

## Studies on the Catalytic Hydrodechlorination of $\text{CHClF}_2$

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Freon is widely used as refrigerants, blowing agents, and cleaning agents due to their beneficial physicochemical properties such as stability, nontoxicity, and nonflammability. Among Freon,  $\text{CHClF}_2$  (HCFC-22) is used as refrigerant in air conditioners. However, HCFCs is found to destroy the ozone layer and to enhance the global warming effect. Now it has been agreed that HCFCs should phase-out until 2030. Therefore, it is essential to find an effective way to recycle  $\text{CHClF}_2$  to more environmental friendly, low or null ODP (ozone depletion potential) and low GWP (global warming potential) product such as  $\text{CH}_2\text{F}_2$  (HFC-32).

Continuous gas-phase hydrodechlorination of HCFC-22 with hydrogen is carried out using tubular reactor. Pd, Pt, or Ni on high-surface-area support were used as catalysts. Reaction temperature was fixed to 300°C and reaction time was 8hr.  $\text{H}_2$  to HCFC-22 feed ratio was 5 with 2600h<sup>-1</sup> space velocity. Starting the gas phase reaction, methane was the primary product whereas HFC-32 yield increased after 1hr reaction. HCFC-22 conversions are in the range of 10-17% and selectivity is in the range of 15-21%.