

### The simultaneous removal properties of H<sub>2</sub>S and NH<sub>3</sub> on the various Mo-Ni-series sorbents in the hot coal gases

임은지, 박창근, 주동건, 정석용, 김재창\*  
경북대학교  
(kjchang@knu.ac.kr\*)

The integrated gasification combined cycle (IGCC) is considered to be one of the most efficient and environmentally acceptable technologies for generating power from coal. To use this technology, it is necessary to remove the pollutants such as H<sub>2</sub>S and NH<sub>3</sub> from the hot coal-gases. In this study, the molybdenum and nickel based sorbents on various supports such as Al (MNAI20), Ti (MNTI20), Si (MNSI20) and Zr (MNZI20) were prepared, and their simultaneous removal properties were tested in fixed-bed reactor at 650°C. The sulfur removal capacities of the MNAI20, MNTI20, MNSI20 and MNZI20 sorbents were shown 120, 122, 133 and 134 mg sulfur/g catal-sorbent. The H<sub>2</sub>S and NH<sub>3</sub> simultaneous removal abilities of the MNAI20, MNTI20, MNSI20 and MNZI20 were 94%, 33%, 67% and 53% each other. These results indicated that MNAI20 catal-sorbents was the most suitable to remove H<sub>2</sub>S and NH<sub>3</sub> simultaneously than the other. It was expected that the NiAl<sub>2</sub>O<sub>4</sub> phase of MNAI20 catal-sorbent plays an important role in the ammonia decomposition during H<sub>2</sub>S absorption. This role of NiAl<sub>2</sub>O<sub>4</sub> phase was characterized by XRD and XPS.