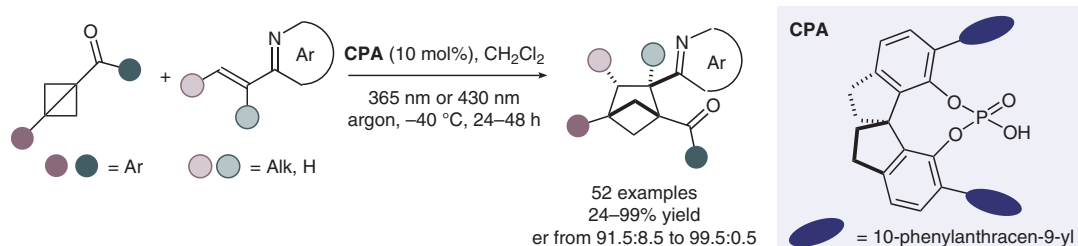
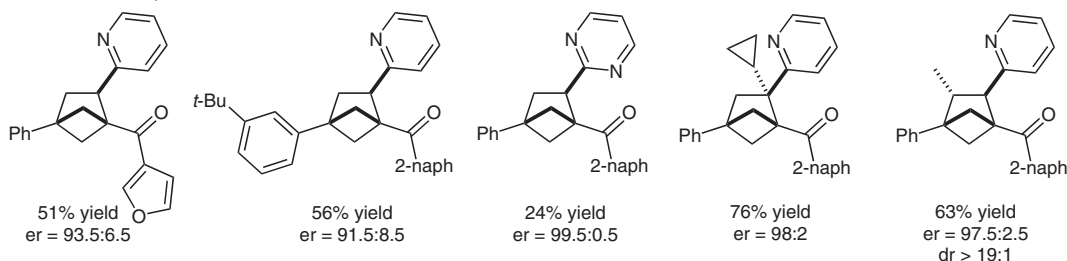


Q. FU, S. CAO, J. WANG*, X. LV*, H. WANG, X. ZHAO, Z. JIANG* (HENAN NORMAL UNIVERSITY, XINXIANG AND HENAN UNIVERSITY, KAIFENG, P. R. OF CHINA)
 Enantioselective $[2\pi + 2\sigma]$ Cycloadditions of Bicyclo[1.1.0]butanes with Vinylazaarenes through Asymmetric Photoredox Catalysis
J. Am. Chem. Soc. **2024**, *146*, 8372–8380, DOI: 10.1021/jacs.3c14077.

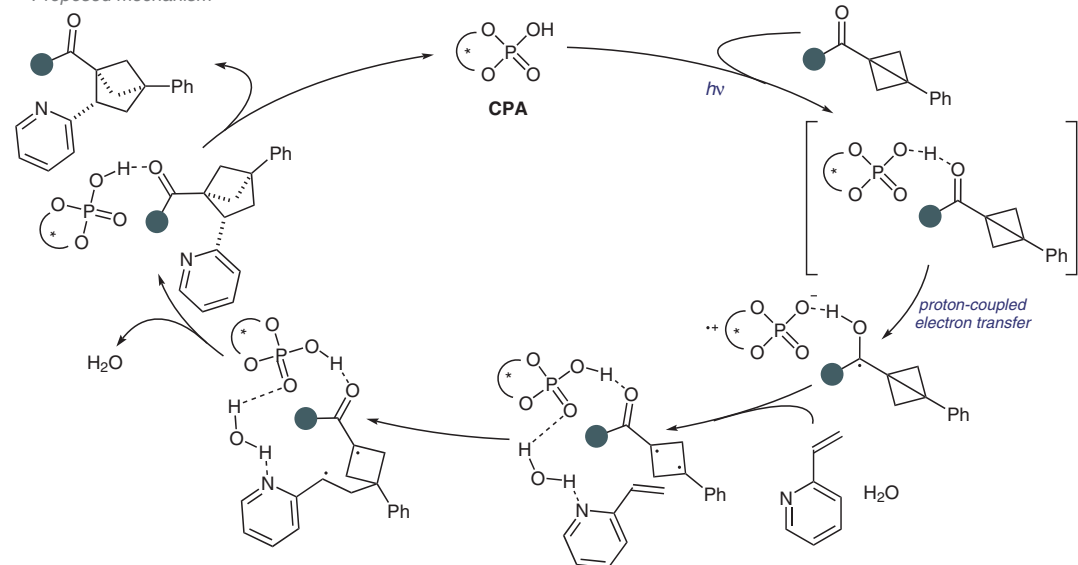
Cooperative Photoredox and Chiral Brønsted Acid Catalysis Permits Asymmetric $[2\pi+2\sigma]$ Cycloaddition



— Selected examples



— Proposed mechanism



Significance: Wang, Lv, Jiang, and co-workers disclosed an asymmetric photoredox and Brønsted acid-catalyzed $[2\pi+2\sigma]$ cycloaddition of bicyclobutanes and vinyl azaarenes. The chiral cycloadducts are furnished in mostly moderate to very good yields with good to excellent enantioselectivity.

Comment: Introducing 10-phenylanthracen-9-yl substituents into the chiral phosphoric acid transforms the catalyst into a bifunctional entity, both capable of providing a chiral environment and serving as a photosensitizer for the cycloaddition. We highly anticipate an experimental validation of the proposed water-assisted radical addition step.

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Organo- and Biocatalysis

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$[2\pi+2\sigma]$ cycloaddition

bicyclobutanes

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