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Chiral Cationic $Cp^XRu(II)$ Complexes for Enantioselective Yne–Enone Cyclizations
*J. Am. Chem. Soc.* **2015**, *137*, 12478–12481.

# Ruthenium-Catalyzed Asymmetric Yne–Enone Cyclizations

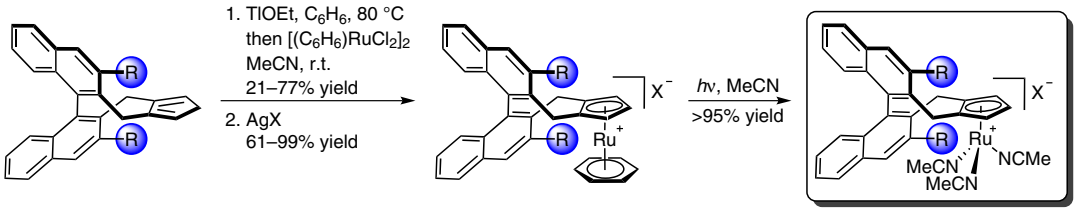
**Category**

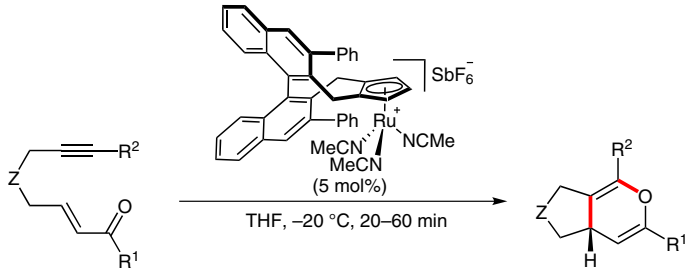
**Metal-Catalyzed Asymmetric Synthesis and Stereoselective Reactions**

**Key words**

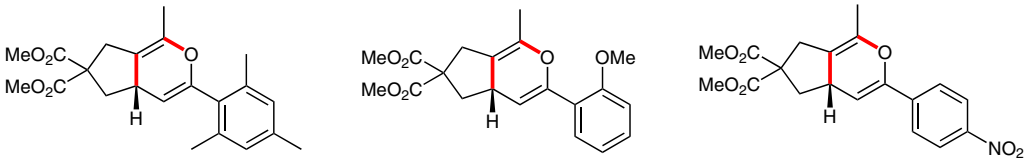
**asymmetric catalysis**
**ligands**
**cyclization**
**alkynes**
**enones**
**ruthenium**

**Synthesis of the chiral $Cp^XRu^{II}$ complexes:**



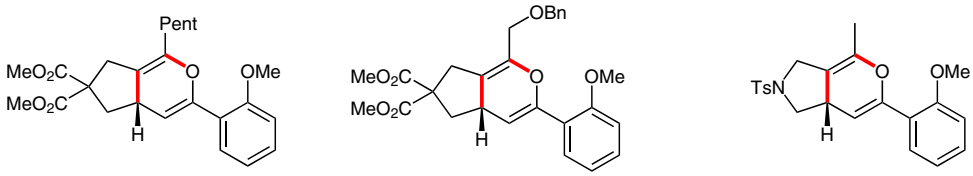

**Selected examples:**




71% yield
er = 97:3

87% yield
er = 98.5:1.5

95% yield
er = 89:11




78% yield
er = 99:1

72% yield
er = 98:2

95% yield
er = 98:2

**Significance:** The authors report asymmetric yne–enone cyclizations catalyzed by chiral cationic $Cp^XRu^{II}$ complexes. A variety of 4*H*-pyrans were obtained in good yields (≤95%) and high enantioselectivities (er ≤ 99:1).

**Comment:** A new class of chiral $Cp^XRu^{II}$ complexes was synthesized that provide opportunities for the development of synthetically valuable enantioselective transformations.

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Synfacts 2015, 11(12), 1275 Published online: 17.11.2015
**DOI:** 10.1055/s-0035-1560930; **Reg-No.:** H15015SF

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