

Nano-porous PbO₂ electrode preparation on BaTiO₃ by Electrochemical deposition: Morphological and Electrocatalytic application study

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This investigation aims to study the experimental conditions for BaTiO₃ electrodeposition along with PbO₂ codeposition to get nano-PbO₂ semiconducting electrode for electrocatalytic applications, here phenol as model compound. At first step, pretreatment of the Ti electrode and electrodeposition of barium focused in various steps in order to assure nano-structured surface and strong adherence. In second stage of experimental section explains preparation and utilization of two different electrochemical baths for electro-deposition of PbO₂ on BaTiO₃. Electrochemical technique of cyclic voltammetry helps to initial confirmation of PbO₂. Further, SEM and XRD analyses firmly explain the morphological and composition PbO₂ on BaTiO₃. SEM and XRD results corroborate with the cyclic voltammetry results. The prepared electrode demonstrates its electrocatalytic activity on liquid pollutant phenol. At end, a discussion will be made for PbO₂ on BaTiO₃ effect and its stability with enhanced electrocatalytic removal of liquid pollutants.