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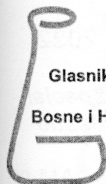
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Microwave-assisted Polyol Synthesis of Pt Based Catalysts for Ethanol Oxidation Reaction

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Abstract: Direct ethanol fuel cells (DEFC) are very promising energy sources due to their high efficiency and low emission of pollutants, high energy density, non-toxic and environmentally friendly characteristics. Platinum is a very good catalyst for the oxidation of ethanol, but it has significant disadvantages: high cost and limited resources in nature. In order to reduce the amount of Pt but also to improve the performance of the catalyst, the main efforts are focused on the synthesis of platinum catalysts in which platinum is alloyed with less expensive metals such as Sn, Zn, Ru, Ni, etc. In this work, PtSn/C, PtZn/C and PtSnZn/C catalysts were synthesized by the microwave assisted polyol method. The activity of synthesized catalysts for ethanol electrooxidation in acidic medium was investigated. The effects of composition and morphology on the catalyst electrocatalytic activity were analyzed by CO stripping voltammetry and ethanol oxidation. Electrocatalytic stability of the catalysts was examined by prolonged cycling as well as by chronoamperometric measurements in $\text{HClO}_4/\text{C}_2\text{H}_5\text{OH}$ solution. It was shown that activity of the platinum catalyst after the addition of another metal is attributed to the bifunctional and electronic effect.