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1,3-DIAZA-2-SILACYCLOPENTANES—REACTIONS, CRYSTAL STRUCTURES, AND ISOMERISATIONS

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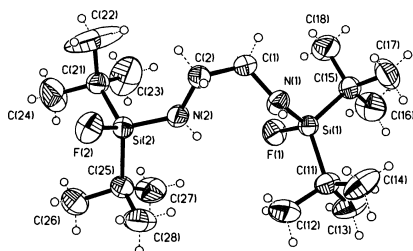
1,3-DIAZA-2-SILACYCLOPENTANES—REACTIONS, CRYSTAL STRUCTURES, AND ISOMERISATIONS

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Keywords: 1,3-Diaza-2-silacyclopentanes; silylethylenediamines; x-ray structures

Starting from ethylenediamine and monochlorosilanes it is possible to synthesize N,N-bis(silyl)ethylenediamines. The first fluorosilyl-substituted ethylenediamine was synthesized after HCl-elimination from ethylenediamine and ditert.-butyl-chlorofluorosilane:



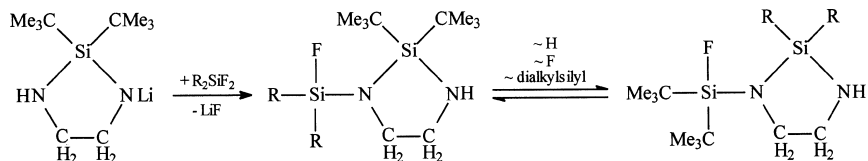
Selected bond lengths [pm] and angles [°]

Si(1)–F(1)	160.82(15)
Si(1)–N(1)	169.4(2)
Si(1)–C(11)	188.2(3)
N(1)–C(1)	145.6(3)
Si(2)–F(2)	161.73(15)
C(1)–C(2)	150.8(3)
C(1)–N(1)–Si(1)	129.12(17)

Ring closure is achieved in the reaction of these compounds with chlorosilanes in the presence of HCl-acceptors or after dilithiation and reaction with difluorosilanes.

A new silicon-nitrogen-rearrangement was found in the reaction of the monolithium derivative of the 1,3-diaza-2-silacyclopentane with difluorosilanes:

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Quantum chemical calculations indicate a silaneimine transition state.¹

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