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## Current trends and challenges of fabrication techniques, sensing modes and applications of nanomaterials-based biosensors

Biosensors have witnessed an everlasting interest because of their wide applications in different areas including medicine, biomedical, environment and food industries. Biosensors are one type of small devices for detecting target analyte that are usually bio-molecules such as antigen, antibody, protein, peptide, enzyme, DNA and RNA. A biosensor can be defined as a compact analytical device or unit incorporating a biological or biologically derived sensitive recognition element or bio-receptor integrated or associated with a physiochemical transducer. The bio-receptor recognizes the target analyte, while the transducer converts the recognition event into a measurable signal which can be weighted and measured electrically, optically, electrochemically or mass-sensitive. The uniqueness of a biosensor is that the two components; bio-receptor and transducer are integrated into one single sensor. Many different fabrication techniques for different types of biosensors have been examined in this presentation. The utilization of new coming Nano-Materials (NMs) has promoted the development of DNA biosensors towards the goal of smart, simple and inexpensive detection for targets analyses. Ideal NMs must comprise a range of fundamental properties like the ease in preparation, availability and an abundance of functional groups, large surface/volume ratio and chemical stability for the use as a suitable matrix in biosensor fabrication. Crucial parameters such as sensitivity, specificity and selectivity are discussed in this presentation.

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