

### Needle-structured ZnO NRs on Ag electrode for Highly Efficient Glucose Sensor

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Needle-structured ZnO nanorods (n-ZNRs) were grown directly on Si/Ag electrode in solution at 90 °C and used to fabricate an enzyme-based glucose biosensor through immobilizing glucose oxidase (GOx). The present n-ZNRs based biosensor exhibits a reproducible sensitivity of 81.71  $\mu\text{A}/\text{mMcm}^2$  at an applied potential of +0.58 V with a detection limit of 3  $\mu\text{M}$  (S/N = 3), wide linear range 0.01–31.5 mM, response time  $\sim 2$  s and the Michaelis-Menten constant ( $K_M^{\text{app}}$ ) is calculated to be 0.0137 mM. Moreover, the anti-interference ability and long-term stability of the biosensor were also assessed. These results are well-consistent with the fact that more GOx is immobilized on n-ZNRs, which have higher specific surface area and provide direct electron communication path between the enzyme's active sites and the electrode.