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Synthesis and characterisation of some hypervalent silicon compounds

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Hypervalent silicon compounds such as isothiocyanato silatrane, *bis* (benzene 1,2-diolato) isothiocyanato siliconates and *bis* (benzene 1,2-diolato) diisothiocyanato siliconates of alkali metal, ammonium, pyridinium and methylpyridinium ions have been isolated from the reactions between triethoxy isothiocyanato silane and triethanolamine or benzene 1,2-diol under appropriate experimental conditions. Whereas neutral hypervalent silicon derivative (i.e. silatrane) is obtained without the use of catalyst, the mono and dianionic siliconates are formed only in the presence of catalytic amounts of KNCS or NaCN. The possible pathway of these reactions is suggested. The compounds synthesised as above have been characterised by multinuclear (^{1}H, ^{13}C, ^{14}N, ^{29}Si) magnetic resonance studies in solution. The solid state structure is established by high resolution mass spectra, FAB-mass spectra and X-ray crystallography. The unique structural features in these compounds have come to light from the deviations of the microstructural details obtained through X-ray crystallography and unusual couplings of some of the nuclei present. On the basis of these studies, modified chemical reactivity of isothiocyanato group is expected. The changed reactivity has synthetic potential.

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