

碳材料电化学腐蚀的质谱-电化学循环伏安(MSCV)法研究 II:催化剂的影响

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摘要 用MSCV法研究了Pt催化剂作用下,碳材料在pH0.3~11.8范围内的阳极腐蚀.Pt催化剂明显加速了活性炭及乙炔黑的腐蚀速度,使这两种电极上CO2

开始析出的电位ΦO2/H2O。因此两种碳电极无论作为阳极还是氧阴极工作时均会被腐蚀。Pt对乙炔黑的催化活性明显强于活性炭,对于活性炭,Pt并不改变CO2的ΦS-PH曲线的形状(ηS-CO2如析出的超电势)(即无论有无Pt它们均为折点在PH~7折线)。然而乙炔黑的情况更为复杂,Pt使CO2的ΦS-PH及ηS-PH形状从折线变为直线;在CO2的IM-Φ曲线上出现两个波。它们似与乙炔黑上两种表面氧化物相对应。

关键词 [铂](#) [催化剂](#) [碳电极](#) [电化学腐蚀](#) [质谱-电化学循环伏安法](#)

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MSCV studies of carbon electrooxidation pt.2: influence of catalyst

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Abstract The corrosion of carbon materials in the presence of Pt catalyst was studied in pH 0.3~11.8 using mass spectrometric cyclic voltammetry (MSCV), the corrosion was found to be greatly accelerated by Pt for both active carbon and acetylene black as evidenced by a negative shift of the onset potential (ΦS) of CO2 evolution which is more negative than the O2/H2O equilibrium potential. both active carbon and acetylene black are corroded when they are used for either anodes of ΦS and the overpotential ηS of the onset of CO2 evolution (they follow broken lines deflecting near pH=7)while the situation is more complicated for acetylene black. the presence of Pt changes the ΦS-PH and ηS-PH from broken lines into straight lines. moreover, there are two waves on the IM-Φ curves for CO2 formation, probably indicating two types of oxides on the acetylene black surfaces.

Key words [PLATINUM](#) [CATALYST](#) [CARBON ELECTRODES](#) [ELECTROCHEMICAL CORROSION](#)

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