chemosensors

MDPI

Supplementary Material

Au Nanoparticles on 4-Thiophenol-Electrodeposited Carbon Surfaces for the Simultaneous Detection of 8-Hydroxyguanine and Guanine

Niloufar Soltani [1,2], Qusai Hassan [1,2], Meissam Noroozifar [1] and Kagan Kerman [1,2,*]

[1] Department of Physical and Environmental Sciences, University of Toronto Scarborough, 1265 Military Trail, Toronto, ON M1C 1A4, Canada
[2] Department of Chemistry, University of Toronto, 80 St. George Street, Toronto, ON M5S 3H6, Canada
* Correspondence: kagan.kerman@utoronto.ca; Tel.: +1-(416)-287-7249

Table S1. The relative atomic percentages of Au 4f, S 2p, and C 1s, for the GCE-Ph-S-AuNPs after the immobilization of AuNPs and GCE-Ph-SH before the immobilization of AuNPs.

Peaks	**Au^4f**	**S^2p**	**C^1s**
Position	Rel.At.%	Rel.At.%	Rel.At.%
GCE-Ph-S-AuNPs	0.3	0.8	76.5
GCE-Ph-SH	0.0	6.8	78.4

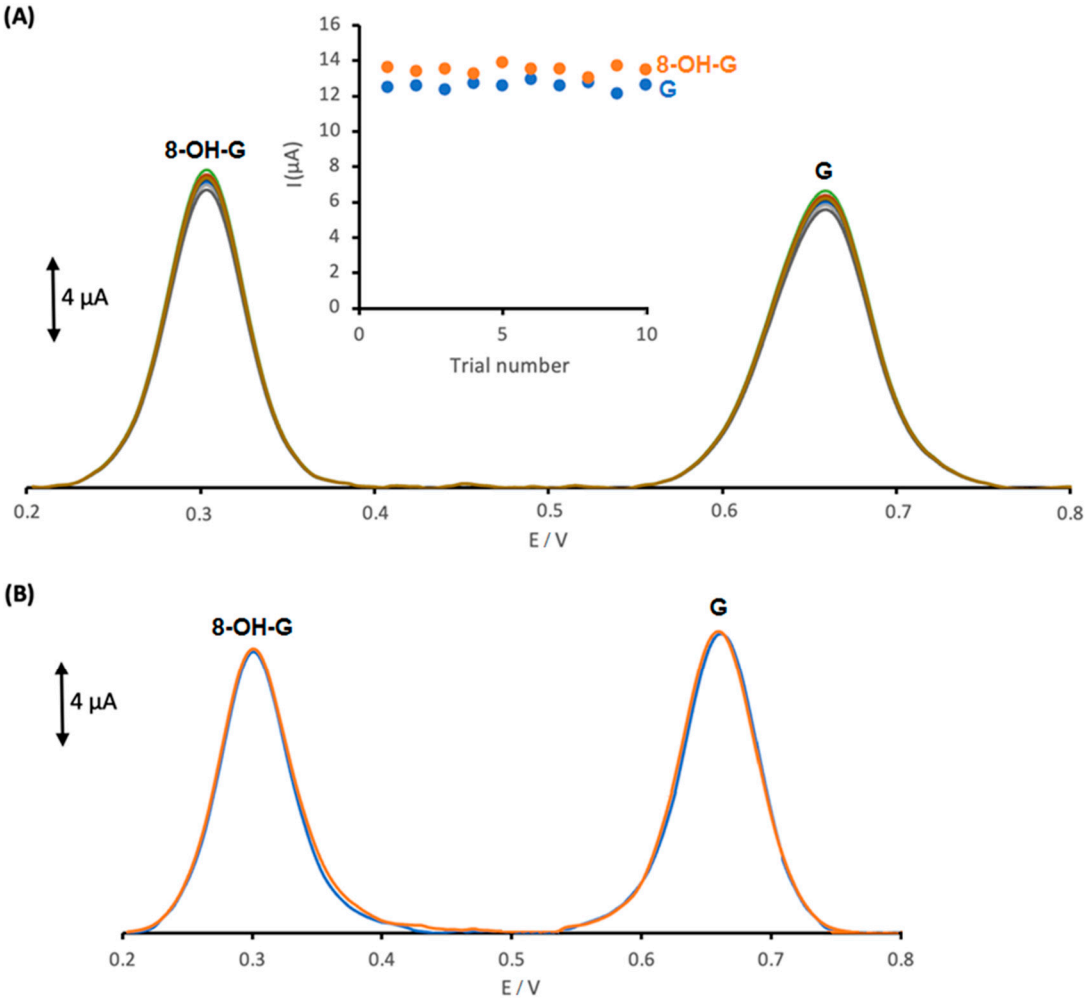

Figure S1. (A) Differential pulse voltammograms of 8-OH-G (150.0 µM) and G (40.0 µM) using the GCE-Ph-S-AuNPs for ten consecutive measurements (n=10) in 0.2 M PBS (pH 7.4), (Inset; the plot for the anodic peak currents of 8-OH-G and G detected for ten consecutive measurements. **(B)** The stability study of the GCE-Ph-S-AuNPs for the simultaneous determination of 8-OH-G (150.0 µM) and G (40.0 µM) performed on day-1 (blue) and after storage in 0.2 M PBS (pH 7.4) for 5 months (orange).

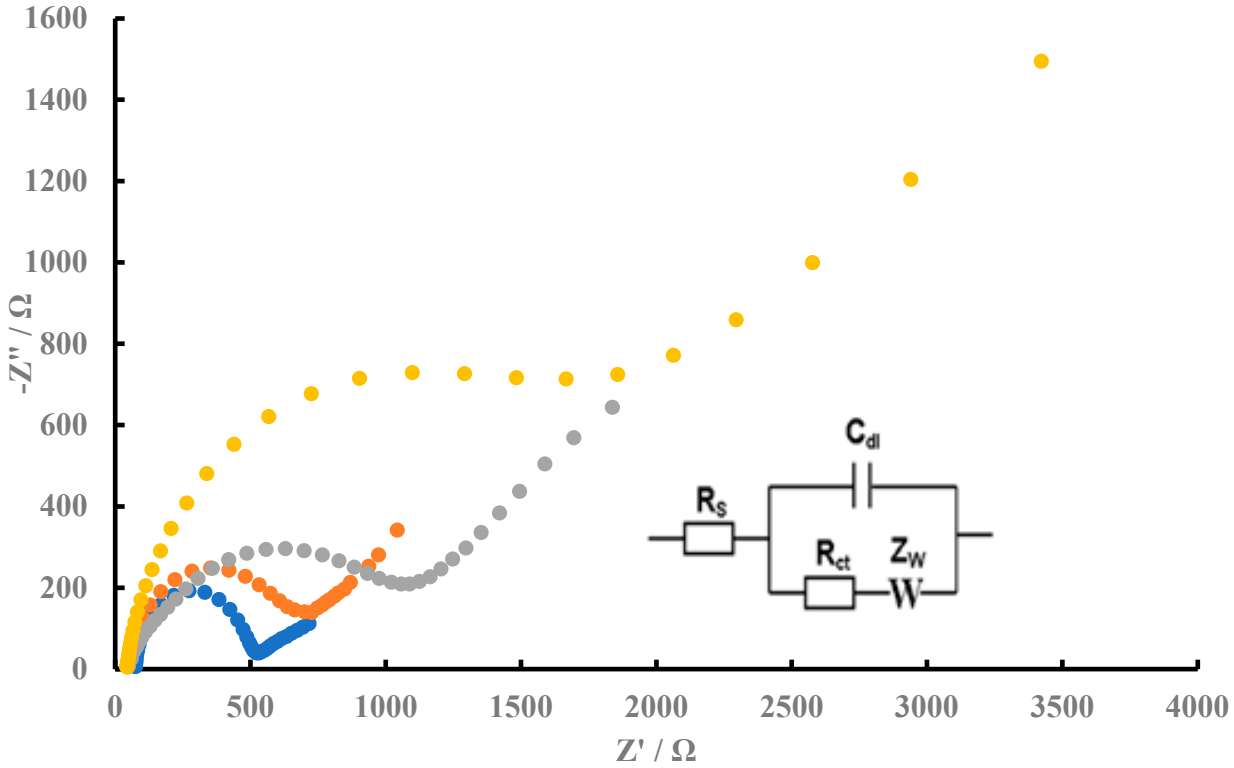

Figure S2. Nyquist plots were obtained with the bare GCE (yellow) and the GCE-Ph-S-AuNPs surfaces that were prepared after 2 scans (grey), 10 scans (orange), 50 scans (blue) of diazonium electrodeposition in 5 mM $K_3Fe(CN)_6$ and 5 mM $K_4Fe(CN)_6$ with 100 mM KCl with the frequency ranging from 0.1 Hz to 100 kHz. Inset represents the modified Randles equivalent circuit model for fitted impedance data, in which R_s is the solution resistance; R_{ct} is the charge-transfer resistance; C_{dl} is the double-layer capacitance; Z_W is the Warburg element.

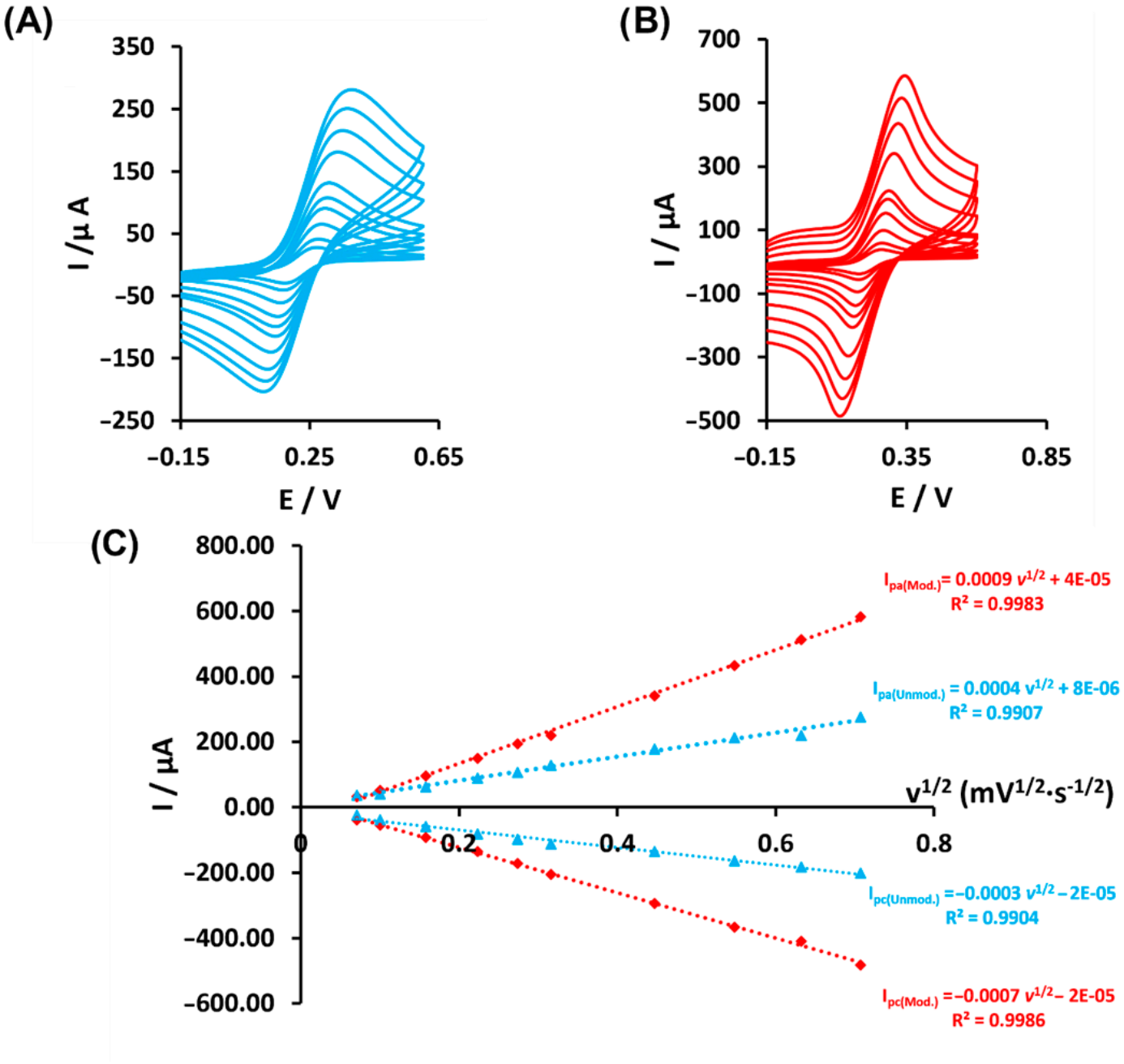

Figure S3. Cyclic voltammograms of **(A)** GCE and **(B)** GCE-Ph-S-AuNPs (prepared with 50 scans of diazonium electrodeposition) in 1.0 mM $K_3[Fe(CN)_6]$ with 0.1 M KCl as the supporting electrolyte at a scan rate ranging from 5 mV/s to 500 mV/s. **(C)** The plot of anodic peak current vs. the square root of scan rate.

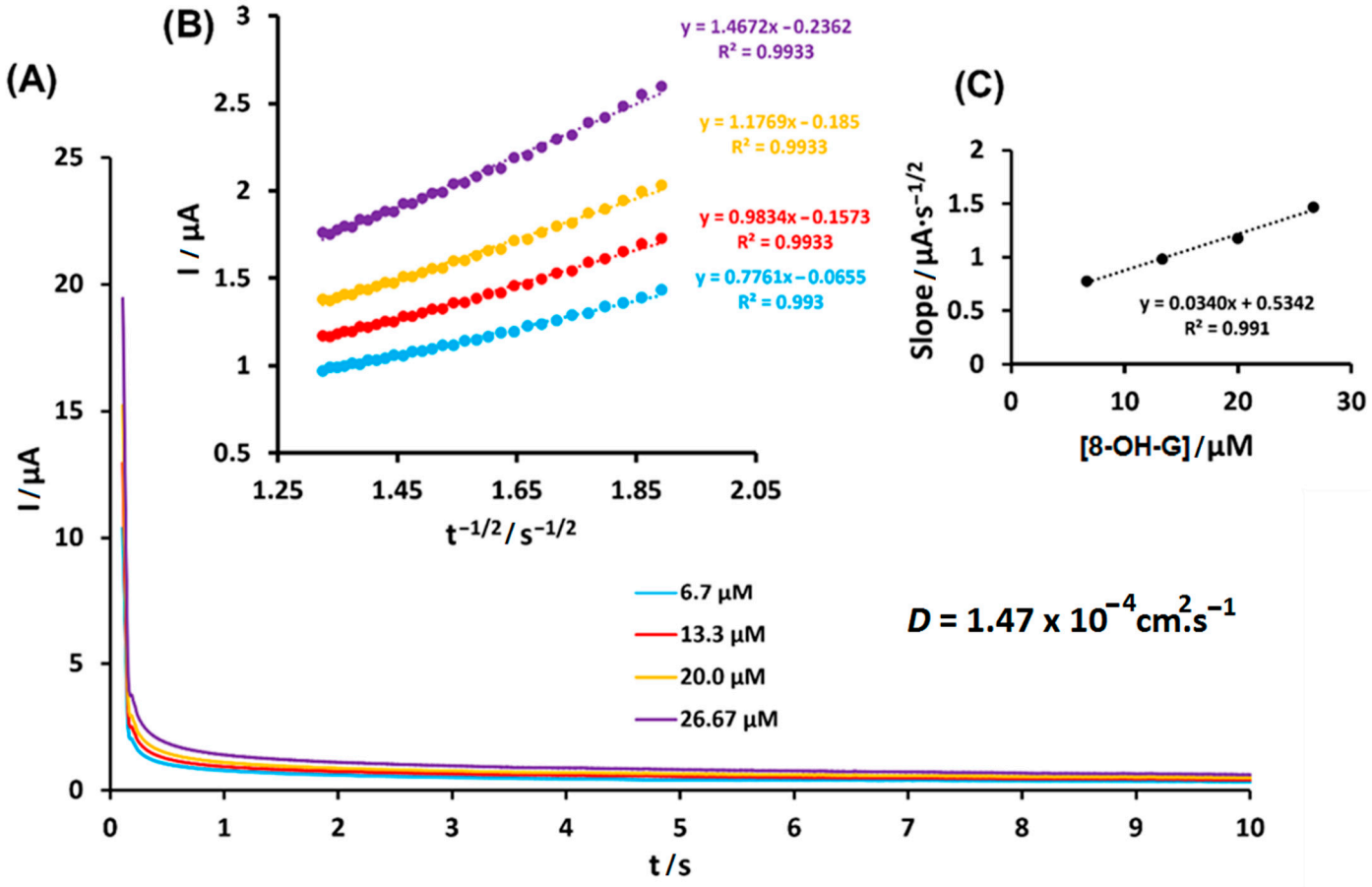

Figure S4. (A) Chronoamperograms obtained using the GCE-Ph-S-AuNPs (prepared with 50 scans of diazonium electrodeposition) for varying concentrations of 8-OH-G (6.7, 13.3, 20.0, and 26.7 µM). **(B)** The plot of I vs. $t^{-1/2}$ generated using chronoamperograms. **(C)** The linear relationship of the slope obtained from the Cottrell plot vs. the concentration of 8-OH-G. All measurements were performed in 0.2 M PBS at pH 7.4.

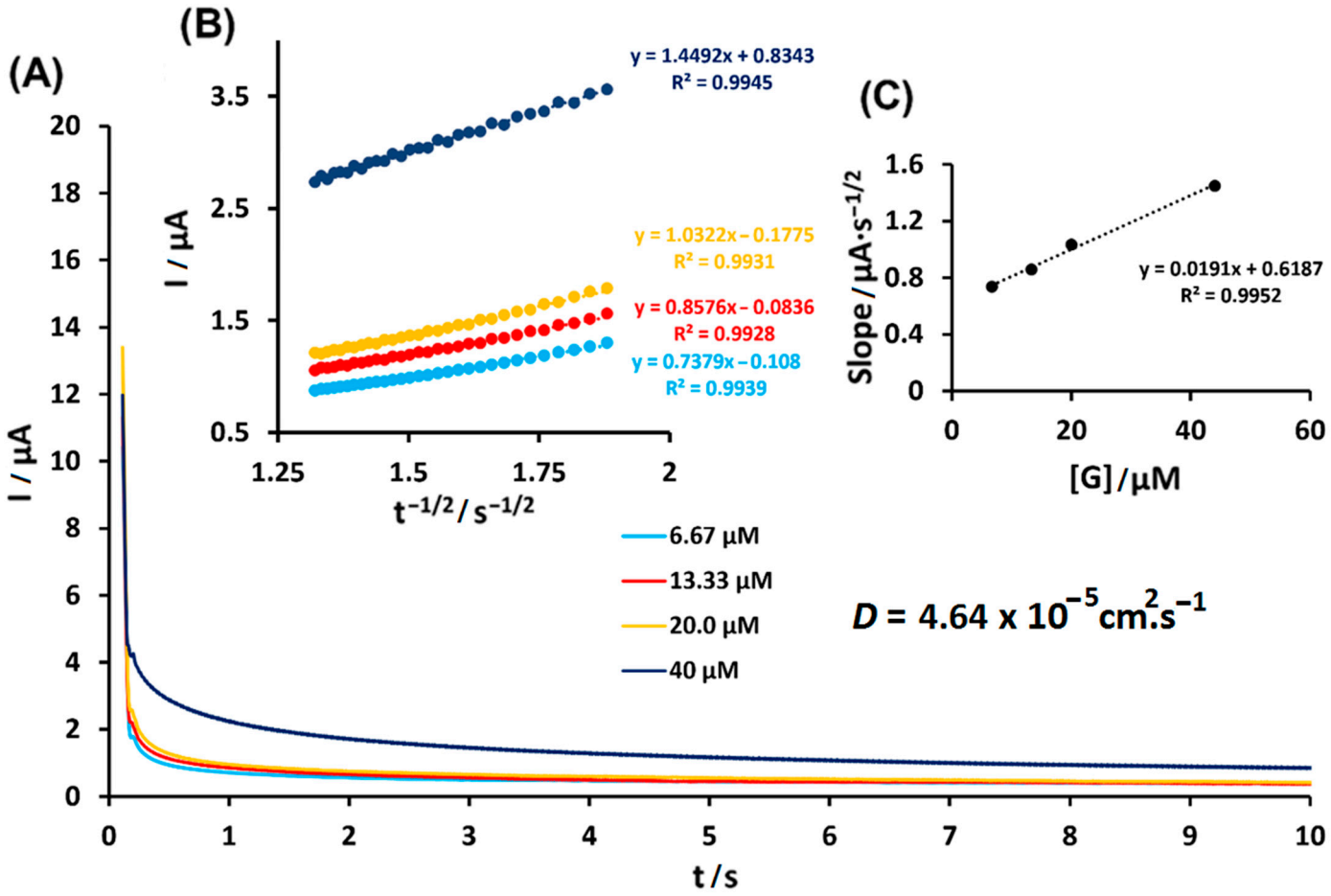

Figure S5. (A) Chronoamperograms obtained using the GCE-Ph-S-AuNPs (prepared with 50 scans of diazonium electrodeposition) for varying concentrations of G (6.7, 13.3, 20.0, and 40.0 µM). **(B)** The plot of I vs. $t^{-1/2}$ generated using chronoamperograms. **(C)** The linear relationship of the slope obtained from the Cottrell plot vs. the concentration of G. All measurements were performed in 0.2 M PBS at pH 7.4.