biosensors

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Spectroscopy-Based Biosensors

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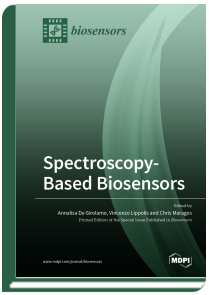

Biosensors are analytical devices capable of providing quantitative or semi-quantitative information by using a biological recognition element and a transducer. Depending upon the nature of the recognition element, different surface sensitive techniques can be applied to monitor these molecular interactions. In order to increase sensitivities and to lower detection limits down to even individual molecules, nanomaterials are promising candidates. This is possible due to the potential to immobilize more bioreceptor units at reduced volumes and their ability to act as transduction elements by themselves. Among such nanomaterials, gold nanoparticles, quantum dots, polymer nanoparticles, carbon nanotubes, nanodiamonds, and graphene are intensively studied. Biosensors provide rapid, real-time, accurate, and reliable information about the analyte under investigation and have been envisioned in a wide range of analytical applications, including medicine, food safety, bioprocessing, environmental/industrial monitoring, and electronics. A variety of biosensors, such as optical, spectroscopic, molecular, thermal, and piezoelectric, have been studied and applied in countless fields.

In this book, examples of spectroscopic and optical biosensors and immunoassays are presented. Furthermore, two comprehensive reviews on optical biosensors are included

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