Effect of pyrolysis heating rate on the gasification reactivity of coal char with CO_2 at elevated temperatures

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Studies on gasification of coal at elevated temperatures and high heating rates are essential to develop the meaning of IGCC (IGCC) technology. Pyrolysis and CO2-gasification behaviors of a medium volatile bituminous coal (Taldivisky coal) are investigated by thermogravimetric analysis (TGA) in the temperature range(from 700 ℃ to 900 ℃). The rates of pyrolysis and CO2-gasification are then evaluated from the corresponding TGA profiles. The pyrolysis step is accelerated by increasing the heating rate (from 10℃/min to 90℃/min). The heating rate of the pyrolysis step provides a great effect on the gasification reactivity. The char produced at the higher heating rate shows higher gasification reactivity. Tar yield accounts for less than 3% of the total coal mass.