The simultaneous removal of the NH_3 and H_2S from the hot coal gases by the molybdenum-based sorbents

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To investigate the simultaneous removal of H_2S and NH_3, molybdenum-based sorbents promoted with transition metals such as cobalt and nickel additive were prepared by co-precipitation method. The sulfur removing capacities and NH_3 decomposition of the molybdenum-based sorbents were tested in micro reactor at 1 atm and high-temperature condition (sulfidation : 650°C, regeneration : 700°C). The NH_3 did not affect the sulfur removing capacity of molybdenum-based sorbents. The molybdenum was found to be an active component in the NH_3 decomposition as well as H_2S absorption, while the support component such as Al_2O_3 did not show any activity in the NH_3 decomposition reaction. The removal efficiencies of the NH_3 and H_2S of the molybdenum-based sorbents were 95% and 99%, respectively. The NH_3 was decomposed until the breakthrough point of the H_2S removal, and the activity of the sorbent was dramatically decreased after that point.