

论文

炼焦煤尾煤热解特性及动力学研究

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摘要:

基于炼焦煤尾煤和原煤的热解实验对比, 研究热解终温、升温速率和高矿物质含量对炼焦煤尾煤热解特性的影响, 并求解炼焦煤尾煤热解的动力学参数。结果表明: 热解终温和升温速率对炼焦煤尾煤的热解过程有重要的影响, 高温有利于尾煤中高分子有机物裂解和挥发分析出, 但高矿物质含量使尾煤热解在850 °C后终温作用不明显; 炼焦煤尾煤中矿物质含量对其热解具有抑制作用, 使尾煤热解过程向高温段推移; 炼焦煤尾煤的热解过程可以用3个二级反应描述, 通过动力学参数拟合计算结果得出炼焦煤尾煤热解反应活化能为54.7~131.1 kJ/mol。

关键词: 炼焦煤尾煤; 热解特性; 动力学

Characteristics and kinetics of the pyrolysis of coking coal tailings

Abstract:

Based on the pyrolysis experiment comparison of coking-coal tailings and raw coking coal, the effect of final temperature, heating rate and high content of mineral in tailings on the pyrolysis of coking-coal tailings was studied, and the kinetic model of coking-coal tailings was established. The results show that the final temperature has great influence on the pyrolysis of coking-coal tailings, with the increase of final temperature, the decomposition of tailings and the precipitation of volatile become easy. After 850 °C, the effect of final temperature begins to weaken due to the higher content of mineral in tailings. Mineral in tailings has suppression effect on the total process of pyrolysis of tailings, and delay the pyrolysis of tailings to a high temperature. The process of tailings can be described as three second-order reactions and the active energy of tailings pyrolysis is 54.7-131.1 kJ/mol.

Keywords: coking coal tailings; pyrolysis characteristic; kinetics

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