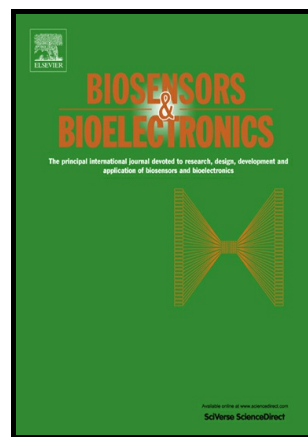


## Author's Accepted Manuscript

Amplified fluorescent sensing of DNA using luminescent carbon dots and AuNPs/GO as a sensing Platform: A novel coupling of FRET and DNA hybridization for homogeneous HIV-1 gene detection at femtomolar level

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**Amplified fluorescent sensing of DNA using luminescent carbon dots and AuNPs/GO as a sensing Platform: A novel coupling of FRET and DNA hybridization for homogeneous HIV-1 gene detection at femtomolar level**

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**Abstract**

The demand for simple, sensitive, affordable, and selective DNA biosensors is willing, due to the important role of DNA detection in the areas of disease diagnostics, environment monitoring and food safety. The presented work is devoted to the fabrication of an ultrasensitive homogeneous biosensor for the detection of DNA sequences related to HIV based on fluorescence resonance energy transfer (FRET) between carbon dots (CDs) and AuNPs as nanoquenchers. CDs as fluorophore with average size 3-4 nm were prepared by hydrothermal treatment of histidine. In this respect, the hybridization was occurring between the assemblies of fluorescence CDs functionalized 5-amino-labeled oligonucleotides as capture probe and label free oligonucleotides as detection probe. Due to strong fluorescence and good biocompatibility of CDs, the capture probe was covalently conjugated to CDs. In the presence of the target probe, the association

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