Geminal diazides: A versatile toolbox for the synthesis of heterocyclic entities

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We present new studies on the synthesis and reactivity of geminal diazides, a mostly neglected class of compounds. The first geminal diazides were reported by Forster et al. in 1908.[1] However, the class of geminal diazides barely found attention in chemical sciences, and reports on their reactivity are rare.[2] It is now shown how geminal diazides (and even triazides) can be easily obtained from a range of highly functionalized starting compounds.[3] For example, 1,3-dicarbonyls undergo direct diazidation when treated with sodium azide and iodine in aqueous DMSO. Besides methods for their synthesis, new reactions with geminal diazides are discussed: In the realm of heterocycles, the thermolysis of geminal diazides can be used to access 3-hydroxypyridines, pyrazines or 1,3,4-oxadiazoles in a controlled way.[4] Unconventional bistriazoles and tristriazoles can be formed through sequential cycloaddition with alkynes.[5]

This presentation aims to make the class of geminal diazides more attractive to researchers by explaining the ease of their synthesis and the great potential of their reactions.