

ジルコノセンを利用したアルキルクロリドの二量化反応の開発
Dimerization of Benzyl Chlorides Enabled by Zirconocene and Photoredox
Catalysis

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The bibenzyl skeleton is frequently found in natural products and other biologically active substances. Radical homocoupling provides a straightforward approach for the synthesis of bibenzyls in a single step, and the reductive homocoupling of benzyl halides has been vigorously developed. Contrasting to benzyl bromides and other designed precursors used in visible light-mediated homocoupling, benzyl chlorides are more abundant and chemically stable. However, chemoselective cleavage of the C-Cl bond remains challenging, and a small collection of studies has been reported so far. Herein, we report a catalytic reductive homocoupling of benzyl chlorides using zirconocene and photoredox catalysis. This cooperative catalytic system enables C-Cl bond cleavage of benzyl chlorides under mild conditions and facilitates the homocoupling of a broad array of benzyl chlorides, including the derivatives of pharmaceutical agents. The preliminary mechanistic investigations indicated the crucial role of hydrosilane in the catalytic cycle.

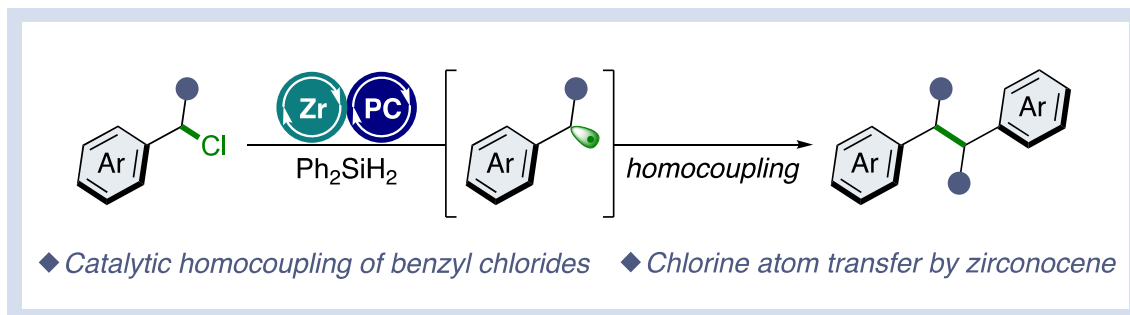


Figure. Catalytic Reductive Homocoupling of Benzyl Chlorides

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