**Synthesis of Methoxylated Oligosilyl Group 4 Metallocenes, Potent Catalysts for the Dehydrogenative Coupling of Silanes**

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The synthesis of silyl substituted group 4 metallocenes continues to be a comprehensively researched field in contemporary metalorganic chemistry. The reason for these studies are the multiple applications of these compounds as catalysts or precatalysts for a number of chemical transformations. [1] Therefore, new methoxylated oligosilyl substituted metallocenes were synthesized by the reaction of a oligosilanide with metallocene dichlorides (Scheme 1).

**Scheme 1**: Synthesis of the respective methoxylated oligosilyl substituted metallocenes **1**-**3**



The catalytic activity for dehydrogenative polymerization reactions of compounds **1**-**3** were investigated. Therefore, 1 and 0.1 mol% of catalyst was used and reacted with SiPhH3 at RT for 1 h. High molecular polymers were observed via NMR-spectroscopy, as well as GPC analysis. Moreover, we investigated dihydrides such as SiPh2H2 and SiEt2H2 as monomers with our synthesized catalysts. Additionally, donors (*N*,*N*-diisopropylethylamine, PEt3), elevated temperatures (80 °C) and longer reaction times (1 week) were used to successfully form oligomeric compounds in the case of SiPh2H2 and high molecular weight polymers for SiEt2H2. GC-MS, GPC-analysis, as well as NMR spectroscopy was carried out to further prove the formation of the different oligomers/polymers.

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[1] Aitken, C.; Harrod, J. F.; Samuel, E. Polymerization of primary silanes to linear polysilanes catalyzed by titanocene derivatives. J. Organomet. Chem. 1985, 279 (1-2), C11-C13. DOI: 10.1016/0022-328X(85)87029-7.