Organosilicon Synthesis of Isocyanates: IV.[1] Synthesis of Isocyanates from Aliphatic and Alkylaromatic Amino Acid Esters

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Abstract—Treatment of an alcoholic suspension of amino acids with trimethylchlorosilane yielded phenylglycine, valine, β-phenylalanine, and homovaline ester hydrochlorides. Their saccharin-catalyzed silylation with hexamethyldisilazane proceeds quantitatively and involves only one proton of the amino group. The best conversion of the amino acid esters to the corresponding isocyanates was achieved by phosgene treatment of their monosilyl urethanes, rather than of the silylated amino esters. Monosilyl urethanes are formed quantitatively by treatment of the amino acid ester hydrochlorides with the hexamethyldisilazane–CO_2 system. The ^1H NMR spectra show that monosilyl urethanes derived from α- and β-amino acid esters are characterized by intramolecular interaction of the silicon atom and the oxygen atom of the carboxy group.

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