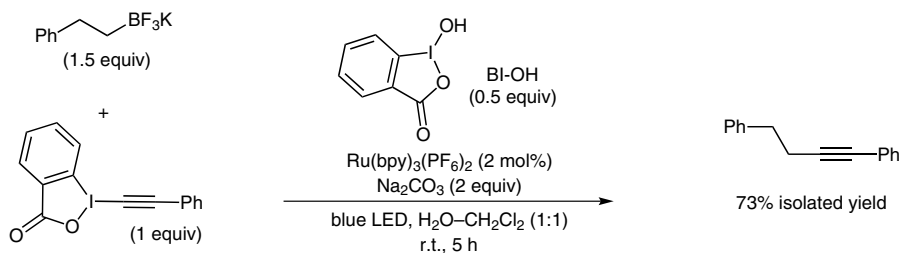


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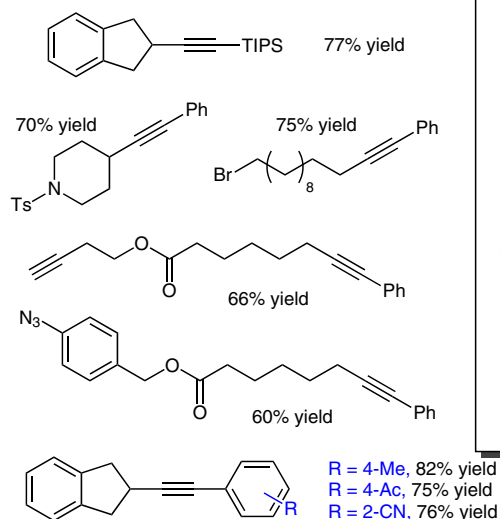
Visible-Light-Induced Chemoselective Deboronative Alkynylation under Biomolecule-Compatible Conditions
J. Am. Chem. Soc. **2014**, *136*, 2280–2283.

Alkynes Made-to-Order with Light, in Air and Water

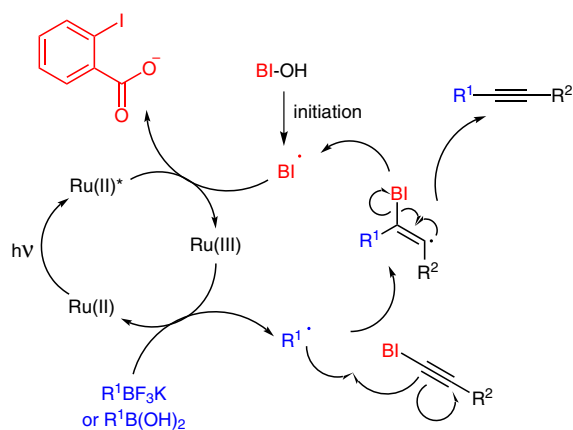
Representative reaction:



Selected examples:



Proposed mechanism:



Significance: Chen and co-workers report a versatile preparation of internal alkynes via direct C(sp³)-C(sp) bond formation that is tolerant of air and water but does not require strong oxidants or high temperatures. Moderate to good yields are obtained, even with substrates bearing sensitive functional groups that are prone to undergo a variety of side reactions under other conditions. Reaction progress proceeds linearly with blue light irradiation in both organic-aqueous and entirely aqueous systems.

Comment: Detailed control experiments support a radical-based mechanism that depends on a redox-neutral coupling of the ruthenium catalyst and benziodoxole (BI) moiety, explaining why strong oxidants are not required for the transformation and why hydroxybenziodoxole (BI-OH) must be added at the start of the reaction. It is particularly noteworthy that the reaction produces significant yields of products bearing functional groups that are radical-sensitive, such as alkyl halides and terminal alkenes.

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