

Effect of mixture of surfactant and polymer in the room temperature synthesis of nano structured PbO_2 and its application to electrochemical oxidation of Phenol

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PbO_2 is a semiconducting material that can capable to replace BDD electrode and importantly it has good resistance to corrosion and hence possess long life time and high over potential to oxygen evolution. Apart from electrochemical synthesis, chemical methods of synthesis in presence of surfactant helps to control the structure of the materials of interest due to capability to form different shapes with varying concentration above CMC value, hydrophobic core and hydrophilic head of surfactant, which leads to formation of nano particles in defined morphology. On these basis, we have synthesized nano structured PbO_2 from the mixture of PVP and Triton X-100 at room temperature. Different ratios of PVP and Triton X-100 were studied to get optimize condition to form defined PbO_2 . The prepared material was characterized by the XRD, SEM and TEM techniques. The Polymer doped PbO_2 was subjected to study the electrochmeical oxidation of Phenol by Cyclic Voltammtery technique.