The effect of H_2O on H_2S removal capacity of the Zn-Ti based sorbent prepared by co-precipitation

정석용, 김재창*, 이태진[1], 류청걸[2], 전희권[3]
경북대학교; [1]영남대학교; [2]전력연구원; [3]한국과학기술원
(kjchang@bh.knu.ac.kr*)

The sulfur removing capacities of various Zn-Ti based sorbents prepared by co-precipitation and physical mixing method were investigated in the presence of H_2O at middle temperature conditions (sulfidation : 480°C, regeneration : 580°C). The capacity of the conventional ZT sorbent (Zn/Ti : 1.5) prepared by physical mixing method was decreased with the level of H_2O concentration. The capacity of the modified sorbent, promoted with 25wt% of cobalt oxide (ZTC-25) was not affected by water vapor. But the sorbent is not economically competitive, because the cobalt was very expensive. So far, Zn-Ti based sorbents with nano particle size were prepared by co-precipitation method (ZT-cp, ZTC5-cp), and they showed excellent sulfur removing capacity during multiple cycle, and were not affected by the water vapor at middle temperature condition. These results were explained by the differences in structures and physical properties measured by X-ray diffraction, BET and TEM images before/after H_2S reaction, which were deeply related with preparation methods.