Fakultät für Naturwissenschaften

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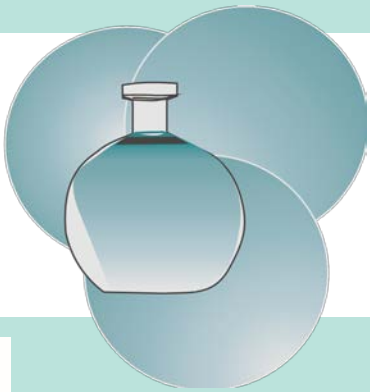

lädt ein

gemeinsam mit der Gesellschaft Deutscher Chemiker zum

Vortrag

von Herrn

Prof. Dr.

Michael R. Buchmeiser

Institut für Polymerchemie, Lehrstuhl für Makromolekulare Stoffe und Faserchemie

Universität Stuttgart

“Mo and W Alkylidene N-Heterocyclic Carbene Complexes: Functional Group Tolerance, Selectivity and Effects of Immobilization on Activity/Productivity“

am: 23.01.2020

um: 16:00 Uhr

wo: 1/232 (Straße der Nationen 62)

Gäste sind herzlich willkommen!

„Treffen mit dem Vortragenden“

Kaffee und Kekse ab 15:30 Uhr

im Hörsaal 1/232

TECHNISCHE UNIVERSITÄT CHEMNITZ

Prof. Dr. Evgeny Kataev
Telefon: 0371 / 531 39841
E-Mail: evgeny.kataev@chemie.tu-chemnitz.de

Fakultät für Naturwissenschaften

Institut für Chemie

Prof. Dr. Michael R. Buchmeiser

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Lehrstuhl für Makromolekulare Stoffe und Faserchemie
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GDCh Gesellschaft Deutscher Chemiker

Mo and W Alkylidene N-Heterocyclic Carbene Complexes: Functional Group Tolerance, Selectivity and Effects of Immobilization on Activity/Productivity

Mo-imido, W-imido and W-oxo alkylidene *N*-heterocyclic carbene (NHC) complexes constitute a new class of catalysts for alkene metathesis.[1-3] The unique interplay between the NHC, the metal and the anionic ligands offers, on the one hand, pre-catalysts that are stable in air, can be operated at high temperatures > 150°C and be used as room temperature-stable, thermally latent pre-catalysts, e.g. for the ROMP of dicyclopentadiene in reaction injection molding. We could show that the active species that form from the neutral pre-catalysts are cationic metal alkylidene NHC complexes. We also demonstrated that the parent 16 valence electron complexes follow an associative reaction mechanism, which entails addition of substrate prior to the formation of a cationic metal alkylidene.[4] Cationic Mo-imido, W-imido and W-oxo alkylidene NHC complexes provide high activity and productivity, particularly when immobilized on silica. The high stability of both, neutral and cationic (pre-) catalysts is related to the stabilizing effect of the NHC, which allows distributing the positive charge in the active species between the metal center and the NHC. Using a subtle interplay between the individual ligands and substrates, one can also realize functional group-tolerant neutral and cationic catalysts for olefin metathesis, which even tolerate the presence of alcohols, aldehydes and carboxylic acid groups. Also, biphasic reaction setups using ionic liquids and a second organic phase can be realized, thereby offering access to continuous reactions using SILP-conditions. Following careful ligand design, both *Z*- and *E*-selective catalysts for homo and ring-opening-cross metathesis are accessible. Also, the synthesis of highly tactic functional “precision” polymers with either an *all-trans*, *cis-st* or *cis-it* structure has been accomplished [5, 6]. This presentation will outline recent accomplishments including mechanistic investigations.[7-15]

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Prof. Dr. Evgeny Kataev
Telefon: 0371 / 531 39841
E-Mail: evgeny.kataev@chemie.tu-chemnitz.de