

阳极二氧化铅膜的阴极还原为硫酸铅的机理

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**摘要** 应用旋转环盘电极, 和静止电极线性电位扫描法(LSV)研究铅上阳极 $PbO_2$ 膜的阴极还原为 $PbSO_4$ 的机理。实验结果表明相应于 $Pb$ 盘上阳极膜中 $PbO_2$ 还原时所产生的 $Pb-7w/oSb$ 环电流是原先 $PbO_2$

膜生长时析出的氧扩散入膜中以及膜内的 $PbO_2$

微粒中的品种逸出而被还原所致。无可溶性中间体可被检出。扫速对静止 $Pb$ 上阳极膜中 $PbO_2$ 的LSV法还原的影响符合薄膜反应的规律。本文提出了上述反应机理。

**关键词** [反应机理](#) [还原](#) [膜电极](#) [旋转电极](#) [氧化铅](#) [铅蓄电池](#) [环盘电极](#) [电位扫描法](#) [硫酸铅](#)

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## The mechanism of the cathodic reduction of anodic $PbO_2$ film to $PbSO_4$

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**Abstract** The mechanism of the reduction of  $PbO_2$  to  $PbSO_4$  in the anodic film on  $Pb$  was investigated using rotating ring-disk electrode (RRDE), and linear sweep voltammetry (LSV) at a stationary electrode. The anodic film studied was formed on  $Pb$  in sulfuric acid solution. The experimental results of RRDE method show that the  $Pb-7wt.\% Sb$  ring current during the reduction of the  $PbO_2$  in the anodic film on the  $Pb$  disk is due to the reduction of oxygen having previously diffused into the film as well as into the  $PbO_2$  particles in the film. No evidences of soluble intermediates have been detected. The effects of scan rate on LSV for the reduction of  $PbO_2$  in the anodic film on  $Pb$  conform to the reduction of a thin oxidized film. The mechanism of the mentioned reduction was suggested.

**Key words** [REACTION MECHANISM](#) [REDUCTION](#) [MEMBRANE ELECTRODES](#) [ROTATION ELECTRODES](#) [LEAD OXIDE](#) [LEAD ACID STORAGE BATTERIES](#) [LEAD SULFATE](#)

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