

Effect of mixture of acids in the electrochemical synthesis of highly sustainable nano structured PbO₂ electrode

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The sustainability of the semiconducting materials are attributed to the various factors such as preparation condition, addition of metal ion, polymers and so on. PbO₂ is a semiconductor but behave like a metal due to the property of non stoichiometric ratio of Pb and oxygen in the PbO₂ composition. Thus, it is still used as anodic material in real application such as Ozone production, and degradation of organic pollutants. Effective coating of PbO₂ is a toughest issue in HNO₃ medium due to evolution of NO₂ and NOX gases during electrolysis. Therefore, addition of supporting electrolyte might minimize such problems and enhance the PbO₂ coating. Here, we have demonstrated the Boric acid, and Sulfamic acid as a supporting electrolyte in HNO₃ bath with different current densities. The effective deposition of PbO₂ was observed in Boric acid and HNO₃ combination. The material was characterized by the XRD, SEM and Cyclic voltammetry techniques. Based on the Supporting electrolyte combination the electrode stability was analysed.