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Swift Electrochemical Detection of Paraben an Endocrine Disruptor

By In₂O₃ Nanobricks

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Abstract

Novel indium oxide (In₂O₃) nanobricks have been prepared by template-less and surfactant-free hydrothermal synthesis method and were characterized by X-ray diffraction (XRD), Raman spectroscopy, Photoluminescence (PL) spectroscopy and field emission scanning electronic microscopy (FESEM). The synthesized In₂O₃ nanobricks were successfully immobilized on the surface of glassy carbon electrode for the detection of *Parabens* (butylparaben). Owing to the unique structure and intriguing properties of these In₂O₃ nanobricks, the nanostructured thin-film electrode has shown an obvious electrocatalytic activity for the detection of butylparaben (BP). The detection limit (LOD) was estimated as 3s/m and the sensitivity (LOQ) was calculated as 10 s/m and were found to be 0.08 μM and 0.26 μAμM⁻¹ cm⁻² respectively. This sensor showed high sensitivity compared with the reported electrochemical sensors for the detection of BP. The fabricated sensor was successfully applied for the detection of butyl paraben in real cosmetic samples with good recovery ranging from 96.0% to 100.3%.

Keywords: In₂O₃ nanobricks, synthesis, Electrochemical BP detection

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