Characterization of Burning Char Particles under Pressurized Conditions by Simultaneous In Situ Measurement of Surface Temperature and Size

Abstract:
Surface temperature and size of individual burning char particles were measured at elevated temperature and pressure using a two-color pyrometric technique. Experimental results obtained in a pilot-scale pressurized entrained flow reactor are presented. The studies concern two German coals: the Gottelborn high volatile bituminous (hvb) coal and Rhenish brown coal from the opencast mine Garzweiler. The obtained results show considerably different particle behavior due to different coal properties. In the case of the Gottelborn hard coal, typical excess temperatures at oxygen concentration of 12 vol%...