

Table of Contents

Erklärung über die Eigenständigkeit der Dissertation	V
Danksagung	VII
Table of Contents	IX
List of Abbreviations	XI
Motivation	XV
Zusammenfassung	XVII
Abstract	XXIII
1 Theoretical Survey	1
1.1 Carbenes	1
1.1.1 N-Heterocyclic Carbenes	3
1.2 Metal Carbene Complexes	5
1.2.1 Fischer and Schrock Carbenes	6
1.2.2 Metal NHC Complexes	7
1.2.3 Tungsten and Molybdenum NHC Complexes	9
1.3 Steric and Electronic Classification of Ligands	15
1.3.1 Electronic Properties of NHCs	16
1.3.2 Steric Properties of NHCs	21
1.4 Olefin Metathesis	25
1.4.1 Olefin Metathesis Catalysts	30
1.4.2 Schrock Catalysts	48
1.4.3 Grubbs Catalysts	52
1.4.4 Molybdenum(VI) Alkylidene NHC Complexes	56
2 Novel Strategies for the Synthesis of Tungsten(VI) Alkylidene Complexes	62

2.1	Stereoselective Schrock Catalysts	62
2.1.1	Publication "Synthesis of Tungsten(VI) Imido Alkylidene Bispyrrolide Complexes via the Isocyanate Route"	66
2.2	Tungsten(VI) Imido Alkylidene NHC Complexes	73
2.2.1	Publication "Reversible <i>N</i> -Heterocyclic Carbene-Induced α -H Abstraction in Tungsten(VI) Imido Dialkyl Dialkoxide Complexes"	76
2.3	Tungsten(VI) Oxo Alkylidene NHC Complexes.....	83
2.3.1	Publication "Predicting Catalytic Activity from $^{13}\text{C}_{\text{CH}}$ Alkylidene Chemical Shift in Cationic Tungsten Oxo Alkylidene <i>N</i> -Heterocyclic Carbene Complexes"	85
3	Application of Group 6 Imido/Oxo Alkylidene NHC Complexes in ROMP	101
3.1	Latent Catalysts for the Polymerization of DCPD	101
3.1.1	Publication "Tuning the Latent Behavior of Molybdenum Imido Alkylidene <i>N</i> -Heterocyclic Carbene Complexes in Dicyclopentadiene Polymerization"	105
3.2	Stereospecific Polymerization of Norbornene Derivatives	120
3.2.1	Publication "Cationic Tungsten Imido Alkylidene <i>N</i> -Heterocyclic Carbene Complexes for Stereospecific Ring-Opening Metathesis Polymerization of Norbornene Derivatives"	126
4	References	135
5	Supporting Information and Raw Data of the Publications	148
6	Curriculum Vitae	150