Nano Graphene-Based DNA Bio-sensors

Mostafa Banihashemi-Tehrani

Mechanical Engineering Department, Sharif University of Technology, Tehran 11365-9567, Iran

Abstract:

Regarding electrochemical sensing applications and thanks to the imperfection that have been created on the graphene oxide (GO) layers, graphene-based nanohybrid is taken into account to be the foremost promising nano-material for this purpose. Excellent conductivity, large specific surface area, and electrocatalytic activity have been considered as inimitable properties of GO maintained by these imperfections. The unrivaled characteristics paved the way for scientists to foster unprecedented graphene-based nanohybrids and amend the sensing performance. Biosensors have been produced in terms of environmental monitoring, food safety, and biomedical diagnostics and graphene-based nanomaterials have been broadly used. In order to fabricate biofunctional nanohybrids; aptamers have been combined with graphene. Hence, the sensitivity and selectivity of produced biosensors have been ameliorated thanks to the unbeatable molecular diagnosis and biocompatibility of aptamers. In this review, we address this subject by universally explaining the recent signs of progress in the design and applications of graphene-based DNA Bio-sensors for biomedical detections of DNA. Moreover, conjugation between aptamers and graphene-based nanomaterials as well as the methodologies of biosensors' structures production have been taken.

Biography:

Mostafa Banihashemi-Tehrani has completed his M.Sc. at the age of 27 years from Sharif University of Technology and served as a graduate research assistant at Sharif University of Technology, Iran. He is the un-official advisor of Micro- and Nanofluidics lab of Sharif University of Technology. He has published 2 papers in reputed journals and has been serving as a reviewer member of Physics of Fluids Journal (AIP Publishing).

Recent Publications:

1. Song, He., Xiaoyang Zhang, Yunfang Liu, and Zhiqiang Su, 2018. Developing Graphene-based Nanohybrids for Electrochemical Sensing. Chem.Rec., 18: 1-17

2. Wang, Li., Aigu, Wu. Egdane, and Gang Wei, 2016. Graphene-based aptasensors: from molecule-interface interactions to sensor design and biomedical diagnostics. RSC, 00: 148–160

3. Zhenguo, Zhang., Cong, Yulin., Yichun. Huang., and Du Xin, 2019. Nanomaterials-Based Electrochemical Immunosensors. Micromachines., 10: 397

3rd International Congress on Biosensors and Bioelectronics; July 20-21, 2020; Paris, France

Citation: Mostafa Banihashemi-Tehrani; Nano Graphene-Based DNA Bio-sensors; Biosensors 2020; July 20-21, 2020; Paris, France.