

Effect of potassium on Fe/CNT catalyst for CO₂ hydrogenation to valuable product

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Potassium promoted Fe/CNT catalyst synthesized by simple incipient wetness impregnation method. The effect of potassium on the physico-chemical properties and catalytic performance for CO₂ hydrogenation of the catalysts were investigated. Potassium slightly hinder the reduction of iron metal and reduce the surface area of iron catalysts. But, it dynamically changing the surface property of catalysts. It enhance the surface basicity, which can enhance the absorption of carbon dioxide and improve the activation of CO for carburization of iron metal to iron carbide(Fe₅C₂) phase. Compared with bare Fe/CNT with potassium promoted one, potassium promoted one have highly improve for production of light olefins and C₅₊ product. Spent-catalyst also analyzed by TEM and XRD it show Fe₅C₂ phase are well synthesized, which is well known active site for iron based CO₂ hydrogenation.