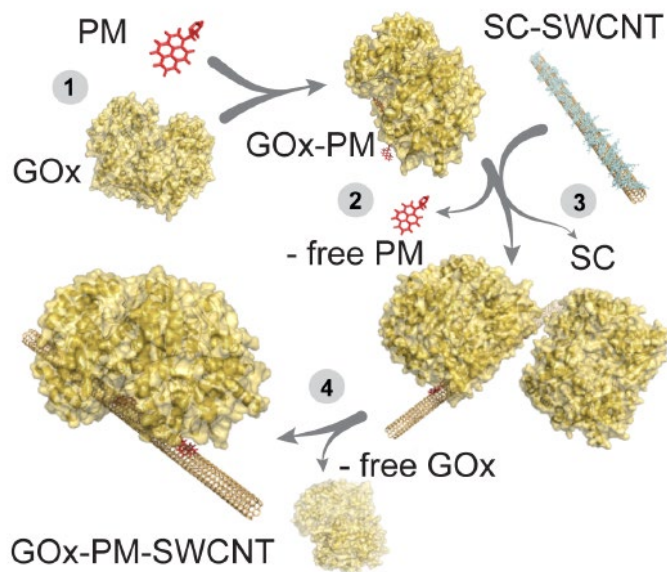


# Photostable Biosensor for continuous analyte monitoring



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Keywords

Sensor, biosensor, analyte, glucose, SWCNT, graphene

Intellectual Property

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Publications

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Synthesis of a GOx-PM-SWCNT biosensor as an embodiment of the technology and as described in *Nanoscale Adv.*, 2022,4, 2420-2427.

## Description

Optical sensors for continuous sensing in-vivo rely on a molecular recognition element that selectively interacts with the analyte of interest and an optical transducer that converts this interaction into a measurable optical signal. Fluorophores can be used as signal transducers but prone to photodegradation. Single-walled carbon nanotubes (SWCNTs) offer indefinite photostability but their functionalisation still remains a challenge. The technology provides a solution to functionalise SWCNTs with a biomolecule specific for an analyte by using a thiol-based linker, which covalently binds the biomolecule in selected regions and adheres to the SWCNT through stacking interactions. The reversible binding of analytes can be measured optically or electrochemically.

## Advantages

(i) High density stacking of biomolecules per SWCNT substrate, (ii) maintaining integrity of structural property of biomolecule; (iii) Near-infrared monitoring in-vivo (i.e. in the optical transparency window for biological material).

## Applications

- Continuous sensing of analytes in cell culture or in-vivo (e.g. under the skin).
- Imaging agents
- nanomedical therapy