

Pyrolysis kinetics of lignite by non-isothermal thermogravimetry: An evaluation of the catalytic effect of coal ash constituents

송병호*, Vergel C. Bungay

군산대학교

(bhsong@kunsan.ac.kr*)

The rates of pyrolysis of Mongolian and Dakota lignites were investigated at different heating rates (10–90 K/min) in a thermogravimetric analyzer. The reaction rate constants were evaluated using the Avrami–Erofeev equation. From these constants, an appropriate kinetic equation was formulated. The effects of heating rate and reaction temperature on the rate of pyrolysis was discussed. To explain the difference in the rate of pyrolysis, the parameters related to the ash components such as alkali index, CaO+ MgO content and SiO₂/Al₂O₃ content were also evaluated. The effect of pyrolysis behavior on the rate of char gasification was also discussed.