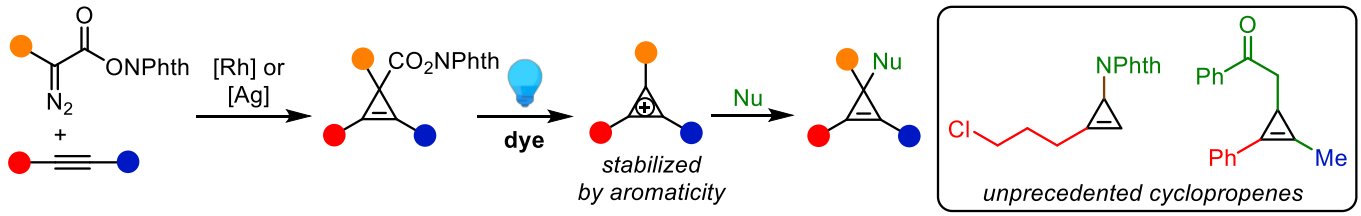
Photocatalytic generation of cyclopropenium cations

Vladyslav Smyrnov, Jerome Waser

[1]Laboratory of Catalysis and Organic Synthesis (LCSO), Institute of Chemical Sciences and Engineering (ISIC), EPFL
vladyslav.smyrnov@epfl.ch

We report photocatalytic decarboxylative functionalization of cyclopropenes (Scheme 1). Cyclopropenylphthalimides are obtained starting from a broad range of redox-active ester-substituted cyclopropenes in the absence of a nucleophile. Moreover, different carbon and heteroatom nucleophiles can be introduced when the acidic additive is present in the mixture. The mechanistic studies provide support for the radical-polar crossover mechanism proceeding through the formation of an aromatic cyclopropenium cation, followed by trapping with the nucleophiles.

.



Scheme 1. Photocatalytic decarboxylative functionalization of cyclopropenes