

activities of 9-vinylcarbazole and trans-9-propenylcarbazole in the reaction with carbonium ions. Substantially lower activity of the cis isomers of 9-alkenylcarbazoles in cationic polymerization (dimerization) and in other electrophilic addition reactions was observed. It is shown on the basis of the experimentally found data on the relative thermodynamic stabilities of the cis and trans isomers of 9-propenylcarbazole and by means of structural models and the UV and  $^{13}\text{C}$  NMR spectra that the difference in the activities of the isomers is due to a decrease in the degree of p- $\pi$  conjugation in the cis isomer because of steric interactions between the substituents attached to the double bond. The photosensitive properties of some of the materials obtained on the basis of 9-alkenylcarbazoles were studied.

S. M. Kirov Tomsk Polytechnic Institute; scientific supervisor Professor E. E. Sirotkina.

## SYNTHESIS AND STUDY OF THE PRODUCTS OF PHOSPHORYLATION OF HEXAHYDRIC ALCOHOLS AND HYDROXY CARBOXYLIC ACIDS

L. I. Gurarii

This dissertation is devoted to the study of the peculiarities of the phosphorylation of structurally symmetrical acyclic polyhydroxy compounds, viz., d-mannitol, galactitol, and galactaric acid. The possibility of the formation of latticed diphosphites of hexitols that contain fragments of the 2,6,7-trioxa-1-phosphabicyclo[3,2,1]octane type as a result of the reaction of hexitols with phosphorus trichloride and tris(N-diethyl-amido)phosphite is demonstrated for the first time. The reaction of triethyl phosphite with hydroxy carboxylic acids with an  $\alpha$ -carboxy group in the molecule leads to the formation of mixed or absolute phosphates (O phosphorylation). The reactivities of the hydroxy groups in hydroxy dicarboxylic acids and tricarboxylic acids is determined to a considerable extent by the competitive effect of the  $\alpha$ - and  $\beta$ -carboxy groups: An increase in the effect of the  $\beta$ -carboxy group favors nucleophilic substitution of the hydroxy group by triethyl phosphite with the formation of a phosphonate (C phosphorylation). The assumption that the reactions of the hydroxy groups of hydroxy carboxylic acids, as well as some 1,2- and 1,3-diols, glycerol, and mannitol, with  $\text{PCl}_5$ , which lead to C chlorination and O phosphorylation (the formation of dichlorophosphates), proceed through the intermediate formation of various types of dialkoxytrichlorophosphoranes was confirmed by the synthesis of the previously unknown cyclic dihydroxytrichlorophosphoranes from dihydroxymaleic and citric acids.

A. E. Arbuzov Institute of Organic and Physical Chemistry, Kazan Branch, Academy of Sciences of the USSR; scientific supervisors Academician B. A. Arbuzov and É. T. Mukmenev.

## ACYLATION OF NAPHTHOLS AND SOME HETEROCYCLIC COMPOUNDS WITH UNSATURATED ACID CHLORIDES AND PESTICIDAL PROPERTIES OF THE SUBSTANCES OBTAINED

Z. Sh. Enileeva

This research was devoted to the O acylation of naphthols and the N acylation of benzimidazolones with  $\alpha, \beta$ -unsaturated acid chlorides. 1,3-Diacylbenzimidazolones were obtained in the reaction with benzimidazolone. The alkylation of 5-nitrobenzimidazolone with alkyl halides in the presence of bases in acetone solution was realized. A relationship between the herbicidal activity of the compounds obtained and their chemical structure was established. 5-Nitro-1,3-dialkylbenzimidazolones are highly effective herbicides.

Tashkent Engineering Institute of Irrigation and Mechanization of Agriculture; scientific supervisors Professor N. Kh. Maksudov and L. F. Golovyashkina.