Facile Synthesis Protocol to the Preparation of Strontium Doped Copper Oxide for the Electrochemical Glucose Sensor

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This manuscript presents the facile synthesis protocol to prepare the strontium doped copper oxide (Sr-CuO) by the ligand exchange of copper nitrate ($\text{Cu}(\text{NO}_3)_2$) and strontium hydroxide ($\text{Sr}(\text{OH})_2$). The $\text{Sr}(\text{OH})_2$ is catalyzed the reaction to facilitate the CuO formation with Sr doping and also, it is furnished a well-defined leaf like morphology to Sr-CuO. The leaf like Sr-CuO nanoparticles are analyzed by the X-ray diffraction pattern (XRD), field emission scanning electron microscope (FESEM) and energy dispersive X-ray (EDX) studies. The Sr-CuO nanoparticles modified screen printed carbon electrode (SPCE) is used for the non-enzymatic glucose determination. The Sr-CuO/SPCE is effectively estimated the concentration of glucose with the acceptable analytical parameters. The estimated linear concentration range is 0.0001 to 11.5 mM and the lowest detection limit is 27 nM. Moreover, the Sr-CuO/SPCE glucose sensor exhibited good selectivity in the potential interfering compounds. These analytical performances of Sr-CuO/SPCE can greatly compared with the other CuO nanostructures.

Keywords: Leaf, ligand exchange, elemental mapping, copper oxyhydroxide, glucose mechanism.

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