REGIO- AND CHEMOSELECTIVE DEPROTECTION OF PRIMARY ACETATES BY ZIRCONIUM HYDRIDES

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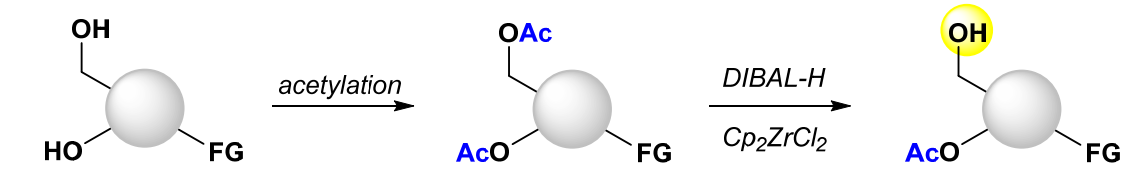
Hydrozirconation, described for the first time by Wailes and Weilgold in 1970, has undergone a considerable boom with the development of zirconocene chloride hydride.[1] Despite the relative stability of Schwartz' reagent (about one month under argon), some methods exist for its *in situ* preparation, allowing the formation of zirconocenes in a practical way.[2] Hydrozirconation of unsaturated functional groups has become a classic reaction in laboratory. Schwartz' reagent induces hydrometalation of alkynes and alkenes with a high chemoselectivity towards functional groups and it has been shown that it can also reduce carbonyl derivatives. Our group is involved in new transition metal-catalyzed transformations in carbohydrate chemistry and we wondered if Schwartz' reactivity could allow us to solve a tough and essential challenge in carbohydrate chemistry: the selective de-*O*-acetylation of peracetylated bio-sourced derivatives. In this study, a combination of DIBAL-H and Cp_2ZrCl_2 is shown to promote the regioselective cleavage of primary acetates on a broad scope of substrates, ranging from carbohydrates to amino acid derivatives, with a high tolerance towards protecting groups and numerous functionalities found in natural and bioactive compounds.[3]



This unprecedented de-*O*-acetylation might become a valuable alternative method to enzymatic mediated deprotections that are hard to implement on a large scale and which scope is relatively narrow. In this presentation, conditions, scope, selectivity issues and mechanistic aspects will be presented.

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[1] Hart, D. W.; Schwartz, J. *J. Am. Chem. Soc.* **1974**, *96*, 8115.

[2] (a) Lipshutz, B. H. ; Keil, R. ; Ellsworth, E. L. *Tetrahedron Lett.* **1990**, *31*, 7257; (b) Huang, Z.; Negishi, E. *Org. Lett.* **2006**, *8*, 3675; (c) Zhao, V.; Snieckus, V. *Org. Lett.* **2014**, *16*, 390.

[3] Gavel, M.; Courant, T.; Joosten, A. Y. P.; Lecourt, T. *Org. Lett.* **2019**, *21*, 1948.