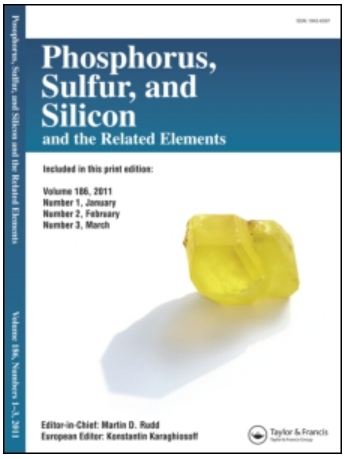

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Il'yas Nizamov[a]; Vladimir Al'fonsov[a]; Elvira Batyeva[a]
[a] A. E. Arbuzov Institute of Organic and Physical Chemistry, Kazan, Russia

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INFLUENCE OF IODINE ON REACTIVITY OF PHOSPHORUS SULFIDES AND HOMOLOGUES OF DAVY'S REAGENT IN ORGANIC REACTIONS

IL'YAS NIZAMOV, VLADIMIR AL'FONSOV AND ELVIRA BATYEVA
A. E. Arbuzov Institute of Organic and Physical Chemistry, Arbuzov str. 8, Kazan, 420083, Russia

Abstract The use of iodine results in reactivity enhancement of phosphorus sulfides and homologues of Davy's reagent in the reactions with disulfides, aminals and thioacetals. The reactions β-diiodotetraphosphorus trisulfides with disulfides, aminals and thioacetals were studied.

INTRODUCTION

Phosphorus sulfides and $(RSPS_2)_2$ react with dialkyl disulfides, aminals and thioacetals under severe conditions (100-200°C) with the formation of some novel organothiophosphorus compounds.

RESULTS AND DISCUSSION

The application of iodine in the reactions of P_4S_3, P_4S_5, P_4S_7, P_4S_{10} and $(RSPS_2)_2$ with dialkyl disulfides leads to a significant improvement in yields of trialkyl tetrathiophosphates at 20-60°C. These reactions proceed via the intermediate formation of S,S'-dialkyl S'',S''-alkyltetrathiolothionophosphates. The products of (1-dialkylamino)- and (1-alkylthio)alkyl thionophosphonate structure were obtained in the reactions of P_4S_3, P_4S_5 and P_4S_7 with aminals and thioacetals in the presence of iodine at 20°C. The reaction of P_4S_{10} with thioacetals which leads to (1-alkylthio)alkyl tetrathiophosphates is also facilitated when iodine is employed (20°C).