

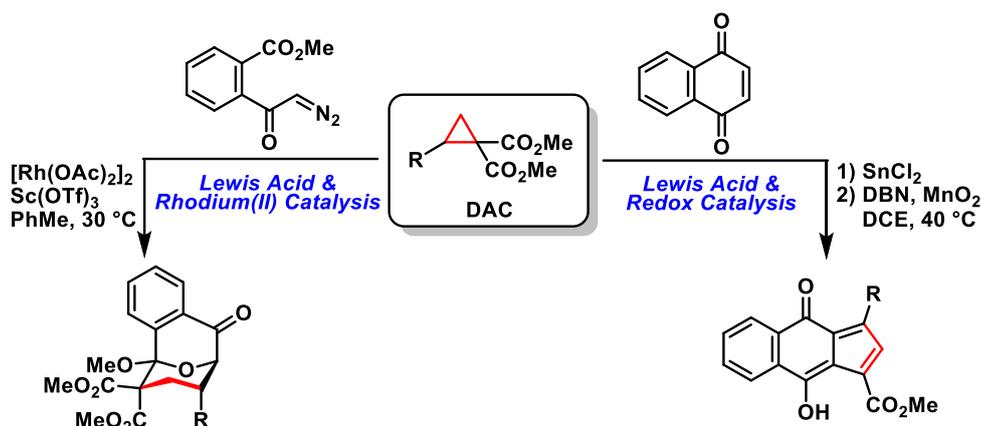
# Gain by Strain: Donor-Acceptor Cyclopropanes to Access Carbo- and Heterocyclic Compounds

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Donor-acceptor cyclopropanes (DACs) are highly strained entities which are unique building blocks for hetero- and carbocyclic systems.<sup>1,2</sup> For the last decade, we have been developing novel methodologies starting from these type of three-membered rings leading to oligopyrroles, chalcogen-containing heterocycles, and 1,3-bisfunctionalized products,<sup>3</sup> just to name a few. To get deeper insights into their intrinsic reactivity in-depth physical organic studies were performed recently.<sup>4</sup>

Besides the common activation of DACs by Lewis acids leading to a wide variety of ring-opening and cycloaddition products even synergistic catalytic approaches can be applied to generate fleeting intermediates which react with the strained systems. Scheme 1 depicts two representative examples, one using Lewis acid and Rh catalysis (affording intermediate carbonyl ylides)<sup>5</sup> and another using Lewis acid and redox catalysis are presented.<sup>6</sup> More recently, electrochemical methods were applied to activate donor-acceptor cyclopropanes.<sup>7</sup>



**Scheme 1.** Donor-acceptor cyclopropanes in dual catalyses.

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