Electrochemical Study of the Herbicide Paraquat Based on a Graphene-Zinc Oxide Nanocomposite

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Detection of the herbicide paraquat (PQ) is of great significance in the field of agriculture. To detect PQ, this work proposed the fabrication of a new electrochemical sensor based on graphene oxide/ZnO nanorod (GR/ZnO)-modified graphite screen-printed electrodes (SPEs). SPEs were used since they are small, low-cost and versatile. The GR/ZnO-modified SPE was prepared by casting a nanocomposite of the GR/ZnO nanorods on the SPE surface. The two reduction DPV peaks of PQ were remarkably strengthened with GR/ZnO at -0.60 V and -1.00 V. The reduction peak currents of PQ on the GR/ZnO-modified SPE were linear under the optimal conditions (concentration range: 0.05 – 2 μ M), and the limit of detection (LOD) was 21 nM.

Keywords: Graphene oxide/ZnO nanorods; Screen-printed electrodes; Graphene; Electrochemical determination; Paraquat

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