

Synthesis of Electrocatalysts for Electrooxidation of Methyl Formate and Their Activity under Half Cell and Single Cell Condition

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Methyl formate is a kind of ester containing methanolic and formate component. Cause it has comparable volumetric charge density and theoretical OCV to methanol, methyl formate can be used as an alternative fuel for fuel cell. Some catalysts containing Sn (PtSn/C) or Pd species (PtPd/C, PtRuPd/C) were prepared, then compared their activity for electrooxidation of methyl formate to commercial catalysts from E-TEK (Pt/C, PtRu/C). Pt1Sn1/C, Pt1Pd1/C, and Pt1Ru1Pd1/C catalysts were easily prepared by chemical reduction with hydrothermal treatment method and their properties were analyzed by XRD, TEM, EDS, and ICP. Electrochemical activities of each catalyst for methyl formate electrooxidation were performed by half cell test (CV, CA, and CO stripping). And to see the influence of catalysts on activities under real system, single cell tests were performed also.