Selective Synthesis and Transformation of Stereogenic Silicon Centers

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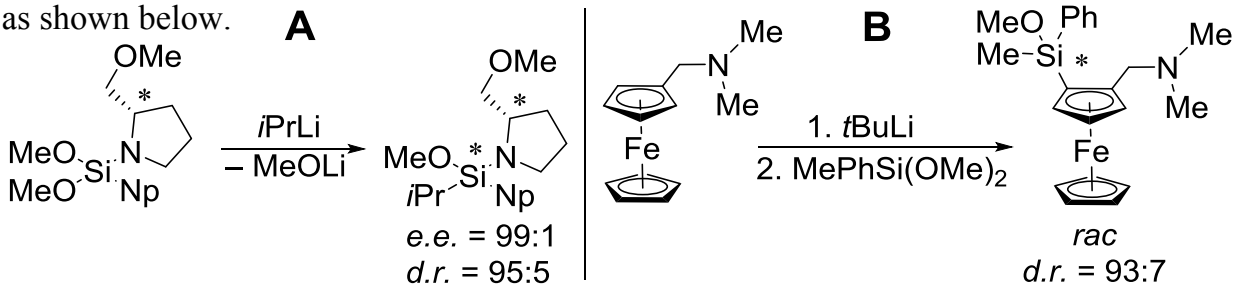
Within the last years, the use of Si-stereogenic compounds in modern chemistry applications has grown.[1a] In comparison to carbon the methods to generate stereogenic silicon centers with a defined configuration are limited.[1b] There are two general approaches of Si-asymmetric syntheses: either create a stable pentavalent intermediate with a chiral backbone that induces stereochemistry by differentiation between several leaving groups (A),[2a] or intentionally avoid stable intermediates to define stereochemistry by the side of attack of a nucleophile (B).[2b,c] The systematical use of these effects gave Si-stereogenic compounds with extremely high stereochemical excess as shown below.



Scheme 1: Two examples for asymmetric synthesis with high stereoexcess at the Si-center.[2a,c]

After the fundamental studies of CORRIU[3a] the stereochemical way of substitution of diverse functional groups at silicon centers is rather less investigated. Several factors can influence the reaction pathway, so that the resulting stereochemistry is hard to predict. There are hints of a clear transformation of OMe-groups in different experiments. Also the substitution of activated Si–C-bonds seemed to work with enhanced stereocontrol.[3b] The presented results will show asymmetric syntheses and transformation processes at stereoenriched organosilanes containing exactely those interesting functionalities OMe and dihydrofuranyl (DHF) with its activated Si–C-bond.

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