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## Phosphorus, Sulfur, and Silicon and the Related Elements

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### HYDROSILYLATION OF UNSATURATED SULPHIDES AND MERCAPTANS

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## HYDROSILYLATION OF UNSATURATED SULPHIDES AND MERCAPTANS

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Some features of the hydrosilylation reaction of unsaturated sulphur-containing compounds such as divinylsulphide<sup>\*</sup>, diallylsulphide, ethylvinylsulphide and allylmercaptan with triethyl- and triethoxysilanes catalyzed by  $\text{H}_2\text{PtCl}_6 \cdot 6\text{H}_2\text{O}$ ,  $(\text{Ph}_3\text{P})\text{RhCl}$ ,  $(\text{Ph}_3\text{P})_3\text{Rh}(\text{CO})\text{H}$ ,  $\text{Co}_2(\text{CO})_8$ ,  $(\text{PhCN})_2\text{PdCl}_2$ ,  $\text{Ph}_3\text{P}$  have been studied for the first time.

The hydrosilylation process of the compounds studied is not regioselective, as a rule, to give a mixture of isomer adducts according and opposite to Farmer's rule.

Together with a number of normal side processes such as redox reactions, disproportionation of the starting hydrosilanes, dehydrocondensation, hydration and polymerization of olefines, the hydrosilylation is accompanied by first recognized S-C bond cleavage specific for unsaturated sulphur-containing compounds.

The cleavage reaction of S-C bonds is common to conjugated systems where mainly S-C<sub>Vin</sub> bonds are cleaved. The substitution of platinum and rhodium catalysts by the palladium one increases regioselectivity of the process, decreases the number of side reactions not excluding the S-C<sub>Vin</sub> cleavage. The use of freshly prepared Speier's catalyst containing no reduced platinum ( $\text{Pt}^{II}$ ,  $\text{Pt}^0$ ) causes polymerization of unsaturated sulphides.

The possible mechanism of the process investigated is discussed.

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\* Divinylsulphide was prepared by the method developed by B.A. Trofimov and S.V. Amosova (U.S. Patent 3887623, 1975) who kindly gave the reagent to the authors.