

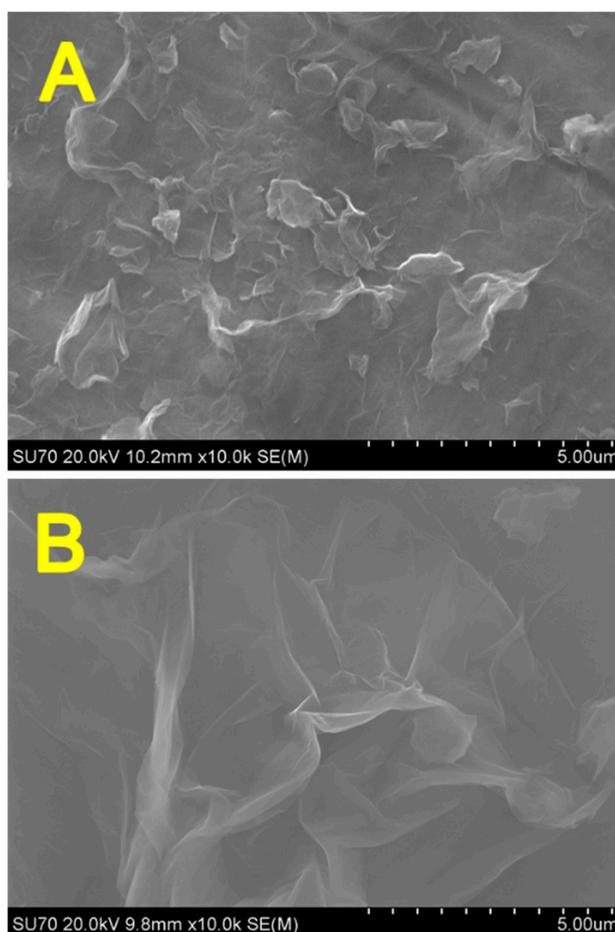
# Sensitive electrochemical detection of caffeic acid in wine based on fluorine-doped graphene oxide

Venkatesh S. Manikandan <sup>1,2</sup>, Boopathi Sidhureddy <sup>1</sup>, Antony Raj Thirupathi <sup>1</sup> and Aicheng Chen <sup>1,\*</sup>

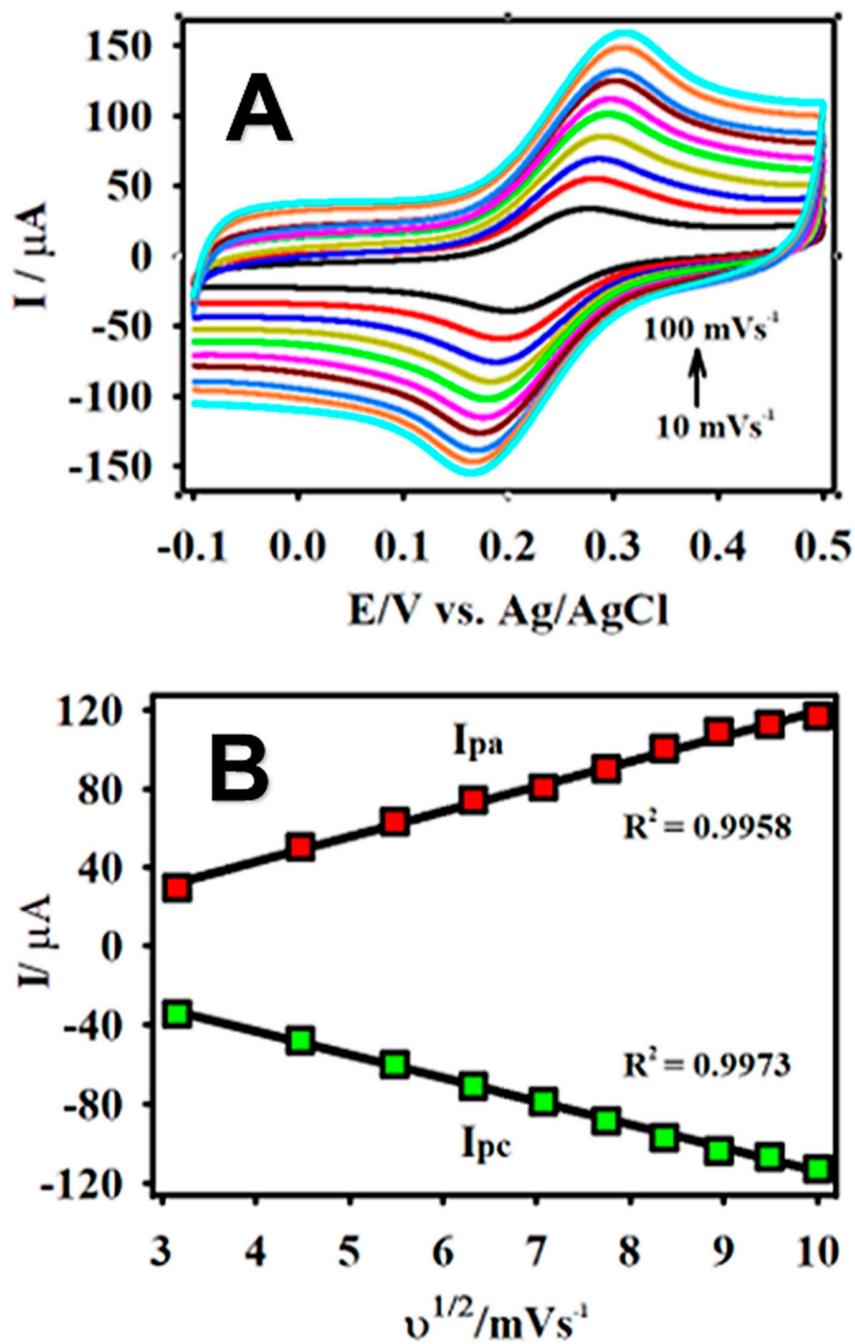
<sup>1</sup> Electrochemical Technology Centre, Department of Chemistry, University of Guelph, 50 Stone Road E, Guelph, ON N1G 2W1, Canada; vmanikan@lakeheadu.ca (V.S.M.); bsidhure@uoguelph.ca (B.S.); athirupp@uoguelph.ca (A.R.T.)

<sup>2</sup> Department of Chemistry, Lakehead University, 955 Oliver Road, Thunder Bay, Ontario P7B 5E1, Canada

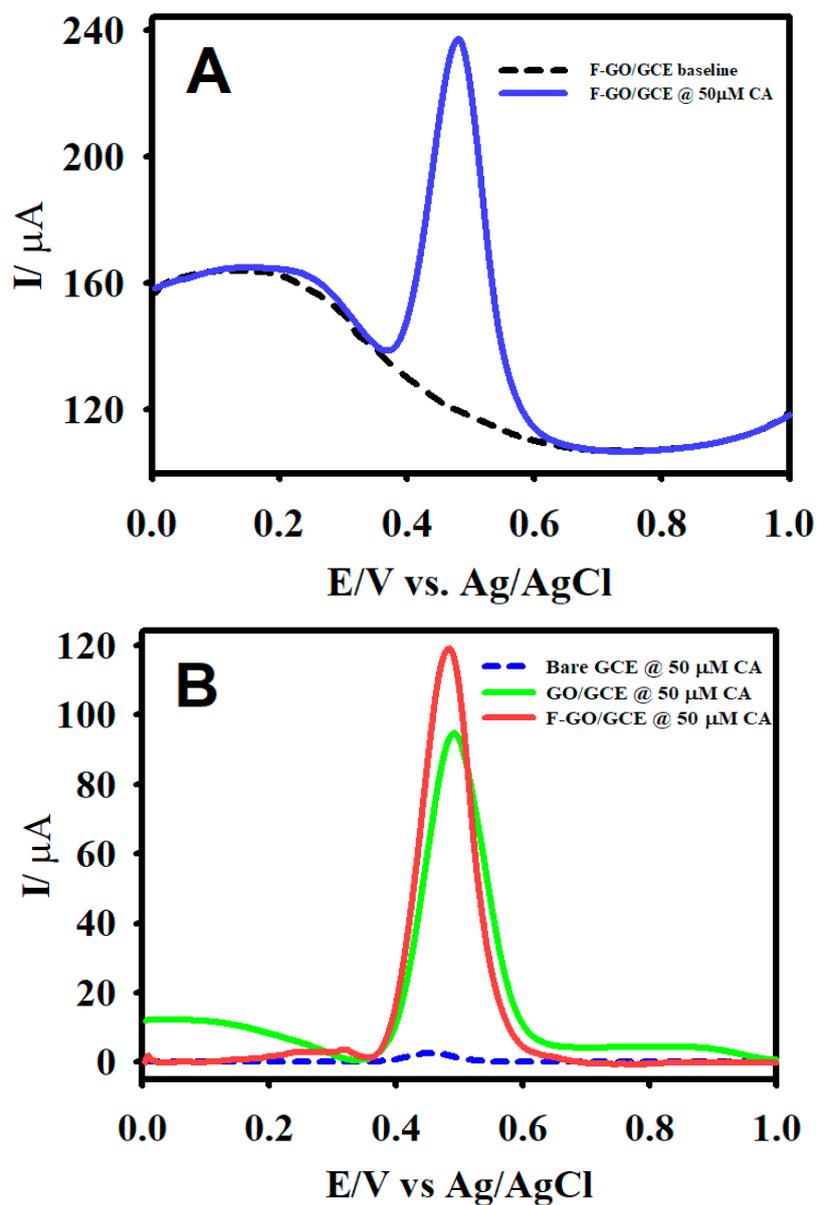
\* Correspondence: aicheng@uoguelph.ca; Tel.: 1-519-8244120 Ext. 54764; Fax: 1-519-7661499



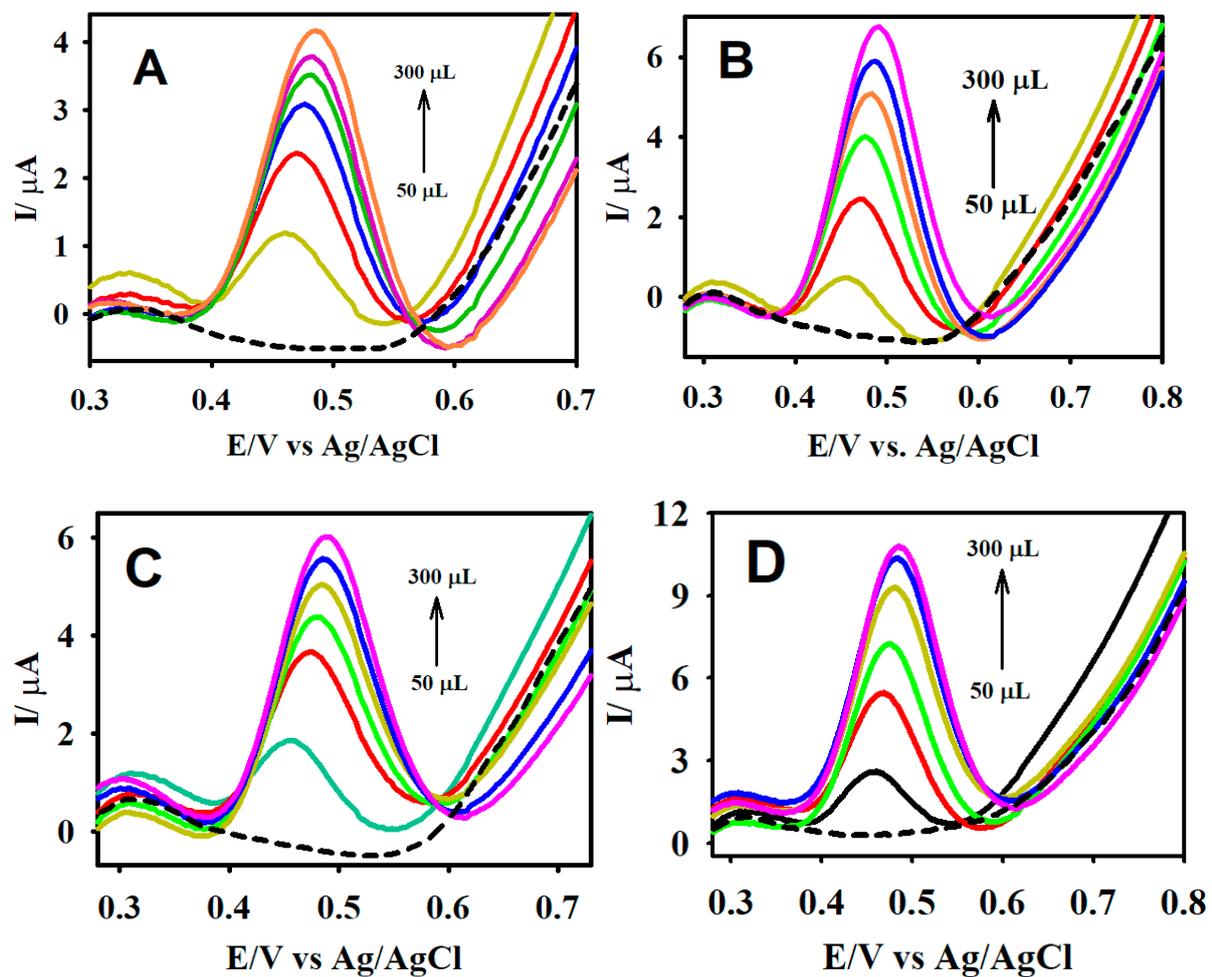
**Figure S1.** SEM images (low magnification) of the synthesized (A) graphene oxide (GO) and (B) fluorinated graphene oxide (F-GO)



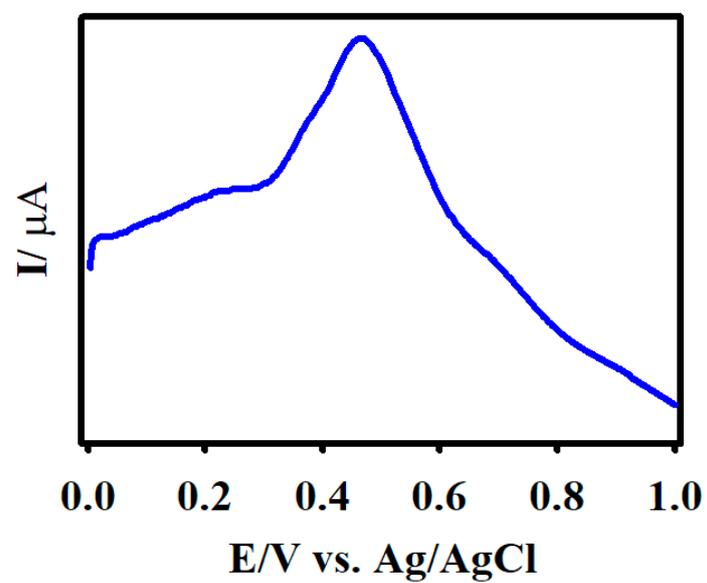
**Figure S2.** (A) CV curves of the F-GO/GCE recorded in the presence of 5 mM  $[\text{Fe}(\text{CN})_6]^{3-/4-}$  in 0.1 M KCl at various scan rates, ranging from 10 - 100  $\text{mV s}^{-1}$ ; (B) the corresponding plots of vs the anodic/cathodic peak current vs the square root of the scan rates.



**Figure S3.** DPV response of F-GO/GCE recorded in the presence of 50.0  $\mu\text{M}$  CA (blue line), in the absence of CA (black dashed line) (A); comparison of DPV response of bare GCE (blue dashed line), GO/GCE (green line) and F-GO/GCE (red line) recorded in the presence of 50.0  $\mu\text{M}$  CA in 0.1 M B-R buffer solution (pH 2.65).



**Figure S4.** DPV response of F-GO/GCE for the detection of CA in different brands of red wine in 0.1 M B-R buffer solution (pH 2.65).



**Figure S5.** DPV response of the F-GO/GCE sensor toward the detection of CA directly in wine sample without an electrolyte medium