

# Studies on the Thermolysis of Ether-Stabilized $\text{Lu}(\text{CH}_2\text{SiMe}_3)_3$ .

## Molecular Structure of $\text{Lu}(\text{CH}_2\text{SiMe}_3)_3(\text{THF})(\text{diglyme})$

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$\text{Lu}(\text{CH}_2\text{SiMe}_3)_3(\text{THF})_2$  (**2**) decomposes slowly at room temperature with formation of  $\text{Me}_4\text{Si}$ . In order to understand the mechanism of this elimination process,  $\text{Lu}(\text{CH}_2\text{SiMe}_3)_3([\text{D}_8]\text{-THF})_2$  (**1**),  $\text{Lu}(\text{CH}_2\text{SiMe}_3)_3(\text{THF})(\text{DME})$  (**3**), and  $\text{Lu}(\text{CH}_2\text{SiMe}_3)_3(\text{THF})(\text{diglyme})$  (**4**) were prepared. The results of  $^1\text{H}$  NMR spectroscopic studies of the decomposition in solution exclude an  $\alpha$ - as well as a  $\beta$ -H elimination mechanism and point towards a  $\gamma$ -H elimination. The molecular structure of **4** has been determined by single crystal X-ray diffraction.

*Key words:* Lutetium Alkyls, Decomposition, X-Ray Structure,  $\gamma$ -H Elimination