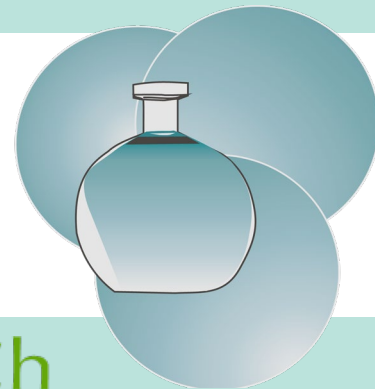


Fakultät für Naturwissenschaften

Institut für Chemie



lädt ein

gemeinsam mit der Gesellschaft
Deutscher Chemiker
zum

Vortrag
von Frau

**Prof. Viktoria H.
Däschlein-
Gessner**

Chair of Inorganic Chemistry II
Ruhr-Universität Bochum

am: 14. November 2024
um: 16:00 Uhr
WO: im Raum 1/232

“Metalated Ylides: Teaching old reagents new tricks”

Die kleine Kaffeerrunde vor dem Vortrag beginnt
um 15:30 Uhr im Raum 1/232.

Das Mitbringen von eigenen Trinkgefäßen ist
erwünscht.

Gäste sind herzlich willkommen!

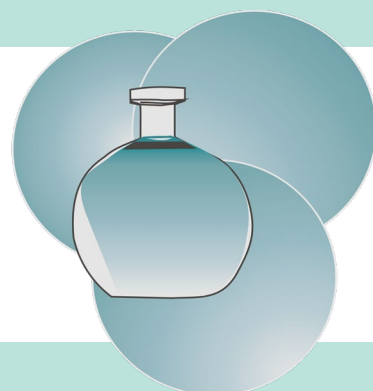


TECHNISCHE UNIVERSITÄT
IN DER KULTURHAUPTSTADT EUROPAS
CHEMNITZ

Prof. Dr. Michael Sommer

Telefon: 0371 / 531 32507

E-Mail: michael.sommer@chemie.tu-chemnitz.de



Prof. Viktoria H. Däschlein-Gessner

Chair of Inorganic Chemistry II
Ruhr-Universität Bochum



GDCh

Gesellschaft
Deutscher Chemiker

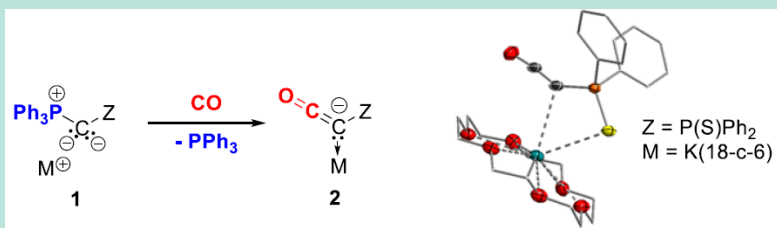
Metalated Ylides: Teaching old reagents new tricks

Since the discovery of ylides more than 100 years ago, this class of compounds has developed to versatile reagents in organic synthesis.[1] While early days were particularly coined by the advent of Wittig and Wittig-type olefination reactions,[2] they are nowadays applied in many stoichiometric and catalytic transformations.[3] Also their α -metalated congener - the so-called yldiides - have early attracted research interest due to their strong nucleophilicity and potential use as versatile building blocks.

However, selective applications long remained challenging because of their high reactivity, often observed unselective and difficult preparation in larger scale. In the past years, our group has reported on the synthesis and reactivity of α -metalated ylides (1). Owing to their highly nucleophilic character these compounds turned out to be excellent precursors to access electron-rich phosphines with beneficial properties for homogeneous catalysis[4] and to stabilize electron-deficient main group species.[5]

Most recently, we uncovered that metalated ylides can also react as coordination complexes of carbon to readily exchange the phosphine substituent by carbon monoxide.[6] This remarkable reactivity provided access to reactive species such as ketyl anions 2 which have long been regarded as fleeting intermediates, but proven sufficiently stable to serve as starting materials to a variety of carbonyl compounds.

Here, we will summarize this unique reactivity of metalated ylides. Figure 1. Phosphine by CO exchange in metallated ylides.



References

- [1] A. Michaelis, H. V. Gimborn, Ber. 1894, 27, 272.
- [2] G. Wittig, G. Geissler, Liebigs Ann. 1953, 580, 44.
- [3] O. I. Kolodiazhnyi in Phosphorus Ylides: Chemistry and Application in Organic Synthesis, Wiley-VCH, Weinheim, 1999.
- [4] a) T. Scherpf, R. Wirth, S. Molitor, K.-S. Feichtner, V. H. Gessner, Angew. Chem. Int. Ed. 2015, 54, 8542. b) S. Lapointe, A. Sarbajna, V.H. Gessner, Acc. Chem. Res. 2022, 55, 770.
- [5] A. Sarbajna, V.S.V.S.N. Swamy, V.H. Gessner, Chem. Sci. 2021, 12, 2016
- [6] M. Jörges+, F. Krischer+, V. H. Gessner, Science, 2022, 378, 1331.

Prof. Dr. Michael Sommer
Telefon: 0371 / 531 32507
E-Mail: michael.sommer@chemie.tu-chemnitz.de