Keteniminium chemistry: a useful tool for the synthesis of small rings and aromatic derivatives

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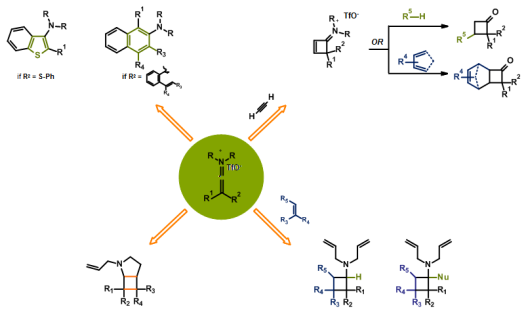
Keteniminium salts possess different types of reactivities enabling the formation of versatile valuable skeletons. Highly substituted naphthylamines as well as 3-amino-benzothiophenes are indeed easily accessible and involve keteniminium salt intermediates reacting *via* a 6π-/10π or a 6π-electrocyclization respectively. But among all the reactions involving keteniminium salts, [2+2] cycloadditions have been by far the most studied; we recently developed a [2+2] cycloaddition with alkynes affording cyclobuteniminium salt adducts which were further elaborated by [4+2] cycloaddition or Michael addition reactions using various dienes or nucleophiles. Furthermore, we also reported a one-pot sequence to obtain aminocyclobutanes, relying on [2+2] cycloadditions with alkenes followed either by stereoselective reduction or nucleophilic addition. The use of easily removable *N*-allyl protecting groups increases the potential of this method to access, in a few steps, highly functionalized cyclobutaneamines-containing building blocks.



[1] Lumbroso, A. Behra, J.; Kolleth, A.; Dakas, P.-Y.; Karadeniz, U.; Catak, S.; Sulzer-Mossé, S.; De Mesmaeker, A. *Tetrahedron Lett.* **2015**, 56, 6541-6545
[2] Lumbroso, A., Catak, S., Sulzer-Mossé, S., De Mesmaeker, A. *Tetrahedron Lett.* **2014**, 55, 5147-5150
[3] Lumbroso, A., Catak, S., Sulzer-Mossé, S., De Mesmaeker, A. *Tetrahedron Lett.* **2014**, 55, 6721-6725
[4] Lumbroso, A., Catak, S., Sulzer-Mossé, S., De Mesmaeker, A. *Tetrahedron Lett.* **2015**, 56, 2397-2401
[5] A. Kolleth, A. Lumbroso, G. Tanriver, S. Catak, S. Sulzer-Mossé, A. De Mesmaeker, *Tetrahedron Lett.* **2016**, 57, 2697-2702
[6] A. Kolleth, A. Lumbroso, G. Tanriver, S. Catak, S. Sulzer-Mossé, A. De Mesmaeker, *Tetrahedron Lett.* **2016**, 57, 3510-3514.