



## 论文摘要

中南大学学报(自然科学版)

ZHONGNAN DAXUE XUEBAO(ZIRAN KEXUE BAN)

Vol.41 No.1 Feb.2010

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文章编号: 1672-7207(2010)01-0044-06

### 高锑低银铅阳极泥控电氯化浸出

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**摘要:** 采用控制电位法研究高锑低银类铅阳极泥的氯化浸出过程, 探讨温度、 $Sb^{3+}$ 浓度对溶液电位的影响, 并对不同溶液电位下浸出渣的物相进行X线衍射分析, 研究溶液电位对金属浸出率的影响。研究表明: 浸出过程中溶液的电位变化有3个阶段: 第1阶段, 溶液的电位缓慢上升; 第2阶段是水平平台, 溶液的电位变化不大; 第3阶段, 溶液的电位急剧上升。随着溶液中 $Sb^{3+}$ 浓度升高以及溶液中温度升高, 溶液电位随时间变化曲线的水平平台延时减小; 溶液电位决定浸出渣的物相, 控制溶液电位在430 mV以上, 浸出渣中主要以 $PbCl_2$ 和 $AgCl$ 存在, 无单一贱金属的峰发现, 而控制溶液电位在380 mV以下, 浸出渣中还存在金属锑单一物相; 氯化浸出过程中, 最佳的溶液电位为430 mV, 此时, 金属锑、铋和铜的浸出率均达到99%以上, 铅和银的浸出率分别为3.10%和2.34%。

**关键字:** 铅阳极泥; 锑; 银; 氯化浸出; 控制电位

### Chlorination-leaching of lead anode slime with high antimony and low silver contents at controlled potential

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**Abstract:** Chlorination-leaching process of lead anode slime with high antimony and low silver contents was investigated by controlling potential. The influence of temperature and  $Sb^{3+}$  concentration on the solution potential was studied intensively. The phase of leaching residuum was tested by X-ray diffraction, and the leaching rate at various potentials was studied. The experimental results show that the solution potential in the process of leaching process includes three stages. In the first stage, the solution potential increases slowly; in the second stage, there is no obvious change in the solution potential, so a plateau emerges in the potential-time curve; in the third process, the solution potential increases greatly. The length of plateau in the second stage decreases with the increase of the concentration of  $Sb^{3+}$  or the temperature. The phase of leaching residuum is determined by the solution potential. When the solution potential is controlled above 430 mV, there is mainly  $AgCl$  and  $PbCl_2$  existing in the leaching residuum, when the potential is controlled below 380 mV, the metal Sb is also existing in the leaching residuum besides the  $AgCl$  and  $PbCl_2$ . Therefore, the optimum potential of solution is 430 mV, the leaching rates of Sb, Bi and Cu are greater than 98%, and the leaching rate of Pb

and Ag are 3.10% and 2.34%, respectively.

**Key words:** lead anode slime; antimony; silver; chlorination-leaching; controlled potential

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