1.1 Antragsteller (Applicant)

Jun Okuda,
Institut für Anorganische Chemie
Rheinisch-Westfälische Technische Hochschule Aachen
Landoltweg 1

1.2 Thema (Topic)

Molekulare Lanthanoid-Hydride: Homogenkatalysatoren für die Hydrometallierung und C-H-Bindungsaktivierung

1.8 Zusammenfassung (Summary)

The objective of this project is the systematic development of molecular lanthanoid hydrides which are not stabilized as metallocene derivatives within a bis(cyclopentadienyl) ligand framework. Their application as homogeneous catalysts for olefin hydrosilylation and, in this third and last phase of the priority program, for the directed C-H bond activation of aromatic hydrocarbons such as pyridine will be targeted. New hydride complexes containing both anionic and neutral supporting ligands will be synthesized and structurally characterized. In particular, structural investigation both in the solid and solution state will be performed in light of the aggregation behavior. The knowledge about the nature of lanthanoid-hydrogen bond will be expanded by comparing the metal-hydrogen bond in molecular complexes of group 13 metals and that in d-block transition metal hydride complexes. Mechanistic studies will clarify under which conditions a terminal lanthanoid hydride bond becomes accessible by tuning the ligand sphere and the ionic charge of the lanthanoid complex.