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The construction of electrochemiluminescence new sensor by Using of Si/C nanostructures for signal amplification in order to measurement of Cyanotoxins in water samples

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Accurate evaluation of trace organic pollutants such as Cyanotoxins with facile methods, is critical to prevention and controling of environmental pollutants [1,2]. Electrochemiluminescence (ECL) assay as an impressive analytical technique has attracted significant interest in recognition and sensing [3]. Herein, we proposed a moleculary imprinted polymer (MIP)-based ECL sensor platform for high sensitive detection of Cyanotoxins in real samples [4]. This proposed sensor with use of Si/C nanoparticles, were designed and made [6]. The established uniform MIP film on the surface of ITO electrode and nanocomposite embedded in MIP, showed an anodic ECL emission using TPrA. When the imprinted cavities were occupied by Cyanotoxin molecules, the ECL emission was efficiently increased. Under optimal conditions, the represented sensing platform illustrated accurate and high sensitive analytical performance toward Cyanotoxin detection with a linear range from 2 ng/ml to 3 fg/ml and detection limit of (S/N=3). In addition, this sensor demonstrated good recovery rates, high reproducibility and stability and excellent selectivity for Cyanotoxin determination. Furthermore, the application of the developed ECL sensor for measurement of Cyanotoxin in water samples was evaluated and the satisfactory results were founded.

Keywords: Electrochemiluminescence, MIP, Cyanotoxins, TprA, Si/C nanostructures.

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