

Development of functionalized microchips for intracellular GSH sensing using BODIPY derivatives as fluorescent probes

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Abstract

Molecular imaging based on fluorescent probes is a technique providing online fluorescence sensing of biomolecules¹. On the other hand, self-assembly monolayers (SAMs) are considered a key tool in the surface design of nanolayers for the bioactive coating of biomedical devices^{2,3}. Our main target is intracellular GSH sensing with micro-sensors providing efficient cellular uptake of fluorescent probes, long-term tracking, and overcoming optical instability and biotoxicity.

Two types of GSH probes based on BODIPY derivatives were synthesized and conjugated to the surface of silicon oxide microchips. Functionalized microchips were finally released in suspension from the wafer by using a mounting medium and characterized by confocal microscopy. The sensitivity of Functionalized microchips was studied in the GSH solution. The cell internalization of functionalized microchips and their sensitivity to the intracellular GSH were also investigated in HeLa cells.

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References

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Figures

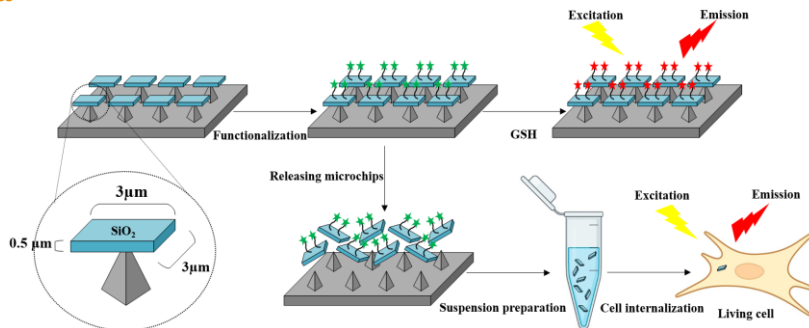


Figure 1: Schematic of surface functionalization of silicon oxide microchips and GSH sensing experiments