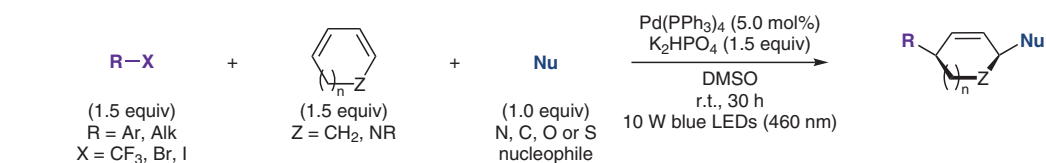


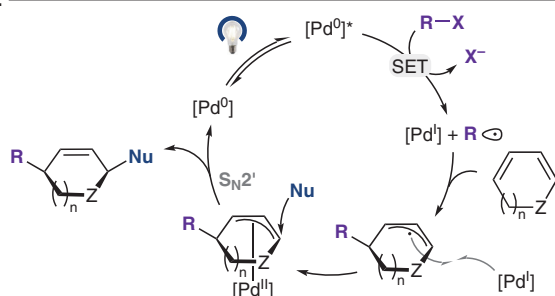
Y. LIANG, T. BIAN, K. YADAV, Q. ZHOU, L. ZHOU, R. SUN, Z. ZHANG* (ZHEJIANG NORMAL UNIVERSITY, JINHUA, P. R. OF CHINA AND UNIVERSITY OF HAWAI'I AT MĀNOA, HONOLULU, USA)

Selective 1,4-*syn*-Addition to Cyclic 1,3-Dienes via Hybrid Palladium Catalysis
ACS Cent. Sci. 2024, 10, 1191–1200, DOI: 10.1021/acscentsci.4c00094.

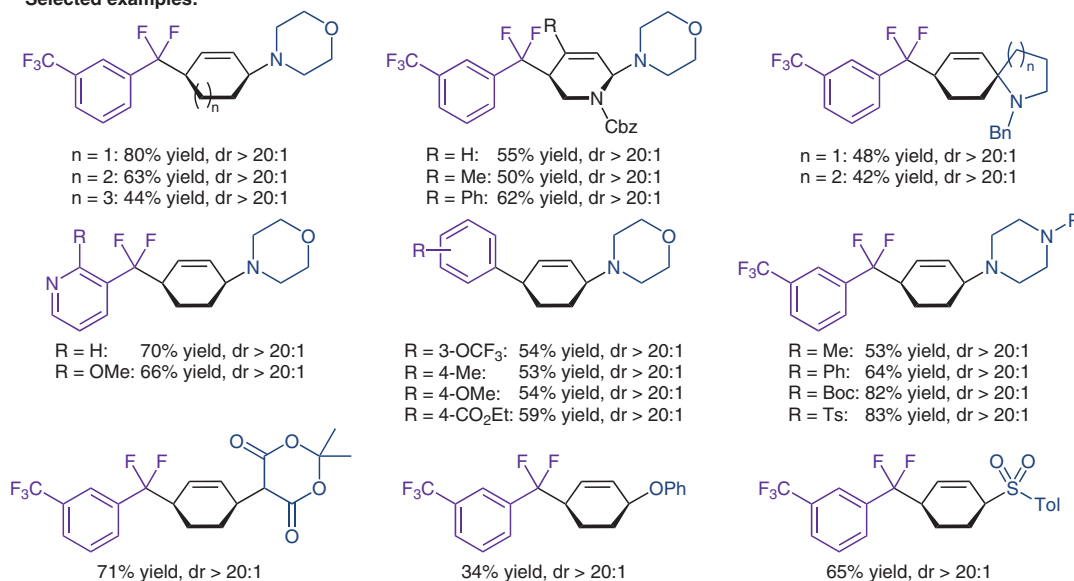
Photoinduced Palladium-Catalyzed 1,4-*syn*-Difunctionalization of Cyclic 1,3-Dienes



— Proposed mechanism:



— Selected examples:



Significance: A hybrid palladium-catalyzed protocol for the synthesis of 1,4-*cis*-substituted cyclic frameworks from 1,3-dienes, alkyl or aryl halides and a diverse array of nucleophiles is disclosed. This mild method features a broad substrate scope and exceptional 1,4-*syn*-addition selectivity (dr >20:1).

Comment: The proposed radical-polar crossover mechanism with reverse facial selectivity is supported by density functional theory calculations and experimental studies such as radical trap and Stern–Volmer quenching experiments.

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Category

Metals in Synthesis

Key words

1,4-*syn*-addition
cyclic 1,3-dienes
palladium catalysis
photocatalysis

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