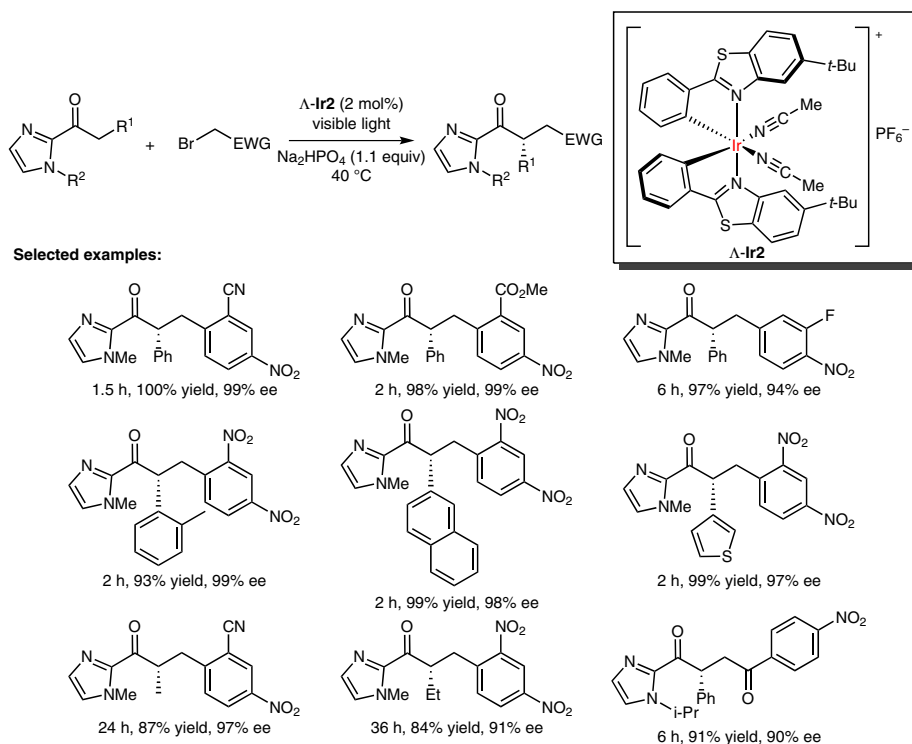


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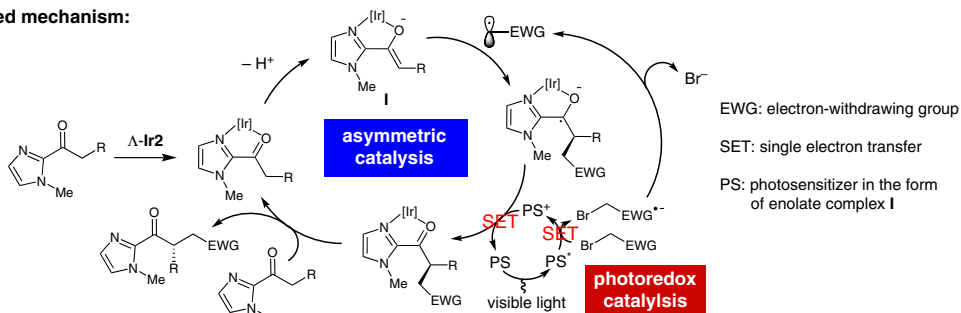
Asymmetric Photoredox Transition-Metal Catalysis Activated by Visible Light

Nature **2015**, *515*, 100–103.

Asymmetric Alkylation via Photoredox Pathway Using a Chiral Iridium Complex



Proposed mechanism:



Significance: The authors demonstrate a unique example of asymmetric redox catalysis achieved by visible light. Two catalytic cycles are connected by the key intermediate, an iridium(III) enolate complex, which is an active photosensitizer generated in situ.

Comment: This process provides very mild conditions and excellent yields and enantioselectivities. The reaction proceeds via a photoredox mechanism, supported by X-ray, radical trapping, luminescence quenching, and interval experiment analyses.

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Category

**Metal-Catalyzed
Asymmetric
Synthesis and
Stereoselective
Reactions**

Key words

**photoredox
catalysis**

**enantioselective
alkylation**

2-acyl imidazoles

visible light

iridium

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