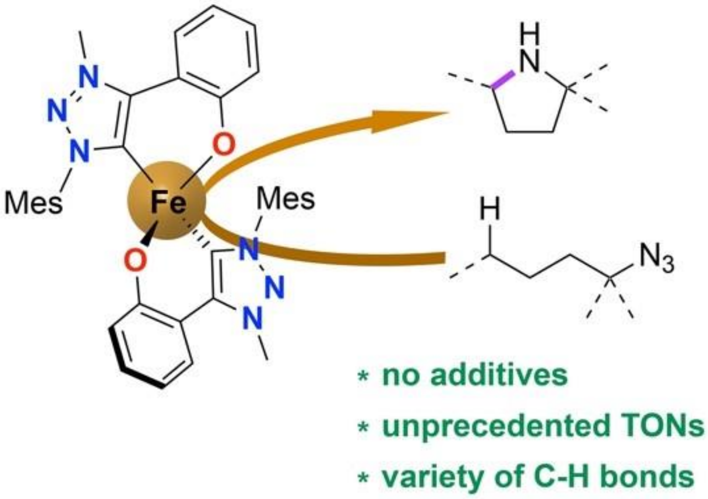
SwissCat Symposium 2022 University of Bern, June 30, 2022

An Iron–Mesoionic Carbene Complex for Catalytic Intramolecular C–H Amination Utilizing Organic Azides

Wowa Stroek,[1] Martin Keilwerth,[2] Daniel M. Pividori,[2] Karsten Meyer[2] and Martin Albrecht[1]*

[1]Department of Chemistry, Biochemistry and Pharmaceutical Sciences, University of Bern, CH-3012 Bern, Switzerland
[2]Department of Chemistry & Pharmacy, Inorganic Chemistry, Friedrich-Alexander-University Erlangen-Nürnberg (FAU), 91058 Erlangen, Germany
e-mail: Vladimir.Stroek@unibe.ch

The formation of N-heterocycles is of paramount importance for synthesis of pharmaceuticals, agrochemicals and natural products.[1] Due to its atom-economy direct C–H amination is a very attractive method to synthesize these class of compounds comparable to more traditional methods. Especially when using azides as nitrene precursors, N_2 is produced as the only side product. Several catalysts are known to show activity in this transformation,[2] though turnover numbers were always low (single digit to a few hundreds). Herein we report a new homoleptic iron complex with mesoionic carbene ligands that is active in the intramolecular C–H amination.[3] It is the first iron based catalyst that does not require any other additives to catalyze this transformation. On top of that, it displays unprecedentedly high TONs of up to 7600, which is more than an order of magnitude higher than any other catalyst known to date. We will discuss the synthetic and catalytic features, including some mechanistic aspects that are unique to our iron carbene system.



- no additives
- unprecedented TONs
- variety of C-H bonds

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[3] W. Stroek, M. Keilwerth, D. M. Pividori, K. Meyer and M. Albrecht, *J. Am. Chem. Soc*., **2021**, *143*, 20157–20165.