

# EXPLOITING ORGANOSULFUR COMPOUNDS IN DONOR-ACCEPTOR CYCLOPROPANE CHEMISTRY

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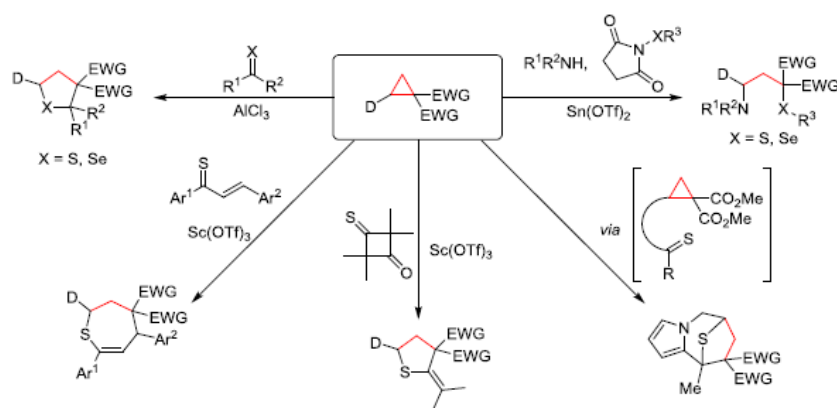
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Readily available donor-acceptor (D-A) cyclopropanes are known since the 1970s and 1980s; however the field has enjoyed a renaissance in the past two decades. Due to their zwitterionic character and high ring strain of about  $115 \text{ kJ}\cdot\text{mol}^{-1}$  D-A cyclopropanes paved the way for a plethora of unusual transformations.<sup>[1]</sup>

During our work on D-A cyclopropanes, we subjected higher homologs of ketones, such as thioketones to a Lewis-acid catalyzed formal [3+2]-cycloaddition process to synthesize highly substituted tetrahydrothiophenes. An intramolecular approach was successfully implemented to gain access to sulfur-bridged [*n*.2.1] bicyclic ring systems. Moreover, we were able to extend our investigations to the formation of tetrahydroselenophenes by using capricious selenoketones. Inspired by these results we finished our investigations by reacting thiochalcones with D-A cyclopropanes to afford tetrahydrothiepine systems. Besides cycloaddition reactions we could realize a ring-opening 1,3-aminochalcogenation reaction to deliver the respective open-chain structures.<sup>[2]</sup>



Scheme 1. Reactions of D-A cyclopropanes with organosulfur compounds.

[1] C. Brückner, H.-U. Reissig, *Angew. Chem. Int. Ed. Engl.* **1985**, *24*, 588; T. F. Schneider, J. Kaschel, D. B. Werz, *Angew. Chem. Int. Ed.* **2014**, *53*, 5504.

[2] A. Augustin, M. Sensse, P. G. Jones, D. B. Werz, *Angew. Chem. Int. Ed.* **2017**, *56*, 14293; A. U. Augustin, M. Busse, P. G. Jones, D. B. Werz, *Org. Lett.* **2018**, *20*, 820.