Synthesis of nano structured Co_xO_x/PbO_2 at low temperature and its Application to Oxygen evolution reaction

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The nano structured binary metal oxide has made new diversion to heterogeneous catalytic applications, such that water spliting, electrochemical degradation of organic pollutant and VOC oxidation and so on. Addition of cobalt dioxide with lead oxides, results excellent promising anodic material in alkaline environment. But preparation of the binary materials required high temperature around 450 to 600°C and also energy. In order to minimize the energy consumption, here we started synthesize a Co_xO_x/PbO_2 based binary nano material at room temperature. At first, precursors of Cobalt and Pb reduced to nano metals in presence of a surfactant. Then, the reduced nano-metals oxidized chemically using an oxidant. Both the reduction and oxidation process have been done at room temperature. The prepared mixed oxides are used to study of OER in alkaline medium. The metal oxides were characterized by XRD, TEM and SEM.