

عنوان مقاله:

An Investigation on Devolatilization of Non-coking Coal and Non-isothermal Reduction of Iron Oxide

محل انتشار:

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خلاصه مقاله:

The devolatilization of a non-coking coal and the reduction of iron oxide fines by volatile matter (VM) were studied non-isothermally using thermogravimetry (TG) in argon atmosphere. The devolatilization of the coal showed five different regions in terms of the rate of devolatilization. The maximum rate of devolatilization and the maximum weight loss occur between 640°C and 725°C furnace temperature. The effect of the heating rate and the coal particle size on devolatilization were studied. Increasing the heating rate and the particle size resulted in lower devolatilization. Non-isothermally reduction of iron oxide by VM in a multi-layered array was investigated. A reduction degree of 40 percent was reached while heating the pack from room temperature to 950°C. Three distinct regions of reduction were observed for reduction of Fe₂O₃. The XRD patterns confirmed the stepwise reduction of iron oxide.

کلمات کلیدی:

Volatile Matter Devolatilization Non-isothermal Reduction Iron Oxide Non-coking Coal

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