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Exploring the reaction of sulfoxonium ylides with allylic carbocations

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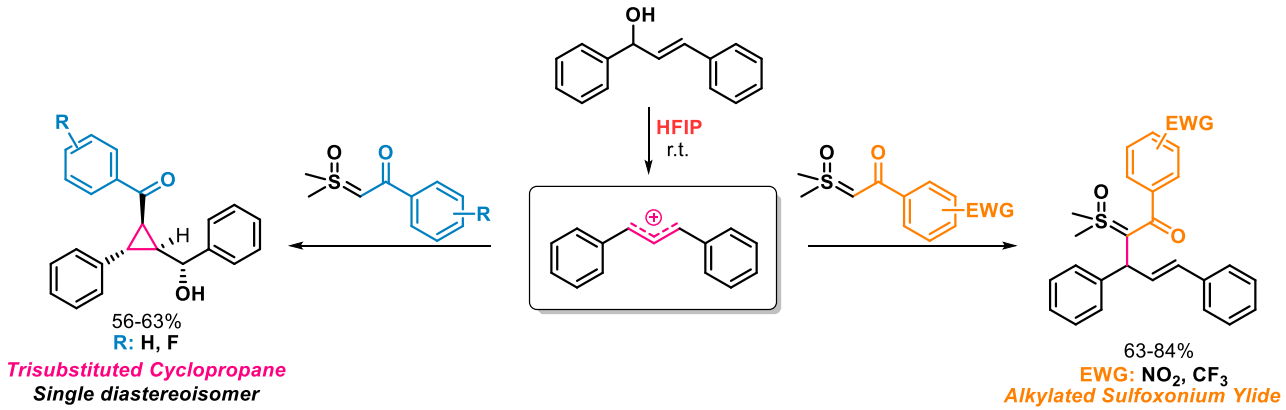
ABSTRACT

Sulfoxonium ylides are valuable tools in the construction of complex molecules.[1] Despite their extensive applications,[2] the reaction of α-carbonyl sulfoxonium ylides with carbocations has been overlooked. Herein we described the reaction of sulfoxonium ylides with allylic carbocations. As a starting point for our studies, we evaluated the reaction of *trans*-1,3-Diphenyl-2-propen-1-ol with α-carbonyl sulfoxonium ylide, under various reaction conditions to promote the formation of the carbocation. We discovered that HFIP (hexafluoroisopropanol) effectively promotes the formation of the carbocation,[3] leading to the formation of two distinct product depending on the sulfoxonium ylide employed. When sulfoxonium ylides with strong electron-withdrawing groups were used, the addition of the sulfoxonium ylide to the carbocation was followed by a deprotonation step, resulting in the formation of an alkylated sulfoxonium ylide. Using other ylides, the addition was followed by a cyclization, leading to trisubstituted cyclopropane as the major product. With the optimal conditions, a scope was constructed.



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