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## Frustrierte Lewis-Paare - Neue Reaktivität durch Modulation von Lewis-Säure und Lewis-Base

By Lutz Greb

Epubli In Der Okt 2013, 2013. Taschenbuch. Condition: Neu. Neuware - The concept of frustrated Lewis-Pairs (FLPs) relies on the combination of a bulky Lewis-acid with a bulky Lewis-base: the formation of the classical dative bond is prohibited by sterical reasons. The resulting ambivalent reactivity allows the metal-free activation of H<sub>2</sub> and hydrogenation catalysis. So far, FLPs have been used in the metal-free reduction of some sterically demanding and reactive unsaturated compounds. Despite the tremendous progress in this young field of research (since 2006), many open questions about the reactivity of FLPs and limitations regarding the substrate scope existed. The directed modulation of the electronic parameters of the FLP partners provides several answers to fundamental questions in this field. Against former opinions, it could be shown, that H<sub>2</sub>-activation with electron poor Lewis-bases readily occurs at low temperatures (-80°C). Using this FLPs, the unprecedented metal-free catalytic hydrogenation of olefins was established. Combined kinetic and mechanistic studies unraveled thus far controversial observations of FLPs in H<sub>2</sub>-activation and catalysis. By using a weaker Lewis-acid, a dramatic increase in functional group tolerance and reactivity in FLP catalyzed hydrogenations was achieved: The first metal-free catalytic hydrogenation of nitroolefins and acrylates was developed. By the combination...



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