

# Sequential 3d-Metal-Catalyzed Dienylation and Cycloaddition for Bioactive Scaffold Construction

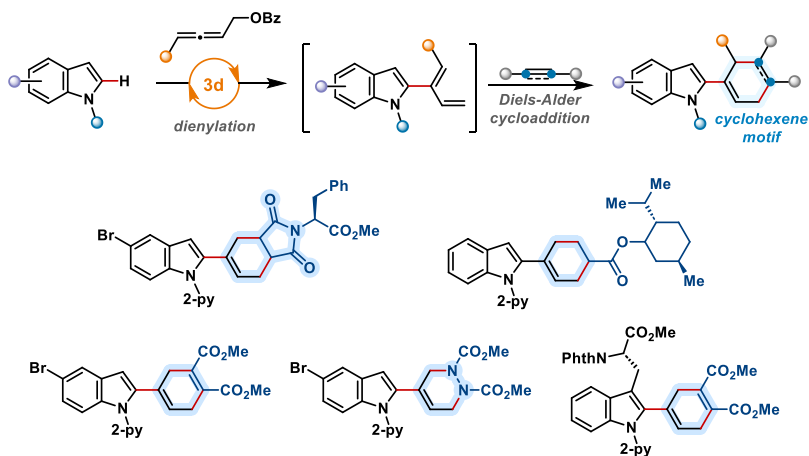
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## Abstract

We report a sequential 3d-transition-metal-catalyzed dienylation and cycloaddition strategy for the rapid construction of structurally diverse and bioactive molecular scaffolds. Using earth-abundant 3d metals, this methodology enables site-selective C–H functionalization of heteroaromatic systems, followed by an efficient in situ cycloaddition process to generate complex alicyclic frameworks in a one-pot manner. A broad range of dienophiles can be incorporated, providing access to architecturally rich polycyclic structures from simple starting materials. Mechanistic studies support a reversible C–H activation process involving a metallacyclic intermediate, which underpins the high selectivity and modularity of the transformation. This sequential catalytic platform offers a streamlined and sustainable approach to the synthesis of bioactive scaffolds, including indole-based hybrids of potential pharmaceutical relevance.



## Reference

1. Park, J.; Kim, D. Y.; Park, Y.; Lee, J.; Lee, S.; Kim, M.; Kim, K. W.; Son, J. *Org. Lett.* **2025**, *27*, 8411-8416.