A. G. AMADOR, E. M. SHERBROOK, T. P. YOON* (UNIVERSITY OF WISCONSIN–MADISON, USA)
Enantioselective Photocatalytic [3+2] Cycloadditions of Aryl Cyclopropyl Ketones

Gd-Catalyzed Photocycloaddition of Aryl Cyclopropyl Ketones to Alkenes

Significance: The authors report a gadolinium-catalyzed asymmetric [3+2] photocycloaddition of aryl cyclopropyl ketones with alkenes. A variety of chiral cyclopentanes were obtained in high yields (≥95%) and stereoselectivities (up to >99% ee and dr up to >20:1).

Comment: This result demonstrates that a combination of a chiral Lewis acid and photoredox catalysis offers a robust and potentially general approach to photochemical stereocontrol that is broadly applicable to the increasing number of powerful transformations achievable by using photoredox catalysis.

**Selected examples:**

- **90% yield**
  - 93% ee, dr = 3:1

- **77% yield**
  - 96% ee, dr = 3:1

**Proposed mechanism:**

This document was downloaded for personal use only. Unauthorized distribution is strictly prohibited.