## Simple and Convenient Method for Preparing Dodecamethylcyclohexasilane

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Summary Dodecamethylcyclohexasilane,  $(Me_2Si)_6$ , was conveniently prepared in good yield from sym-dimethoxy-

tetramethyldisilane in the presence of NaOMe catalyst in tetrahydrofuran.

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THE chemistry of permethylated cyclopolysilanes is a subject of current interest. For instance, dodecamethylcyclohexasilane (II) has been shown to be a useful material for preparing a silicon carbide fibre having good heat resistance and high tensile strength.<sup>1</sup> Existing methods<sup>2-7</sup> for the preparation of (II) are inconvenient, involving, for example, large amounts of Li, Na, K, or Na-K alloy,<sup>2-5,7</sup> and we now report a simple method, involving the conversion of the readily available sym-dimethoxytetramethyldisilane (I)<sup>8</sup> into (II) under mild conditions with NaOMe as catalyst.

$$\begin{array}{cc} 6(\mathrm{MeO})\mathrm{Me_2SiSiMe_2(OMe)} \rightarrow (\mathrm{Me_2Si})_8 + & 6(\mathrm{MeO})_2\mathrm{SiMe_2} \\ (\mathrm{I}) & (\mathrm{II}) & (\mathrm{III}) \end{array}$$

The reaction can be carried out at room temperature to give (II) in good yield. Typically, to a mixture of NaOMe (0.04 mol) and tetrahydrofuran (120 ml) was added (I) (0.2 mol) with stirring under Ar. The mixture was stirred

for 24 h, and  $NH_4Cl$  (2·12 g) in  $H_2O$  (100 ml) was then added. Extraction with ether and concentration (81 °C at 18 mmHg)<sup>†</sup> gave a semi-solid after cooling. Colourless crystals of (II) (60% yield), m.p. 236-240 °C (sealed capillary), separated from the crude solid upon trituration with acetone. An analytical sample (48% yield) was obtained by recrystallization from acetone, m.p. 247-250 °C (sealed capillary), which gave satisfactory elemental analysis and spectral data in comparison with literature results.4,7

The amount of the catalyst can be decreased to as low as 1% relative to the starting disilane and still comparable yields are obtained. This reaction may provide a novel and convenient method for the preparation of cyclopolysilanes starting from other alkoxydisilanes which are readily accessible in large amounts.9

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+ From the low boiling fraction and the acetone washings, dimethoxydimethylsilane (III) (ca. 90%, g.l.c.) and decamethylcyclopentasilane [see refs. 6 and 7, m.p. 183-186 °C (sealed capillary)] were obtained.

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<sup>8</sup> A convenient method for preparing this compound was presented at the 36th Annual Meeting of the Japan Chemical Society, April 1-4, 1977 (Osaka); abstracts, III, p. 728; see also ref. 9.

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