

PALLADIUM-CATALYZED HYDROSILYLATION OF GEM-DIFLUOROALLENES

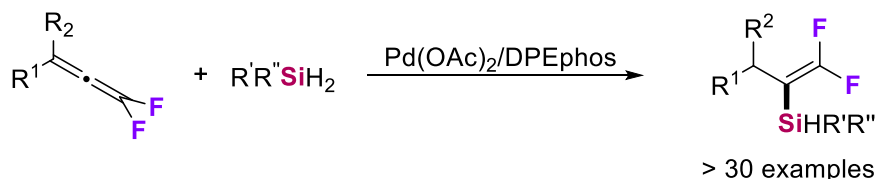
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Gem-Difluoroalkenes represent a significant structural motif in both biological and synthetic applications. The addition reactions of *gem*-difluoroalkenes with X-H bonds (X = C, O, N, S, P) have been extensively studied. However, the catalytic Si-H bond hydrosilylation remains a longstanding challenge. Herein, we have developed a concise and efficient catalytic method access to relevant difluoro-vinylsilanes by palladium-catalyzed hydrosilylation of *gem*-difluoroallenes. This reaction proceeds under mild conditions, demonstrating good adaptability and suitability for late-stage functionalization of natural products. Density Functional Theory (DFT) studies were employed to elucidate the key state transition in the palladium-catalyzed hydrosilylation of *gem*-difluoroallenes, providing insights into the control of regioselectivity in the reaction. This work provides, for the first time, an innovative and unique mode of regioselective control in *gem*-difluoroallene transformations allowing the obtention of new original difluoro-vinylsilanes, which can serve as platform for further chemical transformations.



- Excellent regioselectivity
- Good functional group tolerance
- Broad substrate scope
- Comprehensive mechanistic studies

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