

### Catalytic dimerization of TFE over activated carbon supported ruthenium catalyst

이용준, 문동주\*, 김용식, 김홍곤, 안병성, 홍석인<sup>1</sup>  
한국과학기술연구원; <sup>1</sup>고려대학교  
(djmoon@kist.re.kr\*)

Recently, it was reported that octafluorocyclobutane ( $C_4F_8$ , RC318) is one of the alternative materials for cleaning chemical vapor deposition (CVD) chamber. In general, RC318 was mainly produced through the non-catalytic dimerization of tetrafluoroethylene ( $CF_2=CF_2$ , TFE). In this work, the catalytic dimerization of TFE over supported metal catalysts was carried out to control the selectivity of RC318. The catalyst was prepared by an impregnation method and characterized by  $N_2$  physisorption, CO chemisorption, XRD, TEM and TPD. 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 ( $CHF_2-CF_3$ , R125), chlorotrifluoropentane ( $CF_2=CFCl$ , CTFE). It was found that the catalytic dimerization of TFE is more desirable process than the conventional non-catalytic dimerization under the reaction conditions of 480~680°C and atmospheric pressure. The results suggest that 3wt% Ru/A.C. catalyst is a promising candidate as a catalyst for producing RC318 by the catalytic dimerization of TFE.