

The initial activity of Pt-Sn/Al₂O₃ catalyst for propane dehydrogenation with pulse-injection test

Bakhsi Zarghona, 고희림^{1,†}, 최이선¹, 장진호¹

Hankyong National University; ¹한경대

(hkhoh@hknu.ac.kr[†])

The dehydrogenation characteristics of alumina supported platinum-tin catalysts were investigated by pulsed injection of propane. The yield of propylene was maximized when the reduction time of propane injection catalyst was 550 °C. Raman analysis showed that the amount of coke was very small when PtSn (4.5) catalyst was used and the short contact time was simulated by propane pulse injection. As the tin content in the platinum catalyst increased, the propane conversion was lowered, but the selectivity to propylene increased and the yield increased. From this, it can be seen that the tin-added platinum catalyst is less active than the platinum catalyst from the beginning of the reaction, which is less affected by coke. The dehydrogenation reaction by the propane pulse injection shows a higher conversion rate than the result of continuous injection due to the formation of COx, and the amount of coke is very small. Decrease in selectivity due to the formation of COx can be reduced by increasing the reduction temperature and time.