اسم البحث : Fabrication and characterization of gold nano particles for DNA biosensor applications

الرابط : https://www.sciencedirect.com/science/article/abs/pii/S1001841716000255

اسماء الباحثين : Ahmed Mishaal Mohammed

الكلمات المفتاحية : Gold nanoparticles, Electrochemical, DNA hybridization, Dielectric analyzer

الملخص :

This research involves the preparation of a biosensor using silicon oxide for biomedical applications, and its effective use for the detection of target DNA hybridization. An electrochemical DNA biosensor was successfully fabricated by using (3-aminopropyl) tri-ethoxysilane (APTES) as a linker molecule combined with gold nanoparticles (GNPs) on a thermally oxidized SiO_2 thin film. The size of the GNPs was calculated by utilizing UV-Vis data with an average calculated particle size within the range of 30 ± 5 nm, and characterization by transmission electron microscopy (TEM) and atomic force microscopy (AFM). The GNP-modified SiO_2 thin films were electrically characterized through the measurement of capacitance, permittivity and conductivity using a low-cost dielectric analyzer. The capacitance, permittivity and conductivity profiles of the fabricated sensor clearly differentiated DNA immobilization and hybridization.