Alkyltriflones in the Ramberg–Bäcklund Reaction: Synthesis of *gem*–difluoroalkenes

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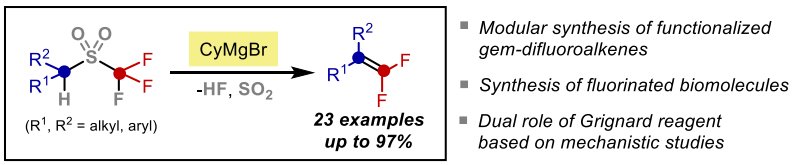
The Ramberg–Bäcklund reaction is a textbook method for the preparation of functionalized alkenes from readily available α-halogenated alkylsulfones. However, fluorinated alkylsulfones have not been employed, likely due to the low leaving ability of fluoride.

gem-Difluoroalkenes, which represent an interesting class of fluorinated compounds, are bioisosteres of vinyl and carbonyl compounds. *gem*-Difluoroalkenes and their derivatives have been employed in pharmaceutical chemistry due to their ability to enhance and change molecular properties.[1] Hu and co-workers have reported the versatile synthesis of fully substituted *gem*-difluoroalkenes from diazo compounds,[2] but there is still lack of straightforward and modular approach for dialkyl *gem*-difluoroalkenes.

Herein we report the first example of the use of alkyltriflones in the Ramberg–Bäcklund reaction, providing ready access to *gem*-difluoroalkenes.[3] Structurally diverse, fully-substituted *gem*-difluoroalkenes that are difficult to prepare by other methods can be easily prepared from readily available triflones by treatment with specific Grignard reagents. Experimental and computational studies provide insight into the unique and critical role of Grignard reagent, which serves both as a base to remove the α-proton, and as a Lewis acid to assist C–F bond activation.



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