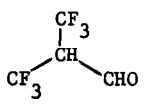
O_{25}

NEW APPROACHES TO THE SYNTHESIS OF ORGANOFLUORINE COMPOUNDS BY MEANS OF HOMOGENEOUS CATALYSIS

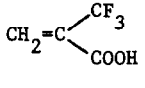
Iwao Ojima

Department of Chemistry, State University of New York at Stony Brook, Stony Brook, NY 11794 (U.S.A.)

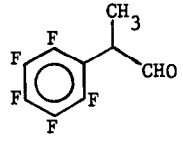
Organofluorine compounds exhibit unique characters in material sciences, pharmaceuticals, medical sciences and other fields. For the synthesis of such organofluorine compounds of interest, we have been exploring effective synthetic methods by means of homogeneous transition metal catalysts using fluorine-containing olefins and vinyl halides as building blocks. For example, the highly regioselective hydroformylations of trifluoropropene and pentafluorostyrene promoted by transition metal catalysts gave us versatile building blocks for the synthesis of CF_3-containing compounds and fluoro-aromatic compounds. Other carbonylations such as extremely regioselective hydrocarbonylation and hydroesterification of fluoro-olefins, novel ureido-carbonylation of 2-bromo-trifluoropropene giving uracil skeleton in one step, and unique hydroformylation-amidocarbonylation of fluoro-olefins giving fluoroamino acids have also been explored. The incorporation of fluoroamino acids thus obtained into peptide hormones is currently underway. In this paper the interface of organofluorine chemistry, homogeneous catalysis and organic synthesis will be discussed.



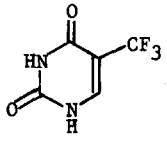
2-TFMPA



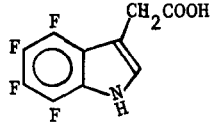
α-TFMAA



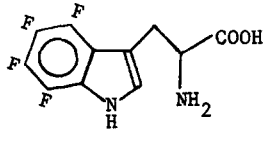
2-PFPPA



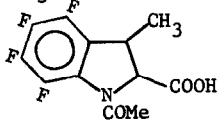
5-CF_3-U

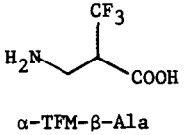


Indol AA-f_4



Tryptophan-f_4





α-TFM-β-Ala

Tyr-D-Ala-Gly-(α-TFM-β-Ala)-Met

Encephalin analog