Supplementary Information (SI) for Analytical Methods.
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Supporting Information

From Colors to Currents: A Hybrid Electrochemical and Colorimetric Sensor for Real-time Detection of Emerging Pollutants and pH monitoring

André L. Ferreira[a1], Mayra V. Paschoarelli[b1], William R. de Araujo[b*] and, Lucas F. de Lima[b,c*]

[a]Nano-Cell Interactions Lab., Departamento de Bioquímica e Biolgia Tecidual, Biology Institute, Universidade de Campinas, 13083-862, Campinas, SP, Brazil.
[b]Laboratório de Sensores Químicos Portáteis, Departamento de Química Analítica, Instituto de Química, Universidade Estadual de Campinas – UNICAMP, 13083-970, Campinas, SP, Brazil.
[c]Departamento de Química Fundamental, Instituto de Química, Universidade de São Paulo, São Paulo, SP 05508-000, Brasil.

[1] These authors contributed equally for this paper.

*Corresponding author:

E-mail address: delimalf@unicamp.br (Lucas Felipe de Lima) and wra@unicamp.br (William Reis de Araujo) Tel.: +5519 35213125.

Keywords: emerging pollutants, laser-scribed graphene, colorimetric and electrochemical sensing, portable device, real-time analyses.

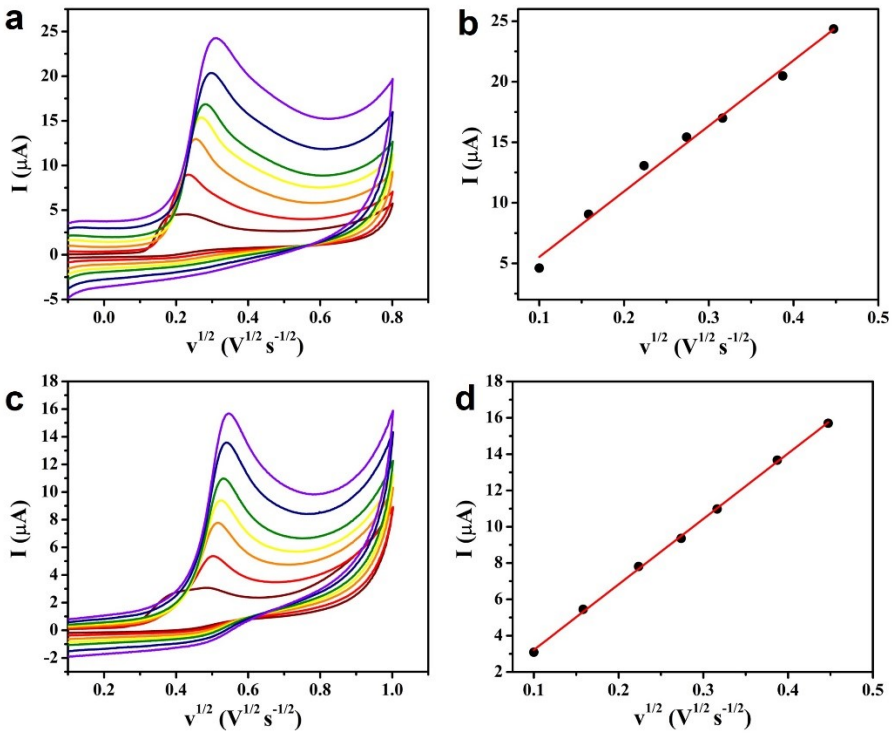

Figure S1: Electrochemical behavior of BPA **(a)** and MP **(b)** in different scan rates ranging from 10 to 200 mV s^{-1}.

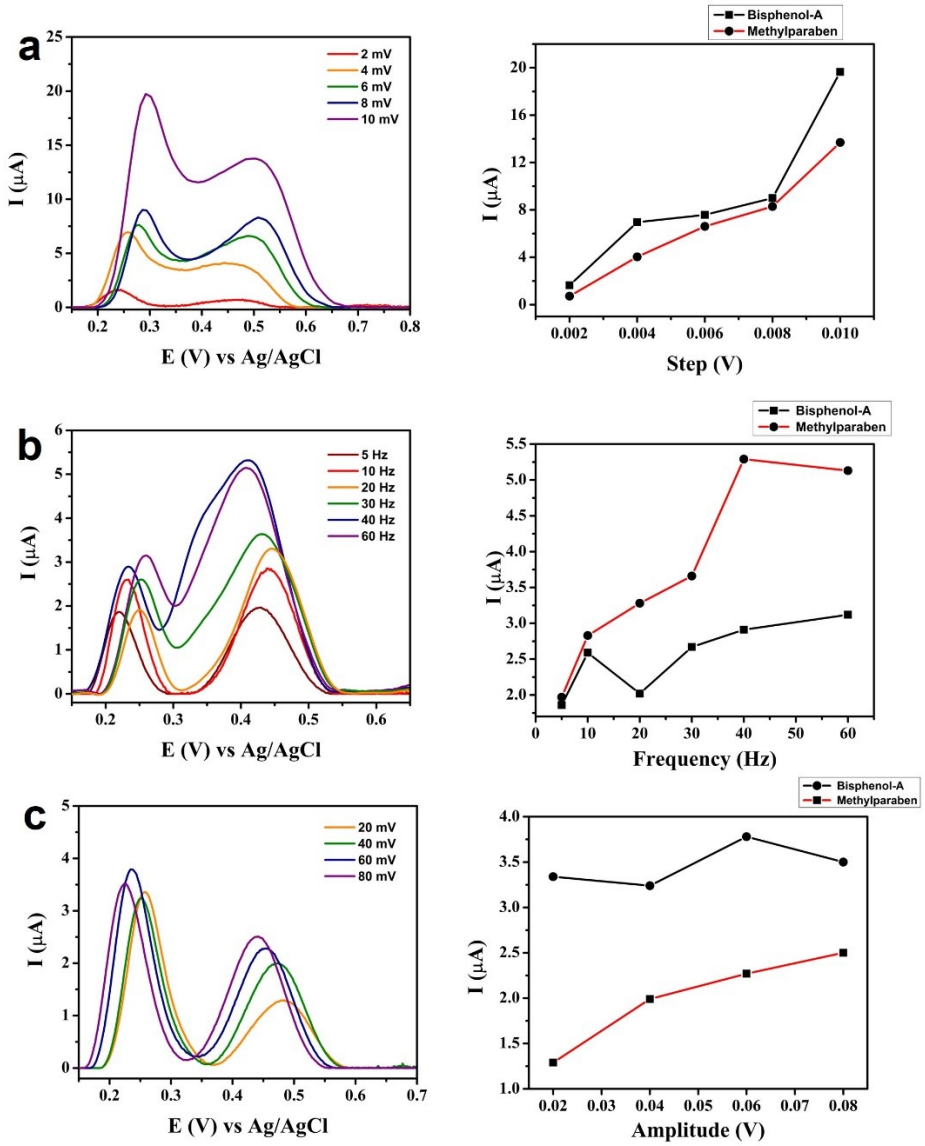

Figure S2: SWV optimization in the presence of 30 µmol L^{-1} BPA and MP in BR buffer (pH 8). A) step optimizations, b) frequency optimizations and c) amplitude optimization. All the results were conducted in the presence of 30 µmol L^{-1} BPA and MP in 0.1 mol L^{-1} BR buffer (pH 8).

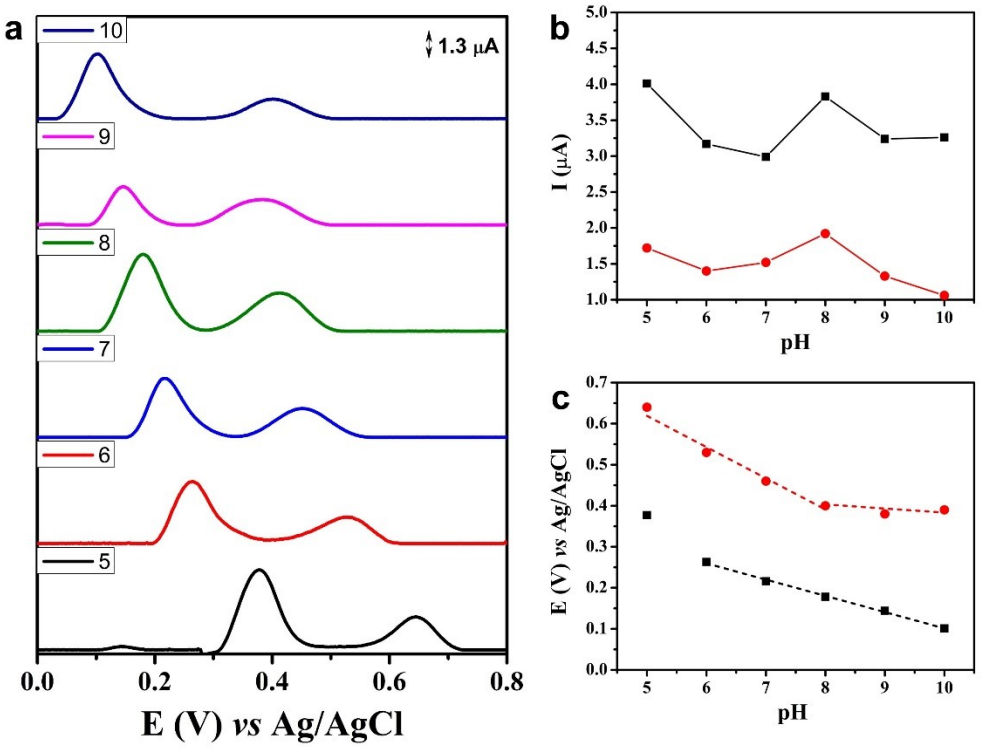

Figure S3: pH study using 30 µmol L^{-1} BPA and MP **(a)** SWV plots; **(b)** Ipa values in the function of pH; **(c)** Ep in function of pH values.

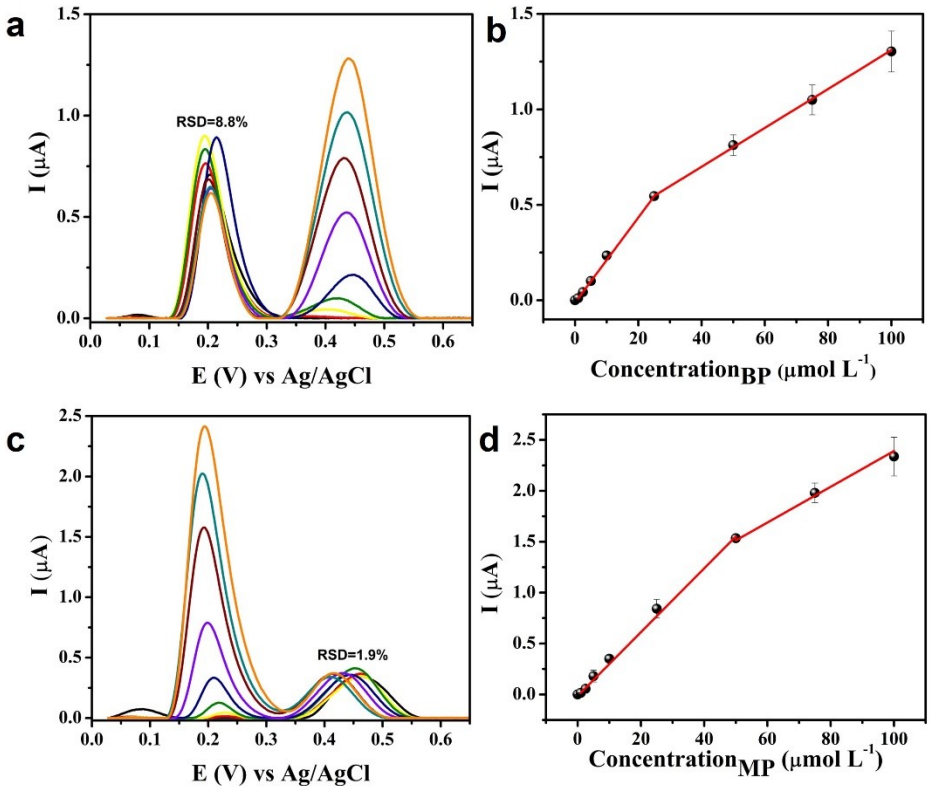

Figure S4: Analytical curves **(a-b)** fixing BPA and changing MP concentrations; **(c-d)** Analytical curves fixing MP and changing BPA concentration in 0.1 mol L^{-1} BR buffer (pH 8). All experiments were performed in triplicate (n=3), as indicated by the presence of error bars.

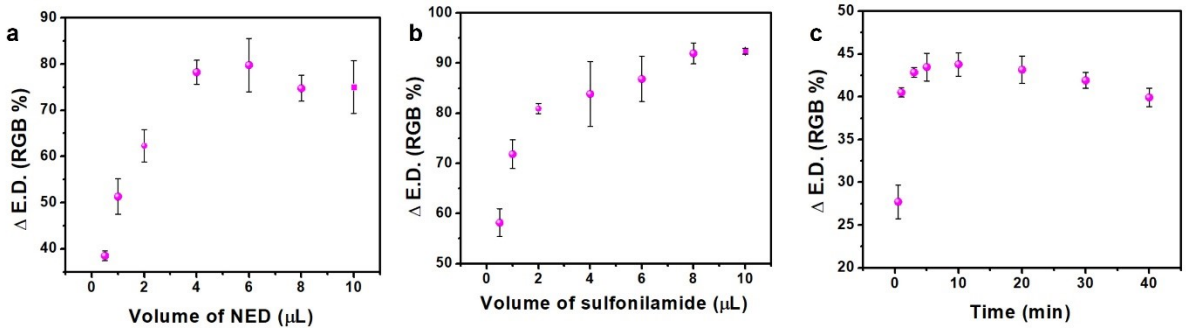

Figure S5: Colorimetric optimizations performed for nitrite detection **a)** volume of NED, **b)** volume of sulfanilamide and **c)** time of reaction. All experiments were performed in triplicate (n=3), as indicated by the presence of error bars.

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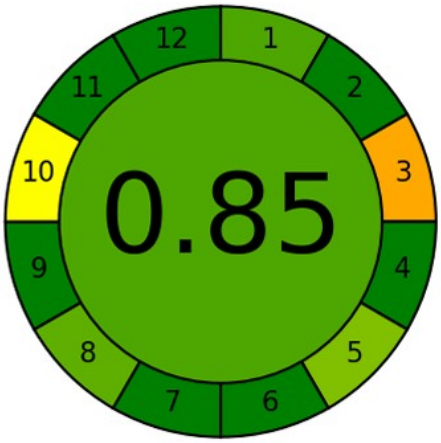

Criteria	Score	Weight
1. Direct analytical techniques should be applied to avoid sample treatment.	0.85	2
2. Minimal sample size and minimal number of samples are goals.	1.0	2
3. If possible, measurements should be performed in situ.	0.33	2
4. Integration of analytical processes and operations saves energy and reduces the use of reagents.	1.0	2
5. Automated and miniaturized methods should be selected.	0.75	2
6. Derivatization should be avoided.	1.0	2
7. Generation of a large volume of analytical waste should be avoided, and proper management of analytical waste should be provided.	1.0	2
8. Multi-analyte or multi-parameter methods are preferred versus methods using one analyte at a time.	0.82	2
9. The use of energy should be minimized.	1.0	2
10. Reagents obtained from renewable sources should be preferred.	0.5	2
11. Toxic reagents should be eliminated or replaced.	1.0	2
12. Operator's safety should be increased.	1.0	2

Figure S6: AGREE reports obtained for our multiplex colorimetric and electrochemical device