**C–C Bond Formation Using Nickel-Photoredox Catalysis**

**Significance:** The authors developed a nickel-photoredox-catalyzed C(sp³)–H functionalization of a variety of unactivated alkyl or benzyl compounds using chloroformate derivatives. Mild coupling conditions allow the tolerance of several functional groups, leading to the corresponding carbonyl compounds in good yields.

**Comment:** From a mechanistic point of view, the authors hypothesized a catalytic cycle, which starts with an oxidative addition of chloroformate to a nickel(0) species. A SET forms a nickel(III) intermediate, which undergoes subsequent photoelimination, leading to a chlorine radical. Following H-abstraction results in a carbon-centered radical. Addition of the nickel(II) complex and subsequent reductive elimination affords the carbonyl compound.

![Chemical Reaction](image)

\[ R^1 \left(\text{Cl}\right) + H_2R^2 \rightarrow \text{R}^1\text{R}^2 \]

**Selected examples:**

- 55% yield
- 62% yield
- 68% yield (α:β:γ:δ 1:8:4.6)
- 66% yield (α:β 32:1)
- 60% yield
- 64% yield
- 55% yield
- 73% yield
- 85% yield (β:γ:δ 2.1:5.4:1)
- 57% yield (α:β:γ:δ 1:3:20.5:4)
- 40% yield (α:β:γ:δ 1:1.6:3.1, dr 1.8:1)

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**Category:** Metals in Synthesis

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