

Hydrogen production by catalytic decomposition of propane over carbon black catalyst in a fluidized bed

남우석, 이동현, 윤기준, 한귀영*
성균관대학교 화학공학과
(gyhan@skku.ac.kr*)

A fluidized bed reactor made of quartz with 0.055 m I.D. and 1.0 m in height was employed for the thermocatalytic decomposition of propane to produce CO₂ - free hydrogen . The fluidized bed was proposed for the continuous withdraw of product carbons from the reactor. The propane decomposition rate used carbon black N330 as a catalyst. The propane decomposition reaction was carried out at the temperature range of 600 - 800 °C, propane gas velocity of 1.0 Umf - 3.0 Umf and the operating pressure of 1.0 atm. Effect of operating parameters such as reaction temperature, gas velocity on the reaction rates was investigated. The carbon which was by-product of methane decomposition reaction was deposited on the catalyst surface that was observed by SEM. Resulting production in our experiment were not only hydrogen but also several by products such as methane, ethylene, ethane, and propylene.