

## Visible-light-driven aza-o-quinone methide generation for the synthesis of indoles in a multicomponent reaction

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Aza-ortho-quinone methides (aza-o-QMs) are highly reactive intermediates of value in many areas of chemistry and biology. In particular, owing to their sizeable propensity for rearomatization, aza-o-QMs can undergo a series of cycloaddition or nucleophilic addition reactions to provide facile access to various condensed heterocycles, 2-aminobenzyl derivatives as well as complex natural products. Traditional synthetic methods for the *in situ* formation of highly reactive aza-o-QMs mainly rely on harsh conditions like pyrolysis, UV photolysis, and particularly prepared precursors, which are complicated by limited generality and scope. Recently, visible light photoredox catalysis has been identified as a powerful tool for the generation of various radicals and radical ions under mild conditions. Inspired by the visible-light photoredox catalyzed olefin difunctionalizations, we use 2-vinyl-substituted anilines and alkyl radical precursors to generate aza-ortho-quinone methides *in situ* by visible-light photoredox catalysis. This process enables a multicomponent reaction of 2-vinylanilines, alkyl halides, and sulfur ylides, and ultimately generating the corresponding densely functionalized indoles in generally good yields.

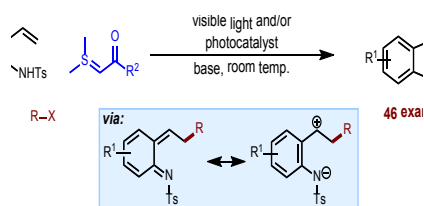


Figure 1: Visible-light-driven aza-ortho-quinone methide generation for the synthesis of indoles.

## Recent Publications

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2. Mao, Y.-L.; Boekelheide, V. *J. Org. Chem.* 1980, 45, 1547-1548.
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4. Chen, J.-R. Hu, X.-Q. Lu, L.-Q. Xiao, W.-J. *Acc. Chem. Res.* 2016, 49, 1911-1923.
5. Liu, Y.-Y.; Yu, X.-Y.; Chen, J.-R.; Qiao, M.-M.; Qi, X.; Shi, D.-Q.; Xiao, W.-J. *Angew. Chem. Int. Ed.* 2017, 56, 9527-9531.

## Biography

Yi-Yin Liu received his BS from Central China Normal University (CCNU) in 2014. Subsequently, he began his PhD studies under the supervision of Professors Jia-Rong Chen and Wen-Jing Xiao at Central China Normal University, China. His research interests include asymmetric catalysis, photoredox catalysis and heterocyclic compound synthesis.

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