

### Studies on Catalytic Dimerization of Tetrafluoroethylene

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Dimerization of tetrafluoroethylene ( $C_2F_4$ , TFE) over carbon supported metal catalysts was investigated to produce octafluorocyclobutane ( $C_4F_8$ , RC318). Carbon supported metal catalysts were prepared by a impregnation method and characterized by X-ray diffraction (XRD), CO chemisorption and  $N_2$  Physisorption. The catalytic dimerization reaction was carried out in a tubular reactor system under the temperature range of  $490^\circ C \sim 650^\circ C$ , contact time of 0.6~1.0 sec, TFE/ $N_2$  molar ratio of 1 to 1 and total flow rate of 300~500 cc/min. The catalytic activity over the prepared catalyst was compared with that of the non-catalytic dimerization. RC318 was mainly produced with a little amount of by-products such as Hexafluoropropylene ( $CF_3CF=CF_2$ , HFP), Trifluoroethylene ( $CF_2=CHF$ , TrFE), Pentafluoroethylene ( $CHF_2CF_3$ , R125), Chlorotrifluoropentane ( $CF_2=CFCl$ , CTFE). The conversion of TFE and the selectivity of RC318 were greatly affected by the temperature and contact time.