Cyclopropanation of Alkenes via a Siloxycarbene–Palladium Complex

![Chemical structure](image)

**Selected examples:**

- 89% yield, dr = 1.8:1
- 77% yield, dr = 2.4:1
- 88% yield, dr = 2.8:1
- 74% yield, dr = 1.5:1
- 62% yield, dr = 2.1:1
- 78% yield, dr = 1.9:1
- 64% yield, dr = 1.5:1
- 92% yield, dr = 1.7:1
- 95% yield, dr = 1.6:1

**Proposed mechanism:**

**Derivatizations:**

- 51% yield
- 55% yield

**Significance:** The authors reveal that, under palladium catalysis, an acylsilane can serve as a source of an electron-rich carbene to undergo cyclopropanation with an alkene. The corresponding siloxy cyclopropanes serve as valuable homonenolates, as demonstrated through various derivatizations.

**Comment:** Both electron-neutral and electron-rich alkenes were compatible substrates in the cyclopropanation; however, electron-rich alkenes were more reactive, suggesting an electrophilic metal carbene species is involved in the catalytic pathway. DFT studies indicate that the mechanism of the cyclopropanation proceeds through a [2+2] cycloaddition to form a palladycyclobutane intermediate.