

Carbon nanotubes as platforms for biosensors with electrochemical and electronic transduction

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Deskripsi Lengkap: <https://lib.ui.ac.id/detail?id=20405818&lokasi=lokal>

Abstrak

The thesis by Mercè Pacios exploits properties of carbon nanotubes to design novel nanodevices. The prominent electrochemical properties of carbon nanotubes are used to design diverse electrode configurations. In combination with the chemical properties and (bio)functionalization versatility, these materials prove to be very appropriate for the development of electrochemical biosensors. Furthermore, this work also evaluates the semiconductor character of carbon nanotubes (CNT) for sensor technology by using a field effect transistor configuration (FET). The CNT-FET device has been optimized for operating in liquid environments. These electrochemical and electronic CNT devices are highly promising for biomolecule sensing and for the monitoring of biological processes, which can in the future lead to applications for rapid and simple diagnostics in fields such as biotechnology, clinical and environmental research.