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# Fabrication of Cu<sub>2</sub>O/TiO<sub>2</sub>/sepiolite Electrode for effectively Detecting of H<sub>2</sub>O<sub>2</sub>

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**Abstract:** A clay-modified electrode, sepiolite modified by TiO<sub>2</sub> nanoparticles (1-10 nm) incorporation of Cu<sub>2</sub>O particles (70-300 nm), was prepared for electrocatalytic reduction of H<sub>2</sub>O<sub>2</sub>. The morphology, structure and properties of obtained materials were characterized by XRD, BET, FT-IR, SEM and TEM and the performance of the modified electrode was evaluated by cyclic voltammetry and chronoamperometry. The results revealed that the concentration of H<sub>2</sub>O<sub>2</sub> was proportional to the response to the current with the linear range from 20 μM to 2.36 mM and the detection limit of 10.2 μM under the working voltage. Compared with previous H<sub>2</sub>O<sub>2</sub> sensors, the Cu<sub>2</sub>O/TiO<sub>2</sub>/sepiolite electrode possess favorable electrochemical performance can be attributed to its large specific surface area and structure of TiO<sub>2</sub>-modified sepiolite in favour of load of Cu<sub>2</sub>O.

**Keywords:** Mineral; Sepiolite; TiO<sub>2</sub>; Cu<sub>2</sub>O; Clay-modified electrode

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