Copper-Catalyzed Asymmetric [4+1] Annulation of Sulfur Ylides

**Significance:** The authors report a copper-catalyzed asymmetric [4+1] cycloaddition by trapping copper–allenylidene dipolar intermediates with sulfur ylides. A variety of chiral indolines were obtained with high stereoselectivities (≥98% ee and dr > 95:5).

**Comment:** This reaction affords an opportunity for the ready synthesis of chiral indoline products and related cycloadducts with high stereoselectivities. Mechanistic studies suggest that this reaction is a sequential process that involves decarboxylative propargylation/S$_2$N$_2$ reactions promoted by binuclear copper complexes.

**Plausible mechanism:**

**Selected examples:**

- 94% yield, 95% ee
- 99% yield, 94% ee
- 92% yield, 98% ee
- 99% yield, 95% ee

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