

Quantum dots modified indium tin oxide electrode using self-assembled monolayers and their sensor applications

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Quantum dots have been tested in most biotechnological application, such as DNA array technology, immunofluorescence assays, and cell animal biology by use of fluorescence. The characteristics of photostable and high brightness have been used for most of bioconjugated quantum dots. Quantum dots were self-assembled onto an indium tin oxide (ITO) electrode to prepare a modified layer type electrochemical immunoassay platform. We synthesized the hydrophobic CdSe quantum dots and convert them water soluble using surface-ligand exchange with 3-mercaptopropionic acid. As prepared water soluble CdSe quantum dots were attached onto the above 3-aminopropyltriethoxysilane (APTES) modified ITO electrode by immersing the APTES/ITO electrodes in to the CdSe colloidal solution (2mM). We conformed solution concentration has an effect on electrode modified rate. Also, photo-current measurement was performed by using linear potential scan method. This work was supported by NANO-Star center under the CRADA of AFIT-UT-KWU.