

Catalytic partial oxidation of 1,2-dichloroethane over $\text{VO}_x/(\text{Al}_2\text{O}_3\text{-TiO}_2)$ composite catalyst

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Chlorinated volatile organic compounds (CVOCs) are regarded as hazardous atmospheric contaminants. Catalytic total oxidation has been considered as solution for CVOCs removal because of its low operating temperature and high selectivity toward non-toxic compounds (H_2O , CO_2 etc.). However, carbon dioxide can cause another environmental problem of global warming (greenhouse effect) and it is difficult to be utilization because of its stability. On the other hand, carbon monoxide is usable in synthetic process of various chemical compounds. Thus, catalytic partial oxidation with minimized CO_2 emission can be a promising method for CVOCs removal. In this study, 1,2-dichloroethane (DCE) catalytic partial oxidation reaction was investigated over VO_x catalyst supported on Al-Ti mixed oxide. The $\text{VO}_x/(\text{Al}_2\text{O}_3\text{-TiO}_2)$ catalyst showed excellent activity and selectivity toward CO because of the synergistic effect associated with acidic property of support material and reducibility of active material.