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Chiral Covalent Organic Cages: Structural Isomerism and Enantioselective Catalysis J. Am. Chem. Soc. **2024**, 146, 6638–6651, DOI: 10.1021/jacs.3c12555.

## Enantioselective Michael Addition Using Ni(OAc)<sub>2</sub>-Chiral Covalent Organic Cage Complexes



**Significance:** Chiral covalent organic cages (**CCOC-1** and **2**) were prepared from 5,10-di(3,5-di-formylphenyl)-5,10-dihydrophenazine and (1R,2R)-cyclohexanediamine according to equation 1. A **CCOC**–Ni(OAc)<sub>2</sub> complex, generated in situ, promoted the enantioselective Michael addition of 2-acetylazaarenes with *E*-nitroalkenes in the presence of DIPEA to afford the corresponding Michael adducts in up to 94% yield with 96:4 er (eq 2).

**Comment: CCOCs** were characterized by means of NMR measurements, FT-IR, MALDI-TOF-MS, SEM, XRD, PXRD, XANES, EXAFS and UV/Vis. In the enantioselective Michael addition of 1-(5-chloro-2-pyr-idinyl)ethenone with *E*- $\beta$ -nitrostyrene, the **CCOC-2**-Ni(OAc)<sub>2</sub> complex was recovered and reused four times without significant loss of its catalytic activity and enantioselectivity (5<sup>th</sup> run; >78% yield, 93:7 er).

## Category

Polymer-Supported Synthesis

## Key words

chiral covalent organic cages

nickel catalysis

enantioselective Michael addition

