

Development of Fouling Index in the IGCC Gasifier

허려화*, 유영돈, 윤용승, 김형택¹
고등기술연구원 플랜트엔지니어링센터;
¹아주대학교 에너지시스템학부
(herh@iae.re.kr*)

In a coal gasifier and heat exchanger, adhered and deposited fouling inhibits heat transfer making the stable operation of the gasifier difficult. The main purpose of the present investigation is to determine the low temperature ash deposition behavior under coal gasification condition by using drop tube furnace (DTF), in which behavior of coal particle in actual gasification condition can be simulated experimentally. Nine pulverized coal samples which are in the range of bituminous and sub-bituminous are injected into DTF under gasification condition. The ash particles are deposited onto sample collector by impacting and agglomerating actions; deposit samples of ash are collected, quantitative analyses are performed by EDX and weight measurements. Experiment results illustrated that mineral components are generally considered as a dominant parameter to determine behavior of ash deposition at low temperature among various physical and chemical properties of coal. It is also found that the alkaline earth mineral in coal ash such as MgO and CaO compounds leads to fouling deposition under the gasification condition.