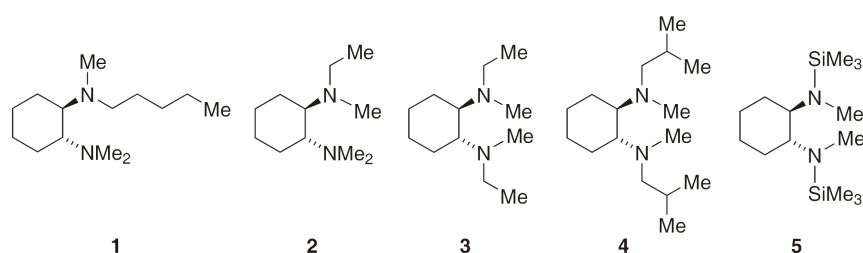


Stereogenic nitrogen centers with specific configuration: Coordination of chiral diamines to transition metals

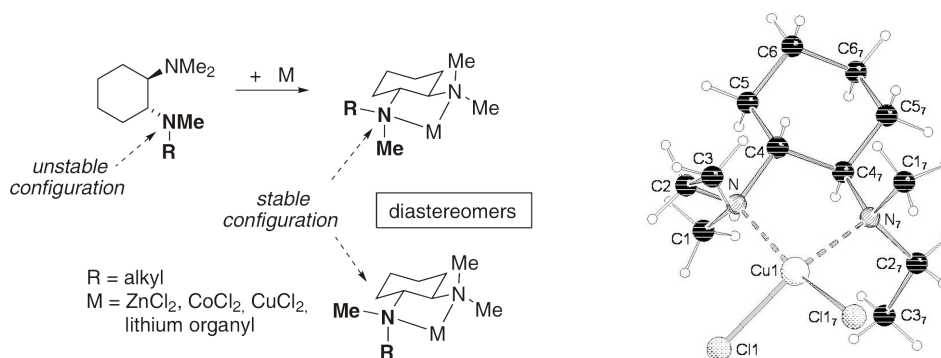
Eckert, P. K., Dortmund/D, Dropalla, G., Dortmund/D, Gessner, V. H., Dortmund/D, Strohmann, C., Dortmund/D

Prof. Dr. Carsten Strohmann, TU Dortmund, Otto-Hahn-Str. 6, 44227 Dortmund

Chiral diamines such as (*R,R*)-tetramethylcyclohexane-1,2-diamine [(*R,R*)-TMCD] and its derivatives^[1] are often coordinated to metal centres to enhance the stereoselectivity of reactions. Coordination to zinc and cobalt halides, for example, yields stereospecific catalysts for Grignard type reactions.^[2]



We developed methods to easily synthesise various (*R,R*)-TMCD derivatives (diamines **1-5**) containing two different substituents on one or two of the nitrogen atoms. Upon chelation of a metal, these nitrogen atoms turn into stereogenic centres. We discovered that the chiral cyclohexane backbone was sufficient to induce the formation of specific configurations in all aggregates with cobalt, zinc or copper halides. This observation was examined with quantum mechanical studies.



Literature:

- [1] P. K Eckert, V. H. Gessner, C. Strohmann *Acta Crystallogr., Sect. E: Struct. Rep. Online* **2009**, E65, o956.
- [2] (a) H. Ohmiya, H. Yorimitsu, K. Oshima, *J. Am. Chem. Soc.* **2008**, 128, 1886;
(b) G. Cahiez, C. Chaboche, C. Duplais, A. Moyeux, *Org. Lett.* **2009**, 11, 277;
(c) J. F. G. A. Jansen, B. L. Feringa, *J. Org. Chem.* **1990**, 55, 4168.