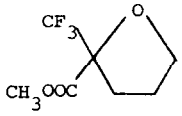
O76

ENE REACTIONS OF METHYL TRIFLUOROPYRUVATE

A. S. Golubev, A. F. Kolomiets and A. V. Fokin

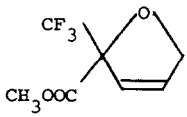
Institute of Organo-Element Compounds, Academy of Sciences U.S.S.R.,
Vavilov St., 28, Moscow, 117813 (U.S.S.R.)

Reactions of methyl trifluoropyruvate (I) with alkenes containing an allylic hydrogen atom have been studied. Reactions of (I) with terminal alkenes proceed slowly at 20°C and rapidly at 100°C. Similar reactions of (I) with cycloalkenes and allyl iodide occur above 100°C. It is found that all these reactions yield methyl esters of α-oxy-α-trifluoromethyl-γ,δ-unsaturated acids. Catalysis of these reactions with $SnCl_4$ reduces reaction times and temperatures to -40-20°C. With terminal alkenes, the use of catalyst does not change the direction of the reaction. With cycloalkenes, methyl esters of α-oxy-α-trifluoromethyl-β,γ-unsaturated acids are obtained. Both allyl methyl ether and allylbenzene react with (I) yielding substituted tetrahydrofurans (II-III) as main products.

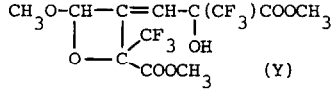


(H)R R = OCH_3 (II); R = Ph (III)

The reactions of (I) with terminal acetylenes have been studied. 1-Hexyn gives the allene derivative. The reaction of (I) with propargyl methyl ether yields a mixture of dihydrofuran (IY) and oxetane (Y)



(H)OCH_3 (IY)



(Y)

The obtained products are useful as synthons for the synthesis of lactones, lactams, substituted dioxans and morpholines.