seit 1558

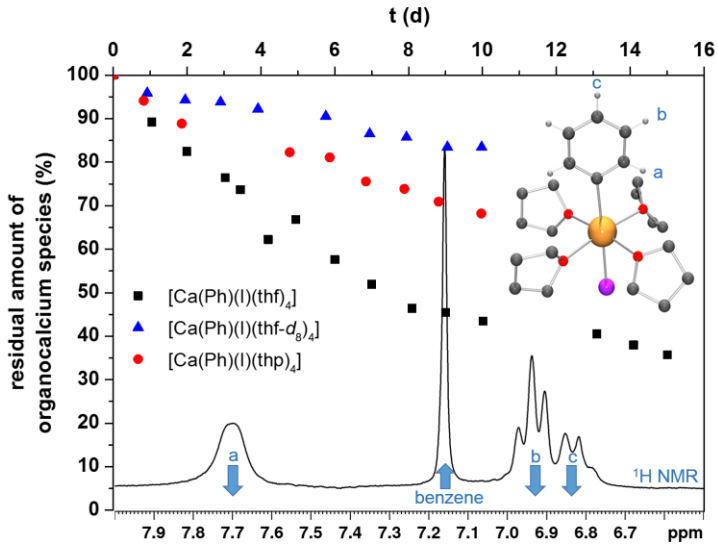
Organocalcium chemistry (Heavy *Grignard* Reagents)

Matthias Westerhausen

Friedrich Schiller University, IAAC, Humboldtstrasse 8, D-07743 Jena, Germany

E-mail: m.we@uni-jena.de

Abstract: The heavy alkaline earth metals combine the beneficial properties of the s-block metals (very electropositive and heteropolar M-C bonds, very nucleophilic carbanions) and of the early transition metals (availability of d-orbitals, strongly Lewis acidic ions, catalytic activity). Especially the use of calcium is advantageous because it is globally abundant, easily available, non-toxic, and inexpensive. However, the discrepancy between the inertness of the metal and the extreme reactivity of the calcium-based organometallics hampered a vast development of an organocalcium chemistry comparable to classic *Grignard* reagents. In order to compete with lithium- and magnesium-organic reagents, high-yield synthesis and durability of ethereal solutions are mandatory. Preparative concepts and stability in organic solvents are presented as well as preliminary applications in stoichiometric and catalytic reactions.



References: a) Köhler, M.; Görls, H.; Langer, J.; Westerhausen, M., *Chem. Eur. J.* **2014**, *20*, 5237; c) Westerhausen, M.; Langer, J.; Krieck, S.; Fischer, R.; Görls, H.; Köhler, M., *Top. Organomet. Chem.* **2013**, *45*, 29; d) Köhler, M.; Langer, J.; Görls, H.; Westerhausen, M., *Organometallics* **2012**, *31*, 8647; f) Westerhausen, M., *Z. Anorg. Allg. Chem.* **2009**, *635*, 13; g) Westerhausen, M., *Coord. Chem. Rev.* **2008**, *252*, 1516; h) Westerhausen, M.; Gärtner, M.; Fischer, R.; Langer, J.; Yu, L.; Reiher, M., *Chem. Eur. J.* **2007**, *13*, 6292; i) Westerhausen, M.; Gärtner, M.; Fischer, R.; Langer, J., *Angew. Chem. Int. Ed.* **2007**, *46*, 1950-1956.