Synthesis of Silatriazole Trimers

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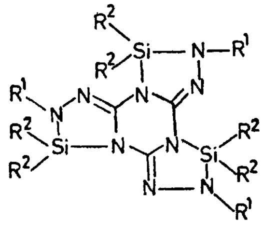
Summary Silatriazole trimers can be prepared by the reaction of diorganodihalogenosilanes with 2,4,6-trihydrazino-*s*-triazine and 2,4,6-triphenylhydrazino-*s*-triazine; they show appreciable hydrolytic stability.

Recently Dewar and Spanninger[1] have shown that 2,4-dihydrazinopyrimidine reacts with phenylboronic acid to form derivatives of boratriazole dimers. However, these compounds are reported to be unstable in boiling alcohol. Since it has been shown recently[2] that cyclosilazanes containing a double bond have thermal as well as hydrolytic stability probably owing to $p \rightarrow d$ overlap, we were interested in synthesizing silatriazoles. Initially, we tried to prepare silatriazole trimers from 2,4-dihydrazinopyrimidine derivatives but the product obtained was very unstable. However, the reaction of diorganodihalogenosilanes with 2,4,6-trihydrazino-*s*-triazine derivatives gave the desired silatriazole trimers, which had good hydrolytic stability. The diphenylsilatriazole trimers were quite stable and were not cleaved when boiled for 2 min with acid (10% HCl) or alkali (10% NaOH). However, the dimethylsilatriazole trimers were cleaved in boiling acid (10%). Similar hydrolytic stability was found in dioxan, in which these compounds are soluble, indicating that solubility does not affect the hydrolytic stability.



	R^1	R^2	M.p./°C	Yield/%
(**1**)	Me	H	275—277	40
(**2**)	Me	Ph	87—90	55
(**3**)	Ph	H	128—129	50
(**4**)	Ph	Ph	120—123	60

The title compounds (**1**)—(**4**) were prepared as follows. 2,4,6-Trihydrazino-*s*-triazine[3] was converted into the sodium salt by reaction with NaH (6 mol. equiv.) in dry toluene under nitrogen. Reaction with Ph_2SiCl_2 (3 mol. equiv.) then gave the corresponding silatriazole trimer in the yields indicated. All compounds gave satisfactory analytical data.

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