中南大学学报 自然科学版 英 文 版

教育部 主管
中南大学 主办

论文摘要

中南大学学报(自然科学版)

ZHONGNAN DAXUE XUEBAO(ZIRAN KEXUE BAN)

Vol.40 No.5 Oct.2009

[PDF全文下载] [全文在线阅读]

文章编号：1672-7207(2009)05-1165-07

高铝铁矿石工艺矿物学特征及铝铁分离技术

李光辉，刘牡丹，姜 涛，周太华，范晓慧

(中南大学 资源加工与生物工程学院，湖南 长沙，410083)

摘 要：研究高铝褐铁矿石的工艺矿物学特性及其对铝铁分离的影响。研究结果表明，铁矿物主要为针铁矿和赤铁矿；铝的载体矿物主要是以微细颗粒集合体被针铁矿包裹的三水铝石和以类质同象存在于针铁矿中的铝；铝硅酸盐矿物呈分散状或浸染状与针铁矿共生，铁铝赋存关系十分复杂。强磁选、磁化焙烧-磁选不能有效破坏矿石中铝、铁细粒嵌布和类质同象结构，铝铁分离效果不明显；钠盐焙烧－浸出工艺能有效实现高铝褐铁矿的铝铁分离，当原矿全铁含量为48.92%，Al_2O_3含量为8.16%，SiO_2含量为4.24%时，可获得全铁品位为62.84%，Al_2O_3含量为2.33%，SiO_2含量为0.45%的铁精矿，铁的回收率为98.56%。

关键字：高铝铁矿；铝铁分离；钠盐焙烧

Mineralogy characteristics and separation of aluminum and iron of high-aluminum iron ores

LI Guang-hui, LIU Mu-dan, JIANG Tao, ZHOU Tai-hua, FAN Xiao-hui

（School of Minerals Processing and Bioengineering, Central South University, Changsha 410083, China）

Abstract: Mineralogy characteristics and separation technologies of aluminum and iron of high-aluminum iron ores were investigated. The results show that iron minerals are hematite and goethite mainly. Major aluminum-bearing carrier minerals include independent gibbsite enwrapped by goethite as fine granules, and others exist in goethite in the form of isomorphism. Aluminosilicates disperse or symmetrically immerse inside goethite. The existential relation between iron and aluminium in the ore is very complex. Magnetic separation and magnetization roasting-magnetic separation are unable to remove aluminum effectively because they are unable to destroy the isomorphous structure of the ore. However, most of aluminum can be removed by sodium-salt-added roasting followed by leaching processing. The iron concentrate bearing 62.84% TFe, 2.33% Al_2O_3 and 0.45% SiO_2 can be obtained by processing a limonite ore with 48.92% TFe, 8.16% Al_2O_3 and 4.24% SiO_2, and the iron recovery reaches 98.56%.

Key words:high-aluminum limonite; aluminum-iron separation; sodium-salt-added roasting

版权所有：《中南大学学报(自然科学版、英文版)》编辑部
地 址：湖南省长沙市中南大学　　邮编： 410083
电 话： 0731-88879765 传真： 0731-88877727
电子邮箱： zngdxb@mail.csu.edu.cn 湘ICP备09001153号