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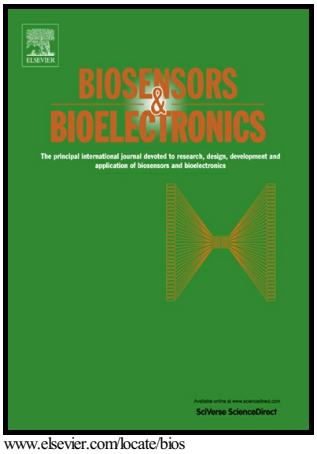

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Electrogenerated chemiluminescence of Si quantum dots in neutral aqueous solution and its biosensing application

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Abstract

Electrogenerated chemiluminescence (ECL) of semiconductor quantum dots (QDs) has been considered as a powerful technique in the fabrication of biosensor, however, high-toxicity of heavy metal ion containing in QDs severely limits their further applications, and the search for the alternative benign nanomaterials with high ECL efficiency is urgent. Herein, ECL behavior of eco-friendly silicon quantum dots (SiQDs) was reported in neutral aqueous condition. Stable and intense cathodic ECL emission was obtained in phosphate buffer solution (PBS) with $K_2S_2O_8$ as coreactant. ECL resonance energy transfer (ECL-RET) system was established with SiQDs ECL as energy donor and gold nanoparticles (AuNPs) as energy acceptor, based on which