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**Non-enzymatic amperometric determination of cellular hydrogen peroxide using dendrimer-encapsulated Pt nanoclusters/ carbon nanotubes hybrid composites modified glassy carbon electrode**

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**Highlights**

- Pt-DENs/CNTs nanocomposite has been prepared.
- Pt-DENs/CNTs nanocomposite has exhibited outstanding electro-catalysis.
- H<sub>2</sub>O<sub>2</sub> released from living cells has been successfully determined.

**Abstract**

In this work, we developed a simple and sensitive non-enzymatic electrochemical sensor based on dendrimer-encapsulated Pt nanoclusters and carbon nanotubes (Pt-DENs/CNTs) nanocomposites modified glassy carbon electrode for determination of extracellular hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>) released from living cells. The Pt-DENs/CNTs nanocomposites were characterized using UV–vis spectra, scanning electron microscopy (SEM), energy-dispersive X-ray spectroscopy (EDS) and transmission electron microscopy (TEM). The non-enzymatic sensor exhibited outstanding catalytic activity toward H<sub>2</sub>O<sub>2</sub> reduction. The successful determination of extracellular H<sub>2</sub>O<sub>2</sub> demonstrated that the Pt-DENs/CNTs sensor maybe provide a potential tool to monitor H<sub>2</sub>O<sub>2</sub> in cellular biological processes.

**Keywords:** Pt-DENs/CNTs nanocomposites; H<sub>2</sub>O<sub>2</sub> detection; living cells; sensor

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