

Accepted Manuscript

Review

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PII: S2095-9273(18)30273-1
DOI: <https://doi.org/10.1016/j.scib.2018.06.002>
Reference: SCIB 430

To appear in: *Science Bulletin*

Received Date: 16 April 2018
Revised Date: 27 May 2018
Accepted Date: 28 May 2018



Please cite this article as: L. Yu, R. Qian, X. Deng, F. Wang, Q. Xu, Calcium-catalyzed reactions of element-H bonds, *Science Bulletin* (2018), doi: <https://doi.org/10.1016/j.scib.2018.06.002>

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Accepted 16-April-2018, Revised 27-May-2018, Received 28-May-2018

Calcium-catalyzed reactions of element-H bonds

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ABSTRACT: Investigation on organocalcium catalysis is just unfolding during the past decade. Beside conventional Ca salts with strong electron-withdrawing counter anions that may serve as Lewis acid catalysts, many Ca complexes have also been designed recently and found to be good catalysts in activation of element-H (E-H) bonds like transition metal catalysts. These findings are interesting and may attract the interest of the chemists. Due to the great abundance, non-toxicity, and biocompatible features of Ca element, Ca-catalyzed reactions can be of great significance from the viewpoint of industry. This short review summarizes the recent advances on Ca-catalyzed reactions of E-H bonds. We hope that it may provide a useful guide for interested readers from both the academy and industry.

KEYWORDS: Calcium, organic reaction, green chemistry, addition, hydrofunctionalization

1. Introduction

Reactions (addition, coupling, etc) of element-H bonds (E-H, E = O, S, N, P, C, Si, B, H, etc.) with organic compounds can provide efficient tools to introduce functional groups into a variety of organic molecules [1–5]. Due to the high atomic economy and generation of very few wastes, these reactions are of good application values in

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