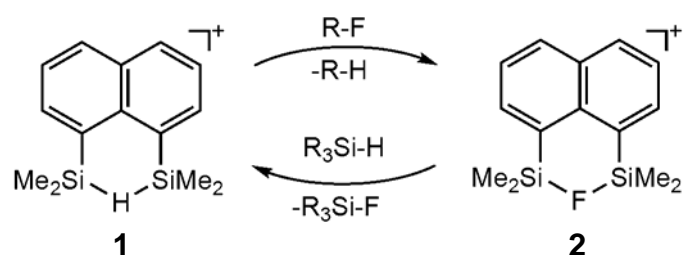


C-F Activation Processes with Main Group Electrondeficient Compounds

Lühmann, N., Müller, T.

Department of Pure and Applied Chemistry, Carl von Ossietzky University, D-26111 Oldenburg, Federal Republic of Germany

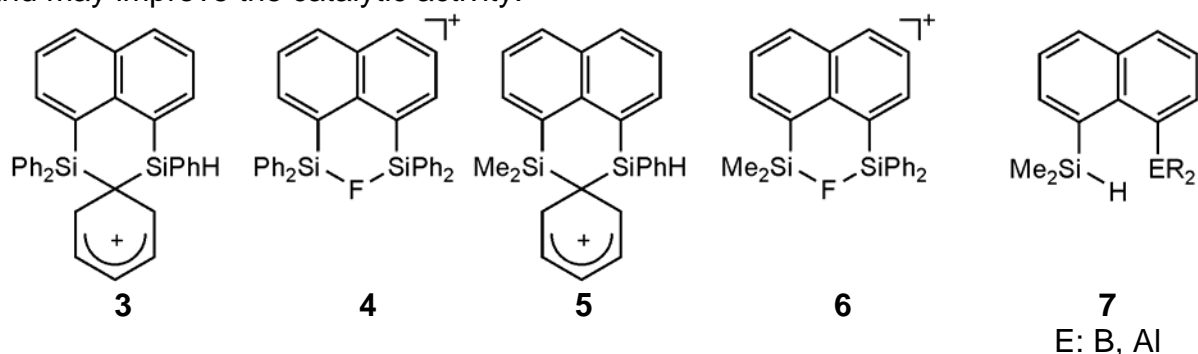
As a result of recent developments in the field of main group chemistry, the catalytic C-F activation process has become available also for aliphatic fluorides.^[1] For example the treatment of 1,8-bissilylated naphthalenes with the Lewis acid Ph_3C^+ results in the formation of hydrogen bridged disilyl cations **1** that can be converted to the fluorine bridged derivative **2** with fluoroalkanes.^[2,3] By reaction with Et_3SiH the initial hydronium ion **1** was recovered in high yields. Further investigations revealed that both cations **1,2** catalyze the hydrodefluorination of fluoroalkanes (Scheme 1) but in different ways.



Scheme 1

In this contribution we report on our NMR spectroscopic investigations of the catalytic CF activation reaction. Different cationic catalysts **1-6** were utilized to obtain a better understanding of the underlying mechanism under solvent-free conditions.

Another aspect of this contribution is the synthesis of an uncharged catalyst **7** by exchange of one silicon atom against a group 13 element and its possible use in the C-F activation. The use of a uncharged catalyst increases the solubility in unpolar media and may improve the catalytic activity.



[1] G. Meier, T. Braun, *Angew. Chem.* **2009**, *121*, 1575. [2] R. Panisch, M. Bolte, T. Müller, *J. Am. Chem. Soc.* **2006**, *128*, 9676. [3] R. Panisch, M. Bolte, T. Müller, *Organometallics* **2007**, *26*, 3524.