

Strategies for Synthesis and Functionalization of Alkylidenecyclobutanes



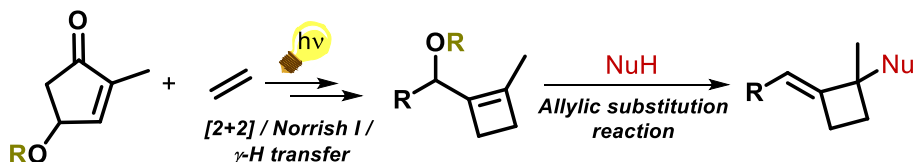
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Cyclobutane derivatives have become increasingly important as molecular building blocks because of their inherent ring strain and the selective modification of their structures can be strategically used in organic synthesis.¹ Cyclobutane rings also appear in the molecular structures of a wide panel of natural and synthetic molecules that display interesting biological activities.²

Within this large family, alkylidenecyclobutane subunits are encountered in natural products, such as providencin,³ and they exhibit enhanced reactivity providing access to complex molecular structures, including enlarged ring and highly functionalized cyclobutane derivatives.⁴

We recently developed an efficient synthesis of functionalized cyclobutenes through a photochemical domino reaction starting from cyclopent-2-enones and ethylene.⁵ In this communication, I will describe our recent developments of the straight-forward transformation of functionalized cyclobutenes into alkylidenecyclobutanes⁶ and the combination of both sequences into a domino-multicomponent process.⁷ These synthetic procedures provide an access to a wide variety of post-functionalized cyclobutane derivatives.



References

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