
The roles of nanomaterials played in the Electrochemiluminescence

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Abstract

Electrochemiluminescence (ECL) as powerful detection tool has been widely used in analytical science such as DNA analysis, immunoassay, food and environmental detection, clinical diagnostics because of the high sensitivity, good selectivity, wide linear range, simple instrumentation and low background. To further improve the performance of the ECL, nanomaterials with the unique optical, electronic, magnetic and catalytic feature entered people's vision as different roles. In this report, three roles of the nanomaterials played in the ECL were demonstrated. (1) nanomaterial as the matrix and nanocarrier to improve the electron transfer and the loading of the ECL probes due to the good conductivity and high surface area and the corresponding sensing platform were fabricated including the recognition of HeLa cells and AFP [1-2]. (2) utilizing the surface capped groups of the nanomaterials to develop the novel coreactants of ECL to improve the ECL efficiency, for example the introduction of boron nitride quantum dots led to the ECL enhancement in the Ru(bpy)₃²⁺ based ECL system.[3] (3) employing the metal nanoclusters as the enhanced ECL probe by doping of Ag atom.[4]

Keywords: ECL, Nanomaterials

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