

论文

三元配煤矿物因子对煤灰熔融特性影响及熔融机理

曹祥, 李寒旭, 刘峤, 张子利, 朱邦阳, 赵清良

安徽理工大学 化学工程学院 灰化学研究室, 安徽 淮南 232001

摘要:

为研究配煤中矿物组成对煤灰熔融特性的影响, 选取煤灰化学组成和煤灰熔融温度差异较大的3个原煤a, b, c进行三元配煤实验, 利用X射线衍射(XRD)及X射线荧光光谱法(XRF)分别测定了煤样矿物组成和煤灰化学成分, 并对高温煤灰熔融机理进行研究。结果表明: 引入矿物因子(MF)来表征煤样矿物组成(耐熔矿物、助熔矿物)对高温煤灰熔融特性的影响具有一定的可靠性。高温下低灰熔融温度矿物钙长石钙含量的升高与高灰熔融温度莫来石矿物含量的减少共同导致了煤灰熔融温度的降低; 在煤灰流动温度左右, 钙长石物相最强衍射峰强度的高低以及低温共熔物相对含量的高低与煤灰流动温度呈现一定的负相关性, 石英和莫来石则相反。

关键词: 三元配煤; 矿物因子; 煤灰; 熔融特性; 熔融机理; XRD

Study on mineral factor of ternary-component blended coal on coal ash fusibility and its fusion mechanism

Abstract:

The work described in this paper was to determine the improved high-temperature ash-fusion behavior by means of ternary-component blended coal technique. All the experiments based on three kinds individual coal which existed remarkable difference in coal ash chemical composition and ash fusion temperature. According to ternary-component blended coal with a certain proportion, mineral components and ash chemical composition were analyzed by X-ray diffraction(XRD) and X-ray fluorescence(XRF) separately. The results show that refractory minerals and fluxing minerals in coal have a prominent effect on high-temperature ash-fusion behavior. Mineral Factor(MF) is introduced to characterize this influence between minerals and ash-fusion behavior. Moreover, with the more content of anorthite, the fusion temperature will decrease more obviously, while the law of mullite is just the opposite. Meanwhile, A negative correlation is found between the strongest peak intensity of anorthite as well as the relative content of amorphous glass and the ash flow temperature, quartz and mullite are just on the contrary about FT temperature. High-temperature ash-fusion behavior can be improved by utilizing ternary-component blended coal technique.

Keywords: ternary-component blended coal; mineral factor; coal ash; fusibility; fusion mechanism; XRD

收稿日期 2012-10-09 修回日期 2012-12-18 网络版发布日期 2013-03-05

DOI:

基金项目:

国家自然科学基金资助项目(NSFC, 21176003)

通讯作者: 曹祥

作者简介: 曹祥(1987—), 男, 江苏泰州人, 硕士研究生

作者Email: jscaoxiang@126.com

参考文献:

本刊中的类似文章

扩展功能

本文信息

- ▶ Supporting info
- ▶ PDF(2679KB)
- ▶ [HTML全文]
- ▶ 参考文献PDF
- ▶ 参考文献

服务与反馈

- ▶ 把本文推荐给朋友
- ▶ 加入我的书架
- ▶ 加入引用管理器
- ▶ 引用本文
- ▶ Email Alert
- ▶ 文章反馈
- ▶ 浏览反馈信息

本文关键词相关文章

- ▶ 三元配煤; 矿物因子; 煤灰; 熔融特性; 熔融机理; XRD

本文作者相关文章

- ▶ 曹祥
- ▶ 李寒旭
- ▶ 刘峤
- ▶ 张子利
- ▶ 朱邦阳
- ▶ 赵清良

PubMed

- ▶ Article by Cao, X
- ▶ Article by Li, H. X
- ▶ Article by Liu, J
- ▶ Article by Zhang, Z. L
- ▶ Article by Zhu, B. Y
- ▶ Article by Diao, Q. L

