude and (C) Bode-phase angle plots for bare GC and CD/GC electrodes in 1 mM $\text{Ru}(\text{NH}_3)_6\text{Cl}_3$ in 0.2 M PB solution (pH3) at scanning frequencies from 0.01 to 100 000 Hz. Inset: equivalent electrical circuit used for fitting the impedance spectra.

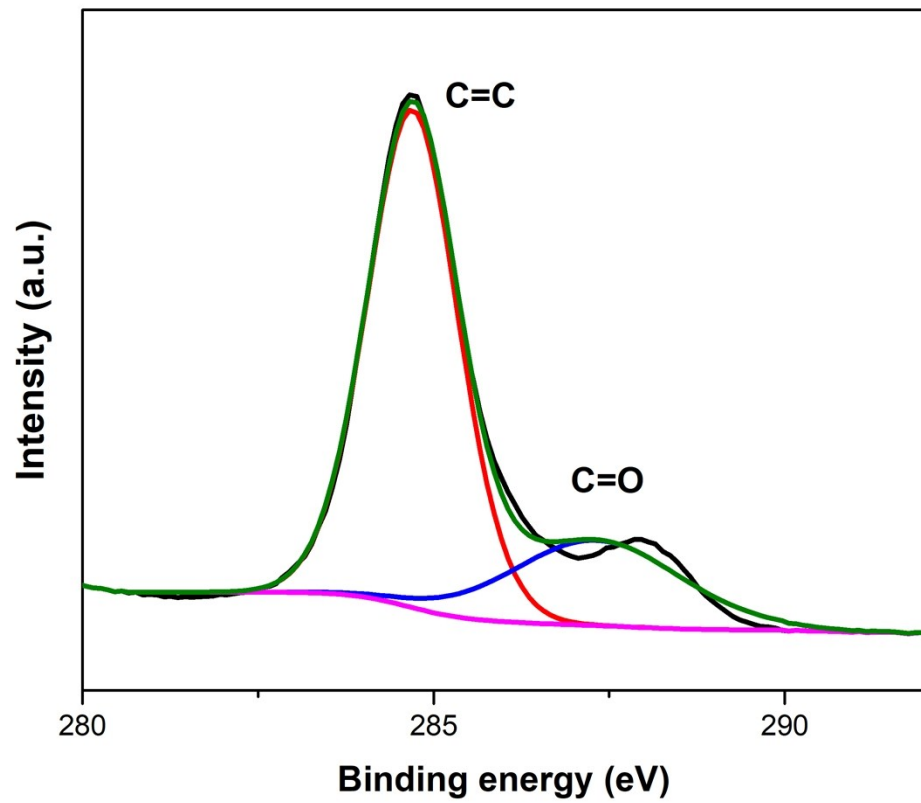


Fig.S4. XPS of bare GC plate in the C1s region.

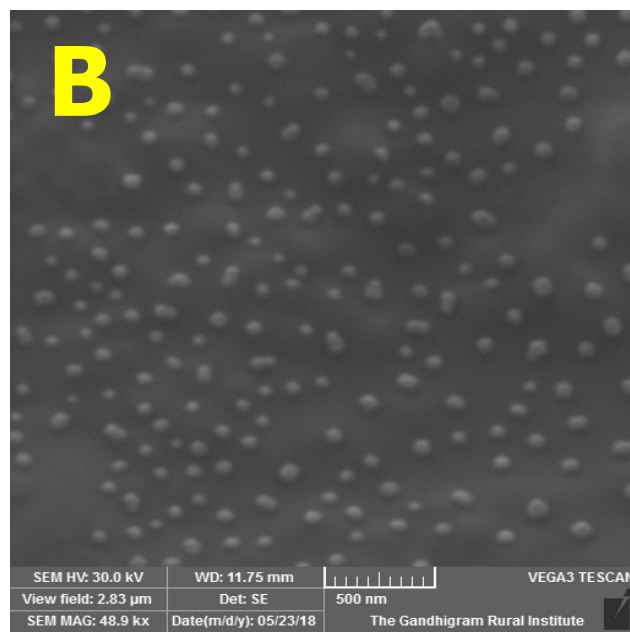
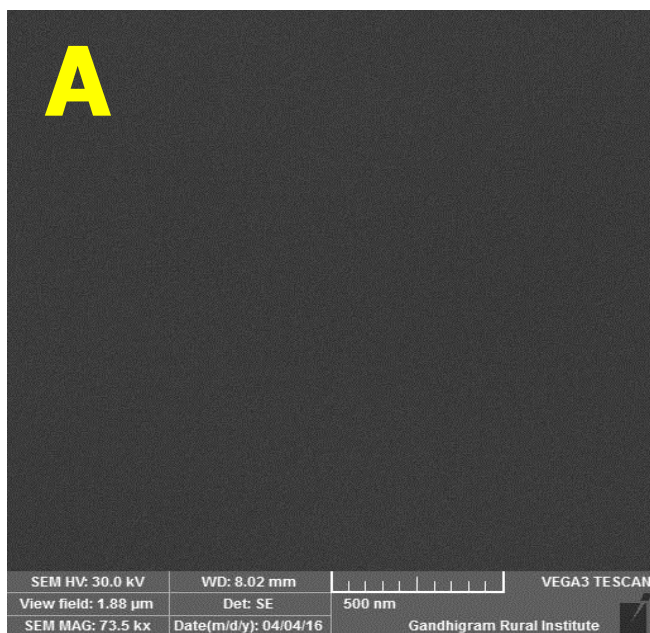


Fig.S5. SEM images obtained for (A) bare GC, (B) CD/GC plates.

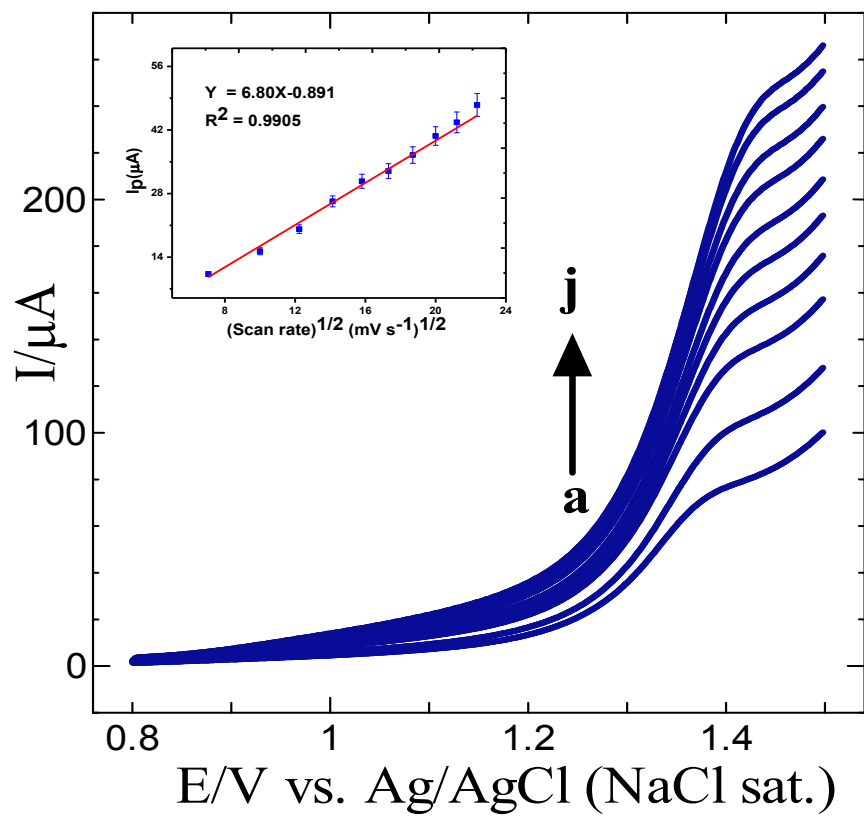


Fig. S6. LSVs obtained at CD/GC electrode for 0.5 mM INO in 0.2 M PB solution at 50 to 500 mV s^{-1} (a-j). **Inset:** Calibration plot for oxidation current of INO against square root of scan rates.

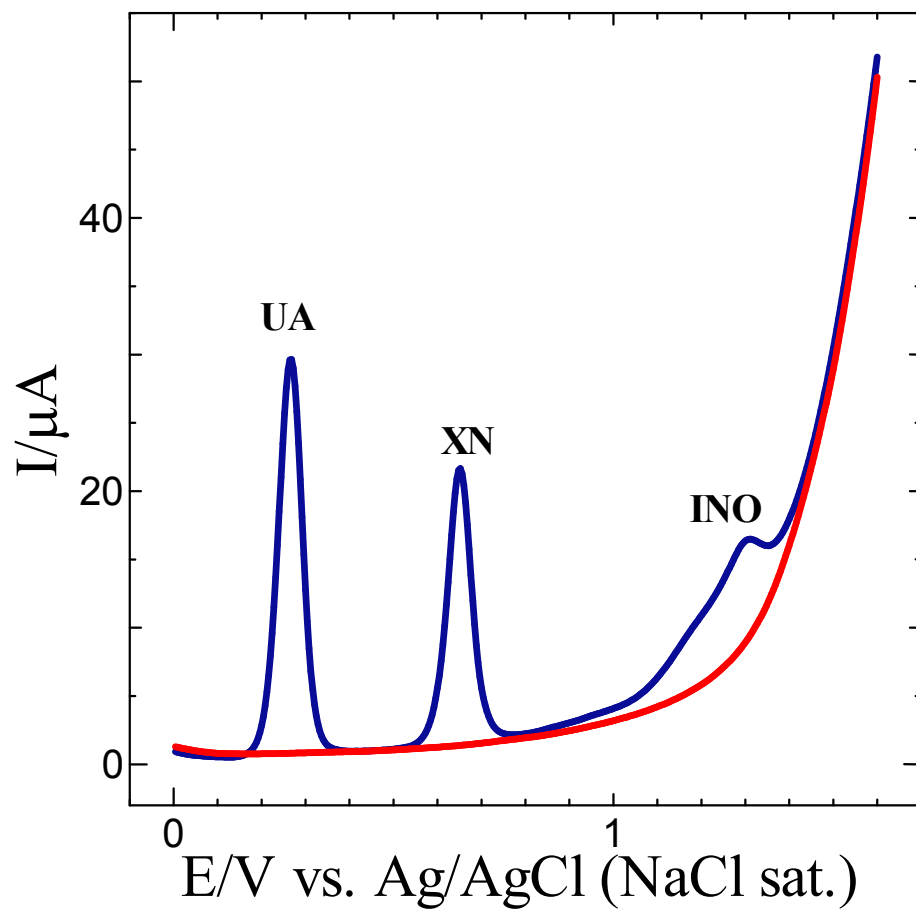


Fig. S7. DPVs obtained at CD/GC electrode for 20 μM INO in the presence of 1 mM each UA and XN in 0.2 M PB solution (pH 7.2).

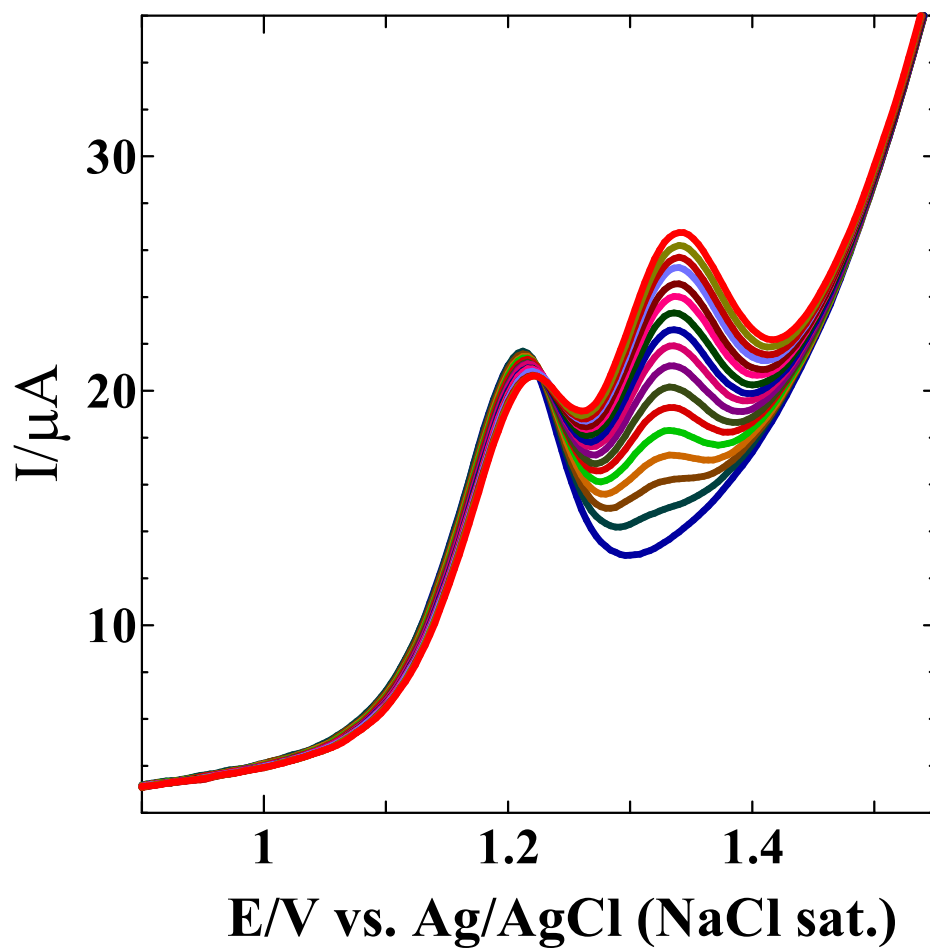


Fig. S8. DPVs obtained at CD/GC electrode for each increment of 5 μM INO in the presence of 200 μM of adenosine in 0.2 M PB solution (pH 7.2).

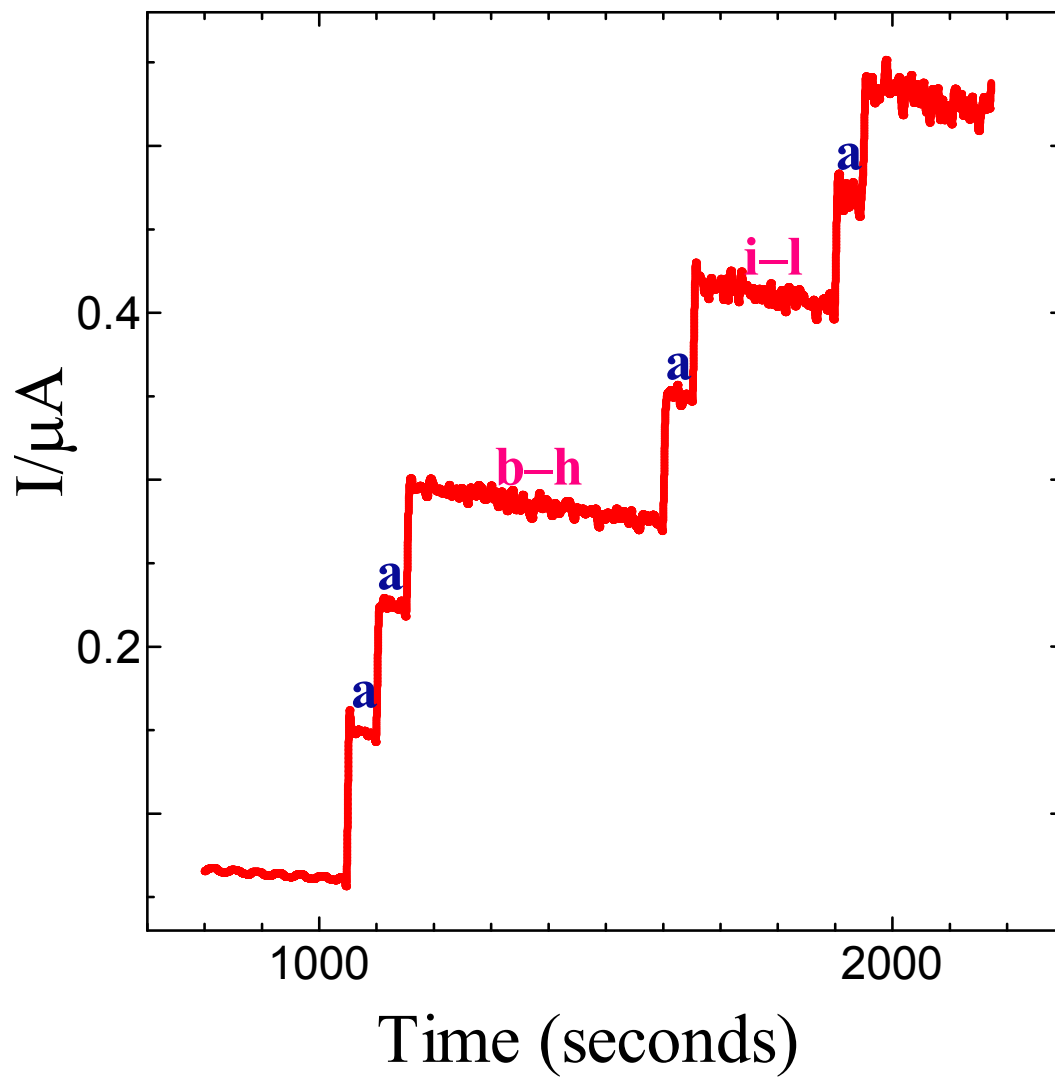


Fig. S9. Amperometric i - t curves obtained for addition of (a) 100 nM of INO and each 100 μM of (b) urea, (c) Ca^{2+} , (d) Mg^{2+} , (e) oxalate, (f) K^+ (g) Na^+ (h) PO_4^{3-} (i) SO_4^{2-} (j) NH_4^+ (k) NO_3^- and (l) glucose at the time interval of 50 s at CD/GC electrode in 0.2 M PBS (pH 6). $E_{\text{app}} = +1.4$ V.

Table S1 Impedance spectral data

parameters	bare GCE	CDs/GCE
R_s (kΩ)	0.15	0.17
C (μF)	4.31	2.54
R_{ct} (kΩ)	40.96	21.20
k_{et} (cm s⁻¹)	0.92×10⁻³	1.79×10⁻³

Table S2 Determination of INO in human blood serum

S.No	Added (μM)	Found (μM)	Recovery (%)	RSD (%)
BS1	20.0	19.90	99.50	1.5
	40.0	39.70	99.20	
	60.0	59.65	99.40	

Table S3 Determination of INO in human urine samples

S.No	Added (μM)	Found (μM)	Recovery (%)	RSD (%)
US1	50.0	49.85	99.70	1.0
	100.0	99.60	99.60	
	150.0	149.70	99.60	