

The effect of support for single stage water-gas shift (WGS) reaction over Pt catalysts

정대운, 김기선, 엄익환, 노현석*, 구기영¹, 윤왕래¹
연세대학교; ¹한국에너지기술연구원
(hsroh@yonsei.ac.kr*)

Various supported Pt catalysts have been applied for single stage water-gas shift reaction (WGS). CeO_2 , ZrO_2 , $\text{CeO}_2\text{-ZrO}_2$, MgO , $\text{MgO-Al}_2\text{O}_3$ ($\text{MgO} = 30 \text{ wt.}\%$) and Al_2O_3 were employed as supports for the target reaction in this study. Commercial high temperature shift (HTS) catalyst (Fe-Cr) was also tested as a reference catalyst. Pt/ CeO_2 exhibited the highest CO conversion as well as very high CO_2 selectivity. The high activity and selectivity is due to beneficial effect of CeO_2 such as high surface area, redox property and high oxygen storage capacity (OSC). Therefore, CeO_2 can be a promising support for single stage WGS.