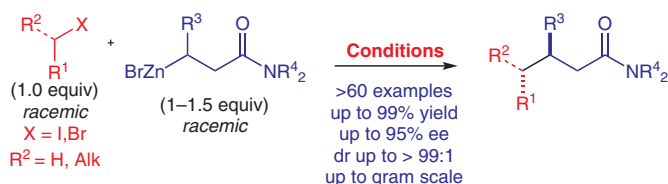


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Catalyst-Controlled Doubly Enantioconvergent Coupling of Racemic Alkyl Nucleophiles and Electrophiles

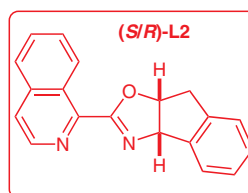
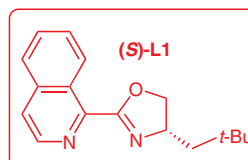
*Science* 2020, 367, 559–564.

# Nickel-Catalyzed Enantioconvergent Coupling of Racemic Partners

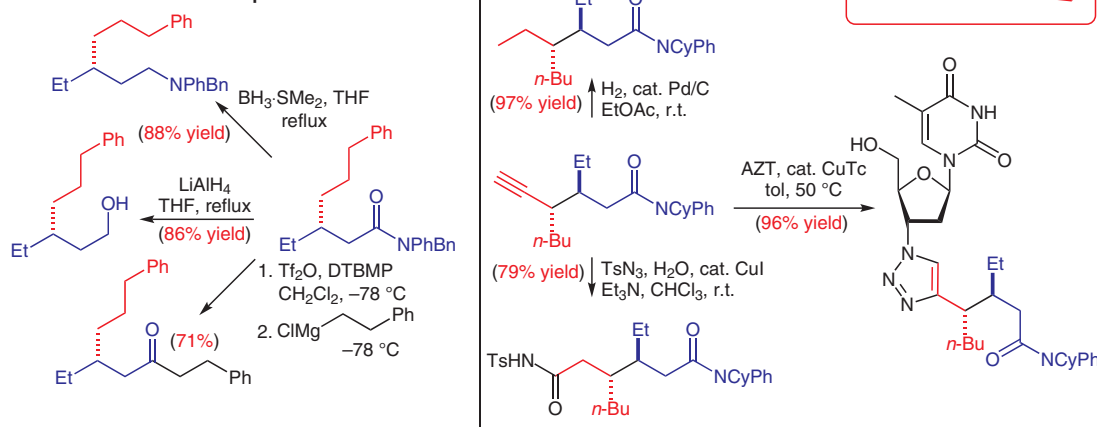


## Conditions:

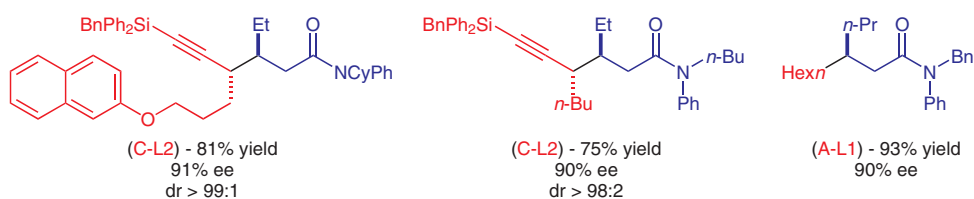
- A)  $NiCl_2$ -glyme (10 mol%), (S)-L1 (12 mol%),  $Ph_2P(CH_2)_5PPh_2$  (10 mol%), THF,  $-5^\circ C$   
B)  $NiCl_2$ -glyme (12 mol%), (S)-L1 (15 mol%),  $Ph_2P(CH_2)_5PPh_2$  (9 mol%), THF,  $5^\circ C$   
C)  $NiBr_2$ -glyme (10 mol%), (S/R)-L2 (13 mol%), LiCl (1.2 equiv), THF, r.t.



## Selected derivatizations of products:



## Selected examples:



**Significance:** Fu and co-workers report a nickel-catalyzed doubly enantioconvergent alkyl–alkyl coupling of racemic partners that proceeds with unprecedented selectivity. The authors employed a chiral nickel catalytic system that generates the product as a single stereoisomer from racemic propargylic halides and racemic  $\beta$ -zincated amides.

**Comment:** The authors propose that the enantioconvergence of the starting materials is facilitated by a radical intermediate arising from both starting materials. The presence of radical intermediates was inferred by the TEMPO adducts formed from both the electrophile and nucleophile partners in the mechanistic study.

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Key words

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enantioconvergent coupling

alkyl nucleophiles

$sp^3$ – $sp^3$  bond

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