Asymmetric 1,2-Dicarbofunctionalization of Alkenes with Copper/Chiral Phosphoric Acid System

Significance: Owing to their ready availability, asymmetric dicarbofunctionalization of alkenes remains an important topic in catalysis. The authors report a three-component asymmetric difunctionalization of 1,1-disubstituted alkenes with a radical initiator and heteroaryl nucleophile using copper and chiral phosphoric acid (CPA) catalyst.

Comment: The reaction proceeds through a Kharasch-type addition across the unactivated olefin, whereupon the resultant tertiary radical undergoes a SET to form a tertiary cation. The CPA's H-bonding affects the facial selectivity of the attack of the indole moiety in an asymmetric fashion to form the products.

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