

The CoAl_2O_4 effect to improve simultaneous of H_2S and NH_3 on Co-based catal-sorbents in IGCC

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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_2S and NH_3 from the hot coal-gases. In this study, the cobalt-based sorbents on various supports such as Al(CMAI30), Si(CMSI30) and Zr(CMZI30) were prepared, to test simultaneous removal properties were tested in fixed-bed reactor at 650 . The H_2S absorption and NH_3 decomposition breakthrough point time of CMAI30 catal-sorbents were 130 min and 105 min, respectively. The simultaneous removal ability of CMAI30 catal-sorbent was maintained, while those of CMSI30 and CMZI30 catal-sorbents were decreased during multiple cycles. These results was found that CMAI30 catal-sorbents was the most suitable to remove H_2S and NH_3 simultaneously than the other catal-sorbents. It was expected that the CoAl_2O_4 of CMAI30 catal-sorbent plays on important role for improve of the NH_3 decomposition ability during H_2S absorption. This role of CoAl_2O_4 phase was characterized by XRD and Raman.