

# **Simultaneous quantification of acetaminophen and tryptophan using a composite graphene foam/Zr-MOF film modified electrode**

**Justin Claude Kemmegne-Mbouguen<sup>a\*</sup>, Firmin Parfait Tchoumi<sup>a</sup>, Edwige Mouafo-Tchinda<sup>a</sup>, Henrietta W. Langmi<sup>b\*</sup>, Sonwabo E. Bambalaza<sup>c</sup>, Nicholas M. Musyoka<sup>c</sup>, Chrispin Kowenje<sup>d</sup>, Robert Mokaya<sup>e</sup>**

*<sup>a</sup>Laboratoire de Chimie Physique et Analytique Appliquée, Faculté des Sciences, Université de Yaoundé I, B.P. 812 Yaoundé, Cameroon*

*<sup>b</sup>Department of Chemistry, University of Pretoria, Private Bag, X20 Hatfield, 0028, South Africa*

*<sup>c</sup>HySA Infrastructure Centre of Competence, Council for Scientific and Industrial Research (CSIR), P. O. Box 395, Pretoria, 0001, South Africa*

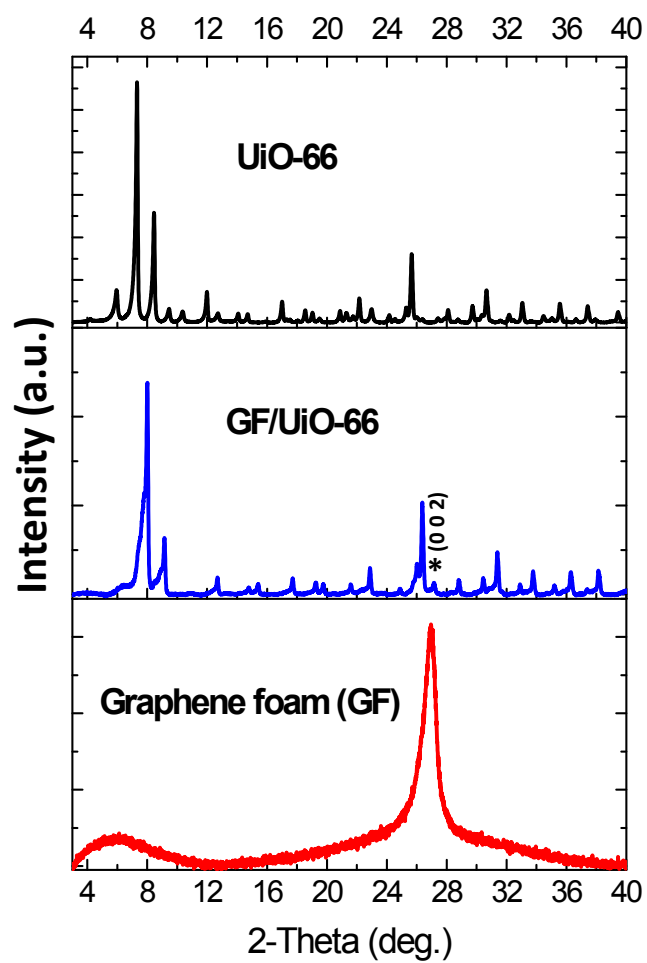
*<sup>d</sup>Department of Chemistry, Maseno University, P. O. Box 333-40105, Maseno, Kenya.*

*<sup>e</sup>School of Chemistry, University of Nottingham, University Park, Nottingham, NG7 2RD,*

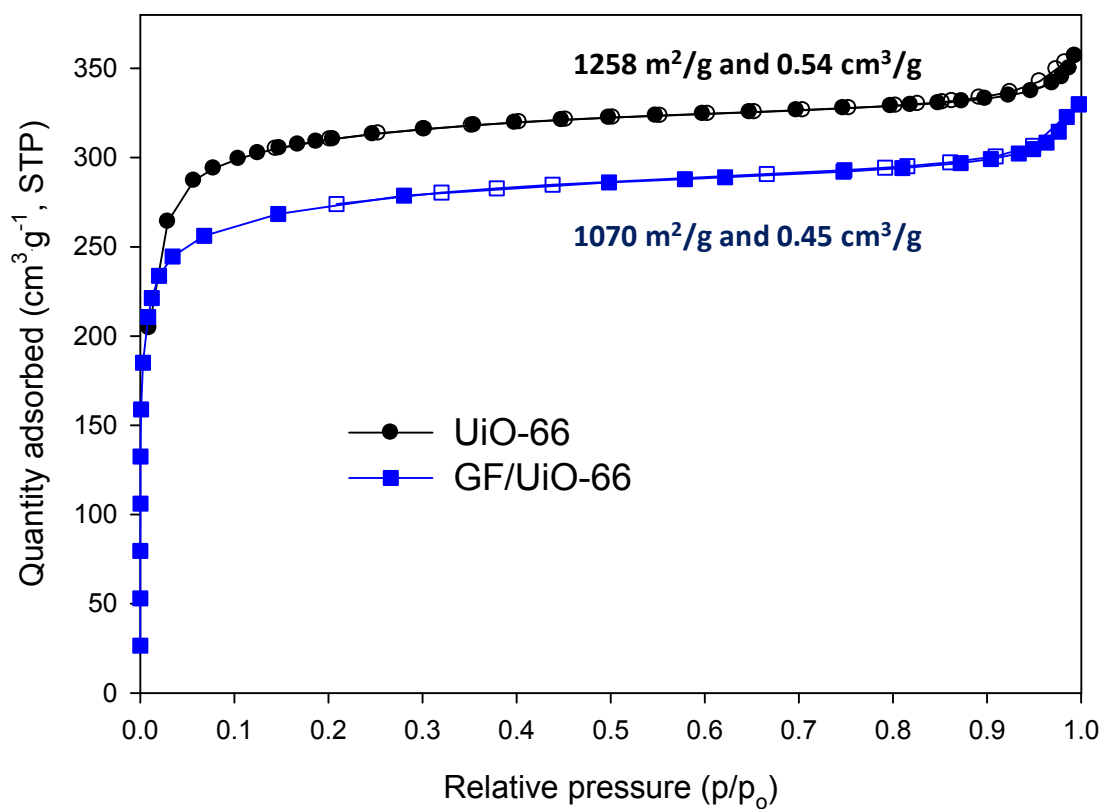
**\*To whom correspondence should be addressed:**

**e-mail: [jkemmeg@yahoo.fr](mailto:jkemmeg@yahoo.fr) and [henrietta.langmi@up.ac.za](mailto:henrietta.langmi@up.ac.za)**

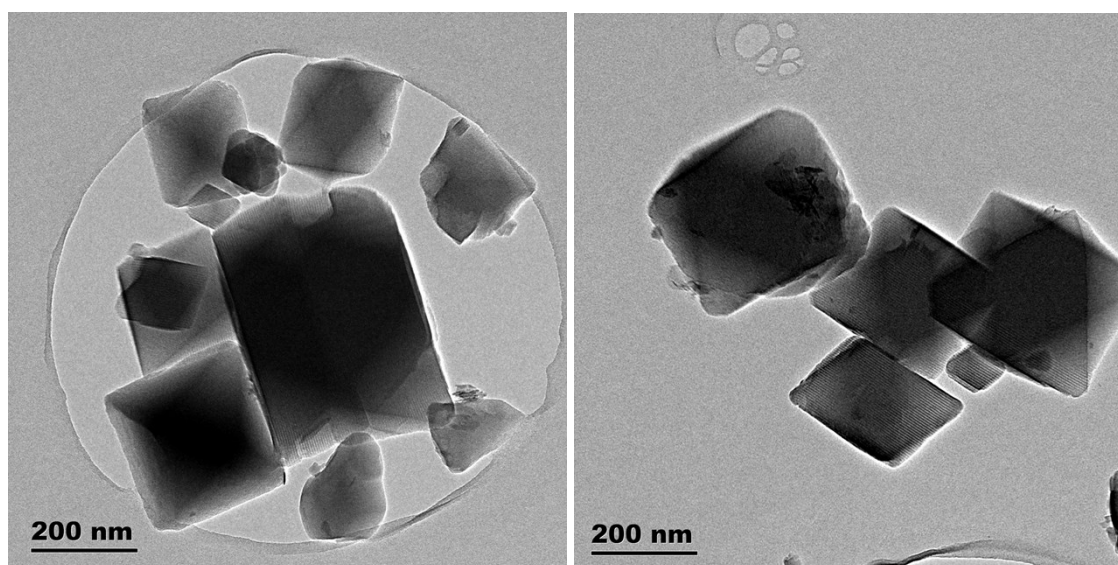
**phone: + 237 666 091225 and +27 (0)12 420 2800**



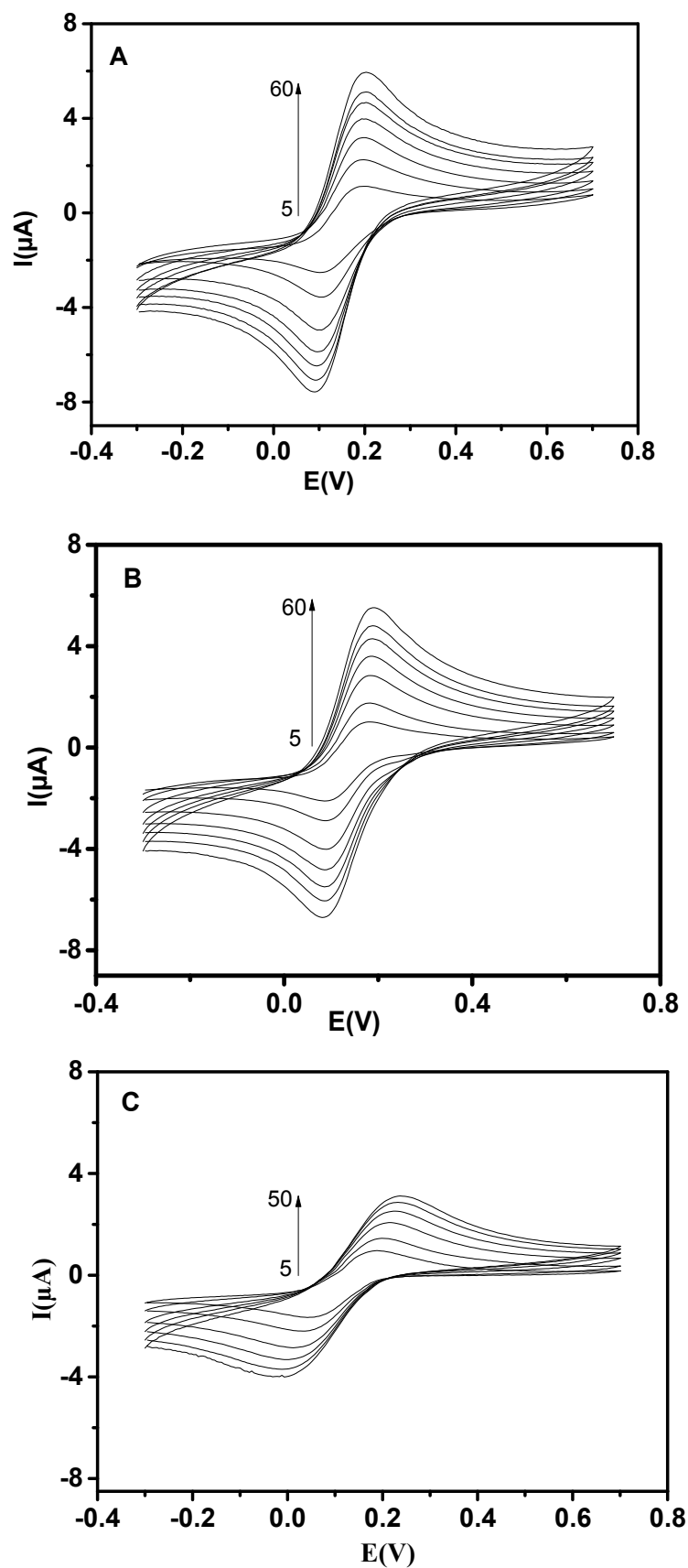
**FIGURE S1: PXRD patterns for GF, UiO-66 and GF/UiO-66**



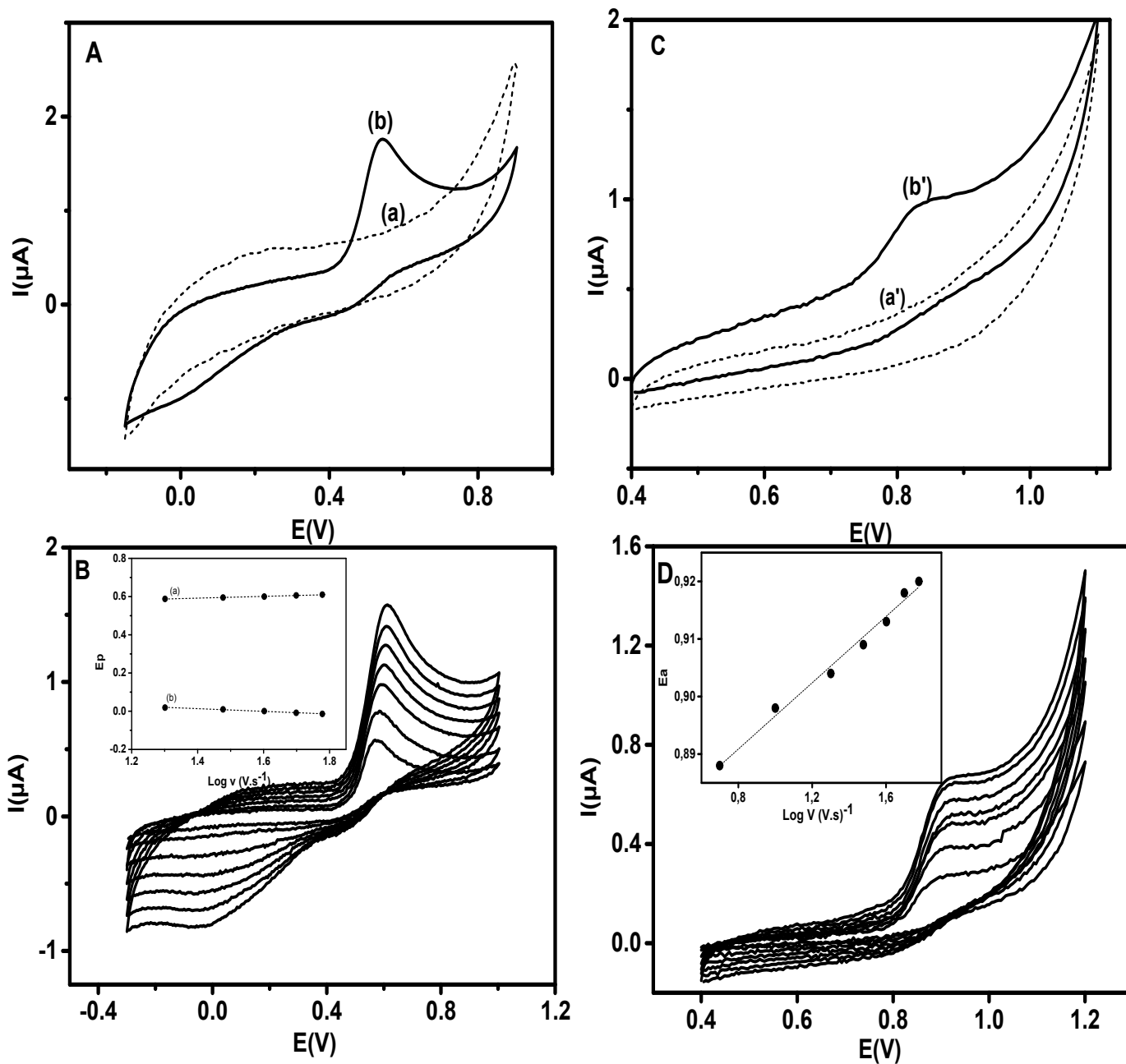
**FIGURE S2 :** Nitrogen adsorption isotherms for UiO-66 and GF/UiO-66. The desorption isotherms are represented with open symbols.



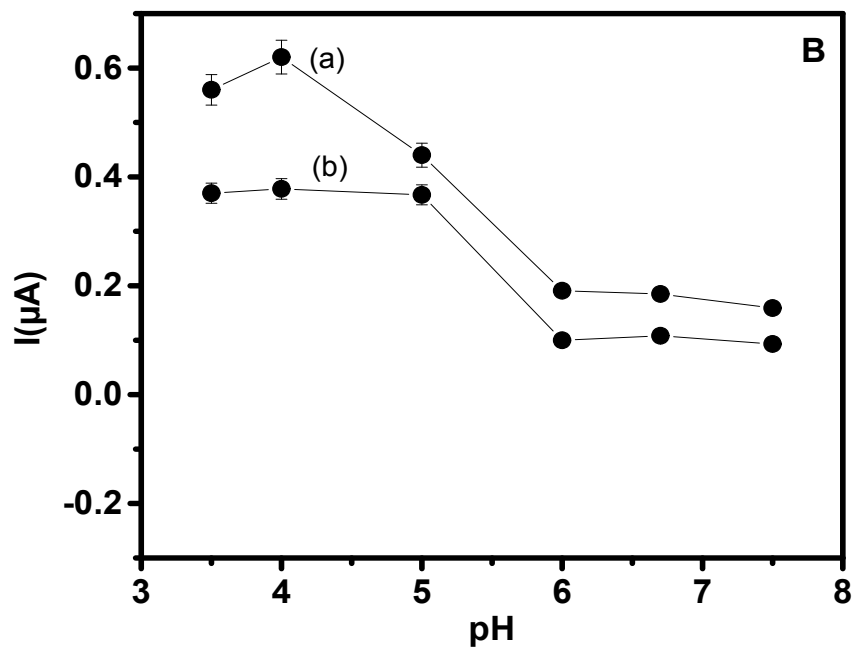
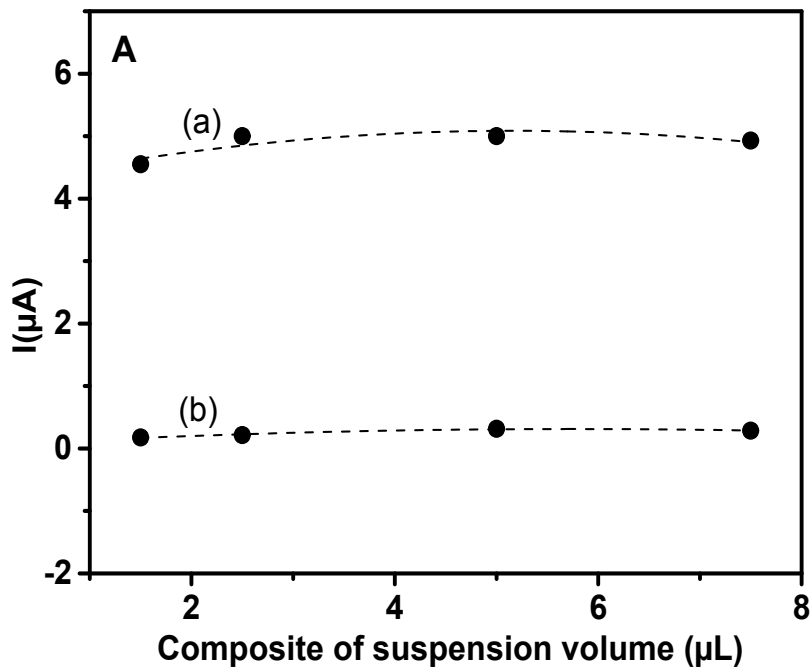
**FIGURE S3:** TEM images of pristine UiO-66 at 40 000X magnification.



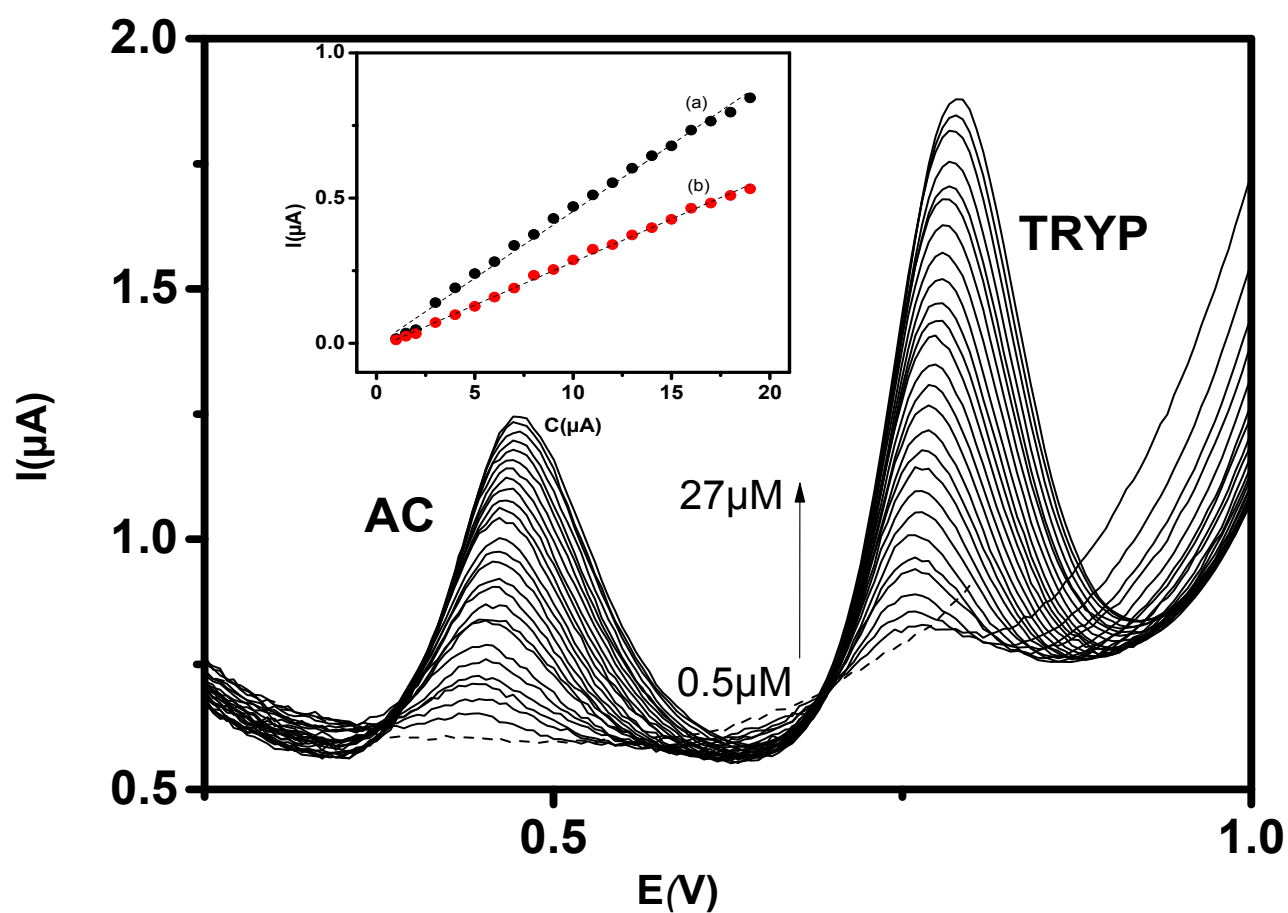
**FIGURE S4:** CVs recorded for (A) GF-UiO-66/GCE, (B) UiO-66/GCE, (C) GCE at different scan rates



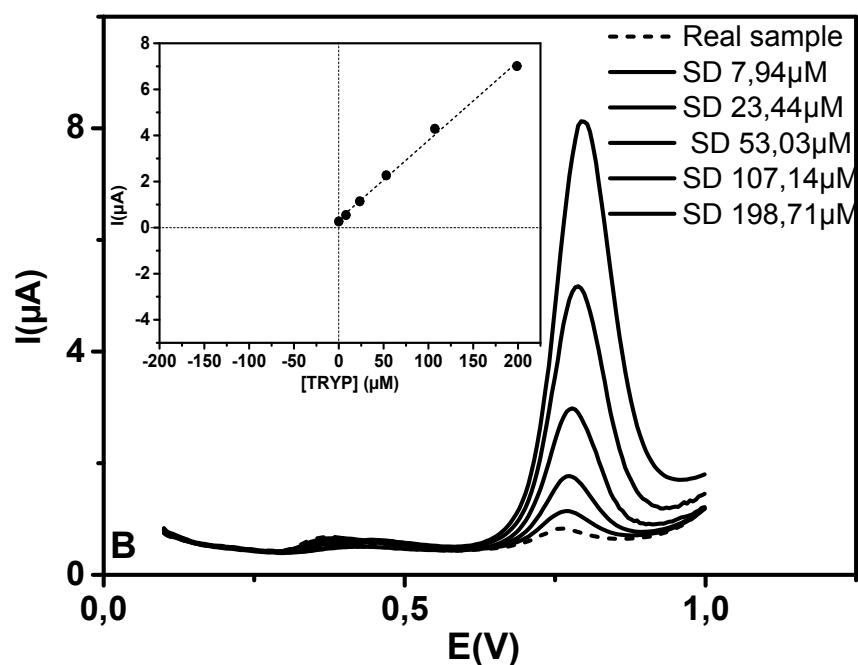
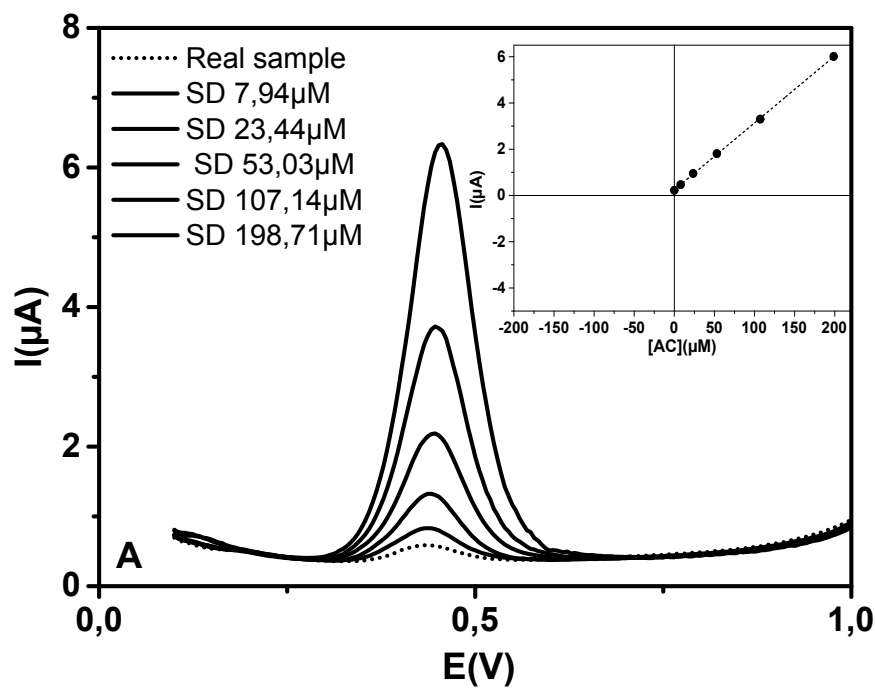
**FIGURE S5** CVs recorded in AB (pH 4) at bare GCE: In the absence of AC ((A), curve a) and TRYP ((B), curve a') and in the presence of  $51.2 \mu\text{mol.L}^{-1}$  of AC ((A), curve b) (A) and in the presence of  $12 \mu\text{M}$  of TRYP ((B), curve b'). CVs at different scan rates in the presence of  $51.2 \mu\text{M}$  AC (C) and  $15 \mu\text{M}$  TRYP (D) at UiO-66/GCE. Inset shows anodic peak potential versus  $\log v$ .



**FIGURE S6** A) Plot of anodic peak current of (a) TRYP and (b) AC recorded at GF/UiO-66/GCE versus: (A) volume of the suspension of GF/UiO-66 and (B) pH of the electrolyte

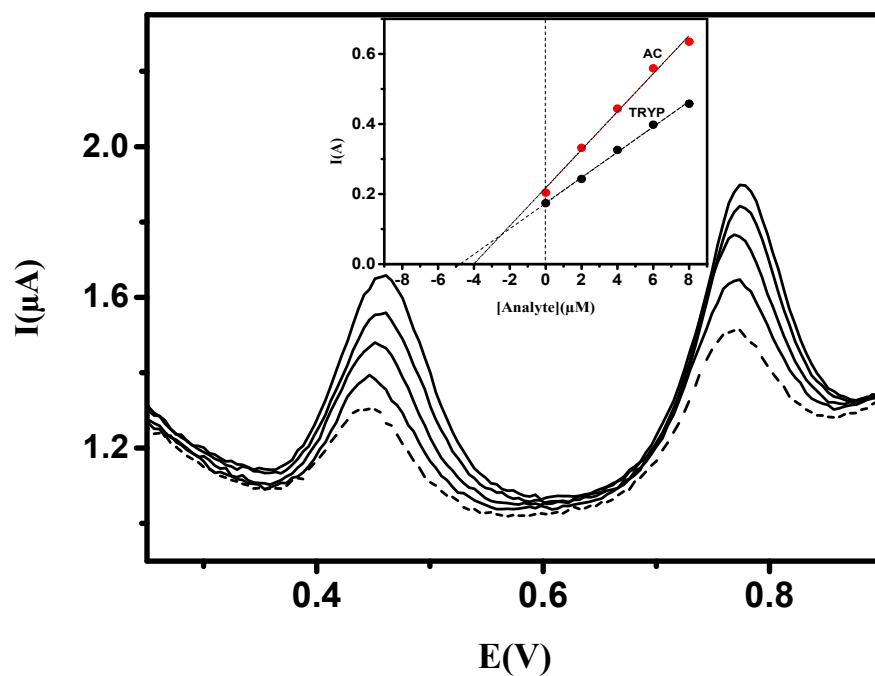


**FIGURE S7** DPVs of GF/UiO-66/GCE in AB (pH 4) with simultaneous continuous addition of AC and TRYP concentration ranging from  $0.5\mu\text{M}$  to  $27\mu\text{M}$ . The inset shows the calibration curve of (b) AC and (a) TRYP



**FIGURE S8:** DPVs of GF/UiO-66/GCE recorded in AB (pH 4) containing: (A) an amount of AC tablet solution (dashed line) followed by continuous addition of standard analyte in the same condition as in Fig. 7A and (B) an amount  $\mu\text{M}$  urine TRYP sample followed by

continuous addition of standard analyte in the same condition as in Fig. 7B. Insets show TRYP and AC concentration with peak current obtained



**FIGURE S9:** DPVs of GF/UiO-66/GCE recorded in AB (pH 4) containing: (A) an amount of AC and TRYP in tap water (dashed line) followed by continuous addition of a mixture of standard analyte in the same condition as in Fig S7 he inset shows TRYP and AC concentration with peak current obtained