

电化学方法分析铅阳极膜的相组成

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摘要 本文提出使用线性电位扫描和电位衰退定性和定量分析铅在 $4.5\text{mol}\cdot\text{dm}^{-3}\text{H}_2\text{SO}_4(30^\circ\text{C})$ 中形成的阳极膜的相组成并与现场X射线衍射,原子吸收光谱,阳极溶出等法比较。结果表明电位扫描伏安曲线的峰电位和电位扫描至峰电位左右时电极开路后,所得的稳定电位可用于阳极膜相组成的定性分析,电位扫描伏安曲线电流峰的面积可用于阴极膜相组成的定量分析。本文的阳极膜由 $\text{PbO}\cdot\text{PbSO}_4$, PbO_2 和 $\text{PbO}_n(2 > n > 1)$ 组成,以 $\text{PbO}\cdot\text{PbSO}_4$ 为主要成份。

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Analysis of phase composition of anodic film on lead by electrochemical method

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Abstract Phase composition of anodic film formed on an lead electrode at 1.3 V (vs. $\text{Hg}/\text{Hg}_2\text{SO}_4$) for 30 min in $4.5\text{mol}\cdot\text{dm}^{-3}\text{H}_2\text{SO}_4(30^\circ\text{C})$ was determined by linear sweep voltammetry followed by open-circuit decay curve method. The latter is carried out after the potential is swept forward around certain peak potential in the voltammogram. The electrochemical method is compared with other methods, i.e., in situ x-ray diffractometry, atomic absorption spectrophotometry, and anodic stripping voltammetry. The peak potential in the voltammogram and the steady state potential in the open-circuit curve can be used to determine the phase composition qualitatively, while the peak area in the voltammogram can be used to determine the amount of the phase component. The anodic films formed in this work are composed of $\text{PbO}\cdot\text{PbSO}_4$, PbO_2 , and $\text{PbO}_n(2 > n > 1)$, with the first one as the major constituent.

Key words [POLYETHYLENE](#) [ATOMIC ABSORPTION SPECTROPHOTOMETRY](#) [SULFURIC ACID](#) [X-RAY DIFFRACTION ANALYSIS](#) [LEAD](#) [MEMBRANE ELECTRODES](#) [PHASE](#) [ANODES](#) [ELECTROCHEMICAL ANALYSIS](#) [ELECTRODE POTENTIAL](#)

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