

VALENCE ISOMERIZATION OF FLUORODIENES AND FLUOROTRIENES

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Thermal and photochemical electrocyclic reactions of cis-perfluoro-1,3,5-hexatriene (I), 2,3-dichlorotetrafluoro-1,3-butadiene (II) and 1,1,2-trifluoro-1,3-butadiene (III) were investigated. Thermal reaction of triene I in a vapour phase yielded perfluoro-1,3-cyclohexadiene (IV) as a sole product whereas its photolysis in the vapour phase gave a mixture of perfluorobicyclo [2.2.0] hex-2-ene (V) and perfluoro-3-vinylcyclobutene (VI). The photolysis of triene I in the liquid phase leads only to the equilibrium mixture of trans- (56%) and cis-isomer (44%). The photochemical reaction of cyclohexadiene IV provided bicyclo derivative V only. The course of photochemical transformations will be discussed.

The thermal reaction of butadiene II or III gave 1,2-dichlorocyclobutene resp. 1,4,4-trifluorocyclobutene besides 1,4,4,5,8,8-hexafluoro-1,5-cyclooctadiene and 1,2,2,5,6,6-hexafluorotricyclo [3.3.0.0^{4,8}] octane.