

Electrochemical synthesis of highly sustainable nano structured BaTiO₃/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 metal due to the property of non stoichiometric ratio of Pb and oxygen in the PbO₂ composition. Thus, it is being still used as anodic material in real application such as Ozone production, and degradation of organic pollutants. Herein, Ceramic materials such as perovskite ABO₃ type BaTiO₃ planned to use to enhance the PbO₂ stability. Among many deposition like sol-gel and thermal, electrochemical deposition adopted due to its strong adherence property. At first, BaTiO₃ was deposited on Ti electrode at various current densities and coating time. In second layer, PbO₂ was electrodeposited using different current densities and time. The prepared electrode characterized by the XRD, SEM and Cyclic voltammetry. Based on the BaTiO₃ and PbO₂ ratio, the electrode stability was analysed. The prepared material was stable around 750hrs.