

MgO polyhedral nanocages and nanocrystals based glucose biosensor

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Abstract:

MgO polyhedral nanocages and nanocrystals, synthesized by non-catalytic simple thermal evaporation process, were used to fabricate high-sensitive amperometric glucose biosensor which showed a high and reproducible sensitivity of $31.6 \mu\text{A}\mu\text{M}^{-1}\text{cm}^{-2}$ with a response time less than 5s, linear dynamic range from 1.0 to 9.0 μM and correlation coefficient of $R=0.9993$. The detection limit of fabricated biosensor (based on S/N ratio=3) was estimated to be 68.3 nM. To the best of our knowledge, this is the first report which demonstrates the use of MgO nanostructures for the fabrication of glucose biosensor; hence, this work opens a new way to utilize MgO nanostructures as an efficient electron mediator to fabricate efficient glucose biosensors.

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