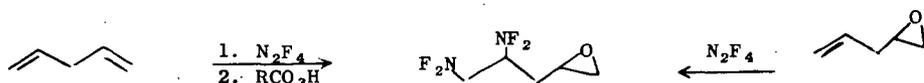


PREPARATION AND POLYMERIZATION OF NF_2 -CONTAINING MONOMERS

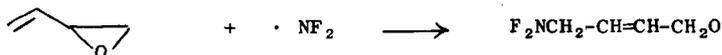
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Polymeric compositions normally employed to hold the oxidizer and fuel components of solid rocket propellant system do not contribute to the energetics of the propellant. In advanced solid propellants use of non-energetic binders is particularly deleterious to the attainment of high Isp. Preparation of binders containing the energetic difluoramino group was studied. Introduction of this group into polymer monomers was realized by the free radical addition of N_2F_4 to olefins. The difluoramino oxiranes synthesized for this work were obtained by either of the illustrated routes.



Attempts to difluoraminate vinyl oxiranes in which the vinyl function is directly attached to the ring were unsuccessful. These systems yield free radical induced rearrangements involving the olefinic and the oxirane functions.



These rearrangements will be discussed. Difluoramination of 3-methylene oxetane yielded a mixture of the expected product together with a difluoramino aldehyde. Polymerization of the NF_2 -oxiranes and oxetane will be described.