
Simultaneous electrochemical determination of sulfadiazine and carbaryl using screen-printed electrodes modified with MOF, carbon black and nafion

Ademar Wong^{1*}, Gabriel A.F.V. Silva¹, Marcos R. V. Lanza², Maria D. P.T. Sotomayor¹

¹São Paulo State University (UNESP), Institute of Chemistry, Araraquara-SP, Brazil and

²São Carlos Institute of Chemistry, University of São Paulo, São Carlos, SP, Brazil

**e-mail: ademar.wong@unesp.br*

Emerging pollutants, including pharmaceuticals, pesticides, personal care products, and microplastics, are increasingly detected in the environment, posing potential risks to human health and ecosystems. However, monitoring these compounds remains challenging due to their low concentrations and chemical diversity, highlighting the urgent need for sensitive and sustainable detection and removal technologies [1]. To address this challenge, this study proposes the development of an electrochemical sensor capable of simultaneously detecting sulfadiazine and carbaryl [2]. For this purpose, a screen-printed electrode was designed and modified with metal-organic framework (MOF), carbon black and nafion film. Under optimized experimental conditions, the sensor exhibited, using the square wave voltammetry technique, linear concentration ranges from 9.0×10^{-7} to 1.7×10^{-5} mol L⁻¹ for sulfadiazine and from 9.5×10^{-7} to 2.8×10^{-5} mol L⁻¹ for carbaryl. The developed sensor demonstrated promising performance when applied to environmental samples, proving to be a valuable analytical alternative for the detection of these emerging pollutants.

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References:

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