

Pt及其修饰电极上乙醇吸附和氧化的CV和EQCM研究

陈国良,陈声培,甄春花,周志有,孙世刚

漳州师范学院化学系;厦门大学固体表面物理化学国家重点实验室.厦门 (361005)

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摘要 运用电化学循环伏安和石英晶体微天平研究了乙醇在Pt电极和以Sb, S吸附原子修饰的Pt(Pt/Sbad和Pt/Sad)电极上的吸附和氧化过程。结果表明乙醇的氧化与电极表面氧物种有着极其密切的关系。Pt电极表面Sb吸附原子能在较低的电位下吸附氧,可显著提高乙醇电催化氧化活性。相反, Pt电极表面S吸附原子的氧化会消耗表面氧物种,抑制了乙醇的电氧化。本文从表面质量变化提供了吸附原子电催化作用的新数据。

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Adsorption and oxidation of ethanol on Pt and Sb, S modified Pt electrodes using cyclic voltammetry and EQCM

Chen Guoliang, Chen Shengpei, Zhen Chunhua, Zhou Zhiyou, Sun Shigang

State Key Lab Phys Chem Solid Surface, Xiamen Univ, Dept Chem. Xiamen (361005)

Abstract The processes of adsorption and oxidation of ethanol on Pt, Pt/Sban and Pt/San electrodes were studied by using cyclic voltammetry and electrochemical quartz crystal microbalance (EQCM). The results demonstrate that the oxidation of ethanol depends strongly on oxidation states of the electrode surface. Sb adatoms on Pt surface can adsorb oxygen at relatively low potentials and exhibit catalytic effects of ethanol oxidation. In contrary, the oxidation of S adatoms consumes oxygen species of Pt electrode surface. As a consequence, the oxidation of ethanol was inhibited by the presence of San. The EQCM studies provide quantitative results of surface mass variation during ethanol oxidation and have thrown new light in elucidating different effects of adatoms Sbad and Sad on Pt electrode surface towards ethanol oxidation.

Key words [CHEMICAL MODIFIED ELECTRODE](#) [ETHANOL](#) [ADSORPTION](#) [ELECTRO-CATALYSIS](#) [ELECTROOXIDATION](#) [CYCLOVOLTAMGRAPH](#) [MICRO-BALANCES](#) [PLATINUM ELECTRODE](#)

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