Ruthenium-Catalyzed Z-Selective Cross-Metathesis of Allylic Alcohols

**Significance:** The authors describe a ruthenium complex catalyzed Z-selective cross-metathesis to afford (Z)-allylic alcohols. The reaction conditions are very mild and a wide range of functional groups (for example, aldehydes, carboxylic acids, phenols, and enol ethers) is tolerated.

**Comment:** Using a ruthenium–disulfide complex, highly valuable (Z)-alkenes are obtained from easily available alkenes and (Z)-allylic alcohols. Theoretical studies provide a better understanding of this catalyst design.

**Selected examples:**

- 72% yield, \( Z/E = 96:4 \)
- 65% yield, \( Z/E = 93:7 \)
- 80% yield, \( Z/E = 98:2 \)
- 68% yield, \( Z/E = 98:2 \)
- 80% yield, \( Z/E = 94:6 \)
- 70% yield, \( Z/E = 96:4 \)
- 63% yield, \( Z/E = 92:8 \)
- 54% yield, \( Z/E = 87:13 \)

**Application to a formal total synthesis:**

Neopeltolide (antitumor)

Leucascandrolide A (cytotoxic)