Stereoselective [3+2] Cycloaddition of Imino Esters with Nitroalkenes

**Significance:** A library of solid-phase imidazoline–aminophenol/metal catalysts was prepared and a high-throughput screening method employing analysis by circular dichroism spectroscopy was used to find the most selective catalyst. This is the first method to generate exo' products in high diastereoselectivity and with excellent ee values.

**Comment:** The exo' stereochemistry suggests that the mechanism is not a concerted [3+2] cycloaddition. The authors propose a stepwise mechanism that involves 1,4-addition followed by a Mannich-type reaction as shown above.

**Proposed reaction mechanism:**

1,4-addition → Mannich reaction

**Selected examples:**

- 99% yield, dr = 82:16:1:1, 97% ee
- 67% yield, dr = 89:11:0:0, 96% ee
- 94% yield, dr = 80:17:0:3, 96% ee
- 88% yield, dr = 68:28:0:4, 92% ee

**16 examples:** up to 99% yield, dr up to 92:7:0:1