

### Formation of Fine Particulates and Heavy Metals Including Mercury in Oxy-Coal Combustion Processes

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Recently, the public concern over climate change has increased due to the increasing emission of CO<sub>2</sub> in the atmosphere. Oxy-fuel combustion is one of the potential CO<sub>2</sub> capturing technologies in combustion facilities. In this study, fine particulate formation and emission characteristics of heavy metals including mercury have been investigated at two types of coal combustion processes; drop tube furnace and lab-scale pulverized coal combustor, installed at HUST in China and KIMM in Korea, respectively. The drop tube furnace can combust coals with the feed rate of 0.2 g/min, while the lab-scale process can burn with the capacity of 26 g/min. Main objectives of this comparable study are to observe differences of emitted between oxy-combustion and air-combustion conditions. Heavy metals emission and mercury speciation in flue gases during oxy-fuel combustion and air combustion were compared in two different scale processes. Particulate size distribution and metal enrichment in different size particulates were also investigated.