

Colloidal synthesis of PtZn nanoparticles for oxygen reduction reaction

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Commercialization of a proton exchange fuel cell (PEMFC) is confronted with insufficient activity and durability of Pt-based cathode catalyst. Thus, research on cathode electrocatalysts has been focused on increase of specific activity of Pt-based catalysts by alloying Pt with transition metals. Computational density functional theory predicted that Pt₃Zn has the nearly optimal oxygen binding energy for oxygen reduction. However, there has been still lack of knowledge on electrochemical performance of Pt₃Zn as a cathode catalyst in a PEMFC. In this work, we developed synthetic method to Pt-Zn nanoparticles in oleylamine. The size of Pt-Zn nanoparticles was tuned by synthetic conditions, such as reaction temperature and precursor concentration. The effect of precursor ratio between Pt precursor and Zn precursor will be also presented.