

研究论文

碱性条件下Pt-M(Ni, Fe, Mo)/C电催化氧化甲醇的性能对比研究

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摘要 采用溶胶法制备了碳载Pt-M(M为Ni, Fe, Mo)电催化剂, 并用TEM和XRD技术表征活性物微观结构, 实验结果表明, Pt基合金微粒在碳黑表面分布均匀, 粒径约为2~4 nm. 用循环伏安法测定催化剂在不同碱性条件下的活性, 研究结果表明, 不同掺杂元素催化剂的活性大小顺序为Pt₇₅Ni₂₅/C>Pt₇₅Fe₂₅/C>Pt₅₀Mo₅₀/C, 掺杂Ni可明显地促进纳米Pt的催化活性, Pt₇₅Ni₂₅/C在1.0 mol/L NaOH+1.0 mol/L CH₃OH溶液中的峰电流密度可以达到726.9 mA/mg.

关键词 [碱性介质](#) [Pt基合金电催化剂](#) [甲醇](#) [电氧化](#)

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Performance of Methanol Oxidation on Pt-M(M=Ni, Fe, Mo) Electro-Catalysts in Alkaline Media

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Abstract Carbon supported Pt-M(M=Ni, Fe, Mo) catalysts were prepared with colloidal method. The catalysts were characterized by TEM and XRD, and the activities of different catalysts were measured *via* the cyclic voltammetry under an alkaline condition for methanol electro-catalytic oxidation. The results show that Pt-based alloys are distributed homogeneously on carbon, the particle sizes are about 2—4 nm, and the activities order of Pt-based alloys is Pt₇₅Ni₂₅/C>Pt₇₅Fe₂₅/C>Pt₅₀Mo₅₀/C. The doping of Ni in the nano-particles of Pt was able to markedly enhance the catalytic activities of Pt/C, and the peak current of Pt₇₅Ni₂₅/C catalyst reached 726.9 mA/mg in 1.0 mol/L NaOH+1.0 mol/L CH₃OH solution in this experiment.

Key words [Alkaline media](#) [Pt-based alloy catalysts](#) [Methanol](#) [Electro-oxidation](#)

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