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Sunset Yellow voltammetric detection with graphene-modified electrodes

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Abstract

Graphene-based materials were prepared by exfoliation of graphite rod with pulses of current. After preparation, the materials were used to modify two glassy carbon (GC) electrodes, denoted GC/EGr-1 and GC/EGr-2, respectively. The performances of each electrode toward Sunset Yellow (SY) detection were tested in laboratory solutions (pH 6 PBS) containing increasing concentrations of SY $(3 \times 10 - 7 - 1 \times 10 - 4)$ M). The sensitivities, linear ranges and the limits of detection of the two electrodes were different. Hence, in the case of the electrode covered with graphene prepared in strong acidic solution (GC/EGr-1) the sensitivity was 0.017 A•M-1, the linear range between 6×10-6 and 1×10-4 M, the LOD was 1.8×10-6 M. In contrast, the electrode covered with the material prepared in weak acidic solution (GC/EGr-2) has higher sensitivity (0.021 A•M-1) wider linear range (1×10-6- $1 \times 10-4$ M) and lower LOD ($3 \times 10-7$ M).

Biography:

Florina Pogacean: her most recent research interests include the development of electrochemical sensors based on nanostructured materials, having significant expertise on fabrication of graphene-modified electrodes, laboratory electrochemical testing methods and data analysis.

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