Dealloyed Pt-Zn/C nanocomposites for oxygen reduction reaction

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The sluggish oxygen reduction reaction limits the performance of proton exchange fuel cells, thus requiring high loading of Pt. The scarcity and high cost of Pt have given rise to search methods for increasing the active sites per gram and specific activity. Alloying Pt with transition metals has been widely used. Computational screening of electrocatalysts predicts that Pt-Zn alloy shows optimal oxygen biding energy for ORR.

Here, we studied Pt-Zn alloy with two types of synthesis of Pt-Zn catalysts. First, Pt-Zn alloy nanoparticles having average size less than 4 nm was synthesized by heating up method in oleylamine. Second, Pt-Zn/C was prepared by wet impregnation method. Through our studying Pt-Zn alloy electrocatalysts for ORR, we think that Pt-Zn/C electrocatalysts is a promising candidate electrocatalysts for ORR.