

Catalytic Pyrolysis of HFC-134a (1,1,1,2-Tetrafluoroethane, CH₂FCF₃)

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Refrigerant HFC-134a is a potential greenhouse gas causing global warming and need to be treated by the proper treatment technology. Although the thermal treatment such as pyrolysis can be considered as the potential treatment method of HFC-134a, it is very difficult to be applied due to its thermal stability. In this study, catalytic decomposition of HFC-134a over five kinds of catalyst was studied at the temperature ranging from 300 to 600°C under nitrogen atmosphere using a vertical plug flow reactor. Among five kinds of catalyst tested in this study, γ -Al₂O₃ showed the best HFC-134a decomposition efficiency, followed by Al₂O₃, CaO, CaCO₃, and Na₂CO₃. Even at 400°C, γ -Al₂O₃ decomposed 99% of HFC-134a and trifluoroethylene, hydrogen fluoride, CO₂ were produced as the byproducts.

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