

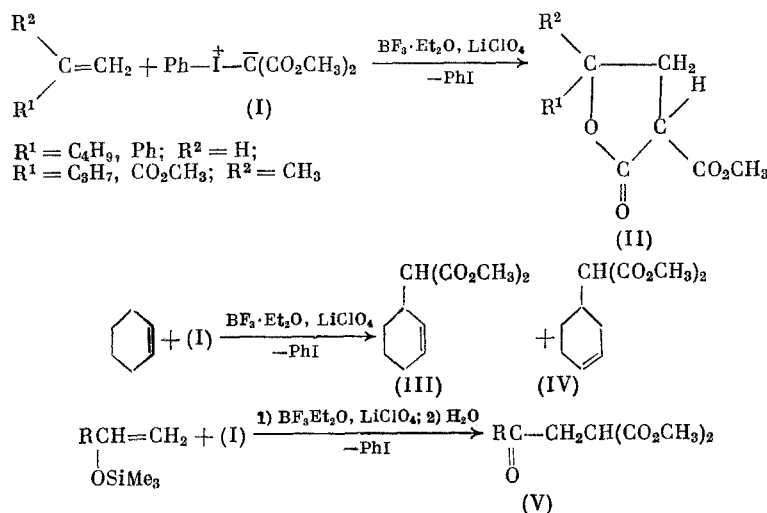
FORMATION OF A CARBON-CARBON BOND IN THE REACTIONS OF OLEFINS
WITH IODONIUM YLIDS UNDER LEWIS ACID CATALYSIS CONDITIONS

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We are the first to report the reaction of iodonium ylids [1] with olefins leading to the formation of a new C-C bond.

The reactions of ylid (I) with acyclic alkenes such as 1-hexene, 2-methyl-1-pentene, styrene, and methyl methacrylate proceed in the presence of a Lewis acid such as boron trifluoride etherate and triethyloxonium tetrafluoroboride (1.5-2 eq.) and LiClO_4 (4-5 eq) as co-catalysts at 20°C in ethyl acetate over 1-5 min with the formation of lactones (II) isolated in 60-80% yield after washing of the reaction mixtures with water and chromatography on silica gel.



Similar reactions for cyclohexene and 1,5,9-cyclododecatriene lead to the formation of a mixture of unsaturated products. For example, cyclohexene gives a mixture of isomeric 3- and 4-[bis(methoxycarbonyl)]methylcyclohexenes (III) and (IV) in 50-70% yield. Under the same conditions, silyl enol ethers give esters of ketodicarboxylic acids (V) in up to 60% yield. The product composition and structure were confirmed by elemental analysis, PMR and IR spectroscopy, and mass spectrometry.

These reactions are a new type of transformation for iodonium ylids and may serve as a convenient method for the extension of the carbon chain of olefins and ketones.

LITERATURE CITED

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