

The support effect to improve simultaneous of H₂S
and NH₃ on Co-Mo-based catal-sorbents
in the hot coal gases

입은지, 김정현, 김현욱, 윤지환, 남기민, 최성민, 정석용,
이수출, 김재창[†]
경북대학교
(kjchang@knu.ac.kr[†])

In the commercial IGCC process, H₂S and NH₃ gases have been in each removal process. If it combined two processes to remove H₂S and NH₃, energy loss between the processes and initial capital could be decreased. To use simultaneous removal of H₂S and NH₃ technology, it is necessary to remove H₂S by absorption and NH₃ by decomposition reaction from the hot coal-gases. In this study, the Co-Mo-based sorbents on various supports such as Al₂O₃ (CMAI 30), SiO₂ (CMSI 30) and ZrO₂ (CMZI 30) were prepared. Their simultaneous removal properties were tested in fixed-bed reactor during multiple removal reaction and regeneration cycles at high temperature conditions (removal reaction at 650°C and regeneration at 700°C). The H₂S absorption and NH₃ decomposition breakthrough point time of CMAI 30 catal-sorbents were 130 min and 105 min, respectively. The simultaneous removal ability of CMAI 30 catal-sorbent was about 80% and maintained, while those of CMSI 30 and CMZI 30 catal-sorbents were below 68% and decreased during multiple cycles. These results were related to pore size, pore volume and crystal structure.