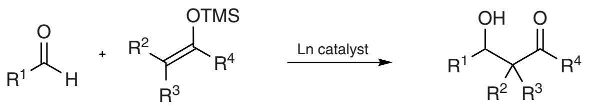
Abstracts

2011 p 1

2.12.15 Organometallic Complexes of Scandium, Yttrium, and the Lanthanides

P. Dissanayake, D. J. Averill, and M. J. Allen

This manuscript is an update to the existing *Science of Synthesis* chapter on organometallic complexes of lanthanides. It summarizes the synthesis of β-hydroxycarbonyl compounds using lanthanide-containing catalysts in Mukaiyama aldol reactions. Early investigations as well as recent improvements to lanthanide-containing catalysts with respect to substrate scope and enantioselectivity are included.



Keywords: aldol reaction · catalysis · β-hydroxycarbonyl · lanthanide · Mukaiyama

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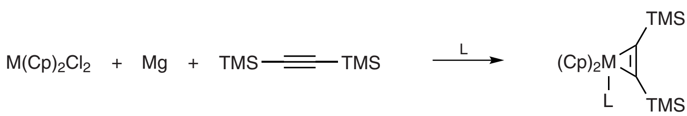
2.14 Product Class 14: Group 4 Metallocene Complexes with Bis(trimethylsilyl)acetylene

T. Beweries and U. Rosenthal

This manuscript describes the methods for the synthesis and application of group 4 metallocene–bis(trimethylsilyl)acetylene complexes. Recent interest in this area has been generated by the fact that metallocenes play an important role in numerous catalytic and stoichiometric applications, including the formation of metallacycles, which can serve as model compounds for such highly interesting reactions as the oligomerization of ethene to linear alpha alkenes.



M = Ti; no L;
M = Zr; L = THF, py, PMe_3, acetone;
M = Hf; L = py, PMe_3

Keywords: alkyne complexes · titanocenes · zirconocenes · hafnocenes · metallacycles

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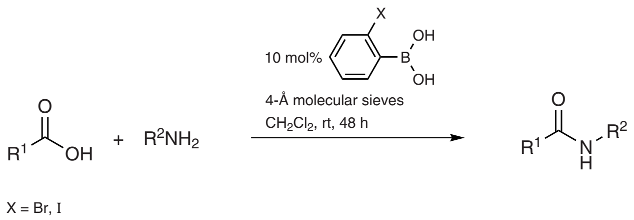
6.1.7.11 **Hydroxyboranes**

D. G. Hall and H. Zheng

This manuscript is an update to the earlier *Science of Synthesis* contribution describing methods for the preparation and application of organoboronic acids (hydroxyboranes) in organic synthesis. It focuses on the literature published in the period 2002–2011.



Keywords: boronic acids · boronic esters · borylation · boronic ester hydrolysis · boronic acid catalysis · cross-coupling reaction · C—C bond formation · C—X bond formation · C—H borylation · hydroxyboranes · organoboronic acids · phase-switch purification

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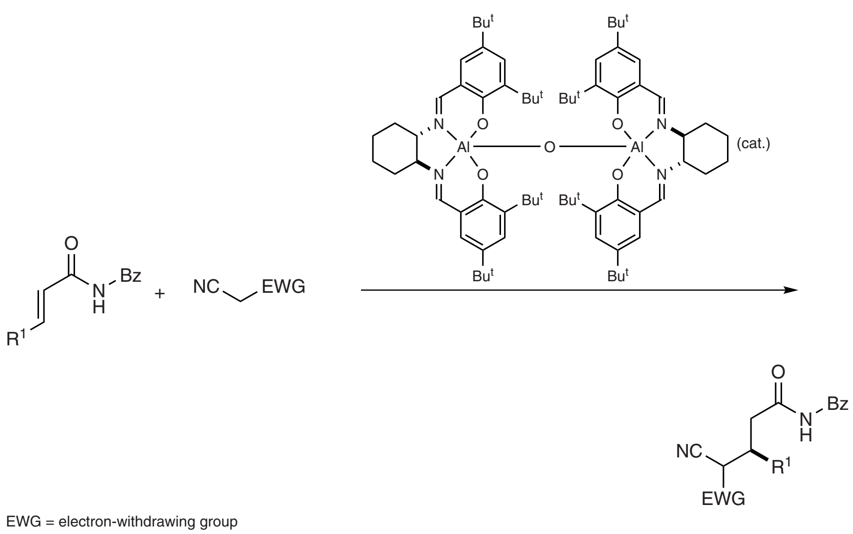
7.1.4.7 **Aluminum Alkoxides and Phenoxides**

K. Ohmatsu and T. Ooi

This manuscript is an update to the earlier *Science of Synthesis* contribution describing the synthesis of aluminum alkoxides and phenoxides. It focuses on the literature published in the period 1999–2010.



Keywords: alkoxides · aluminum compounds · asymmetric catalysis · carbonyl compounds · Lewis acid catalysis · phenoxides

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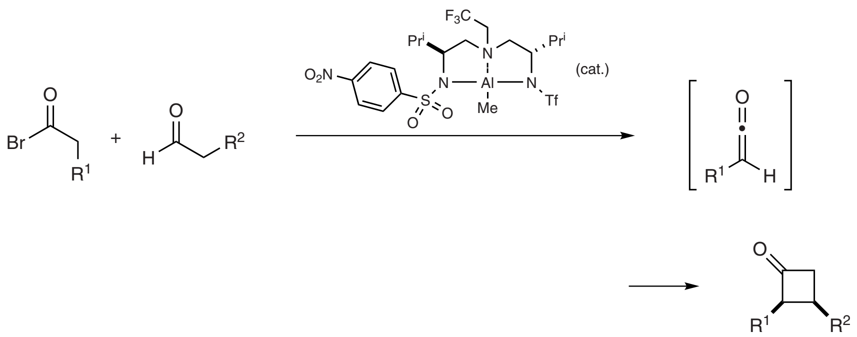
7.1.7.15 **Aluminum Amides**

K. Ohmatsu and T. Ooi

This manuscript is an update to the earlier *Science of Synthesis* contribution on the synthesis of aluminum amides. It focuses on the literature published in the period 1999–2010.



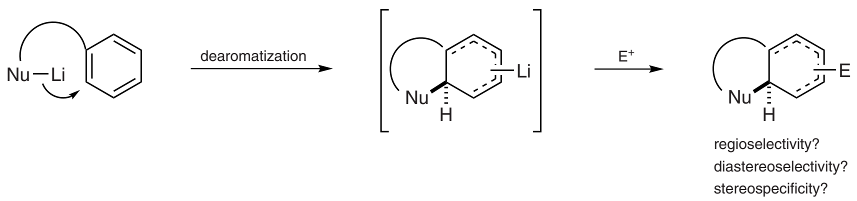
Keywords: aluminum compounds · amides · asymmetric catalysis · carbonyl compounds · coupling reactions · Lewis acid catalysis

New —— p 139 ——

8.1.29 **Dearomatization Reactions Using Organolithiums**

G. Lemière and J. Clayden

Addition of organolithiums to aromatic rings has emerged as a convenient method for the rapid construction of functionalized carbocyclic and heterocyclic compounds. These dearomatization reactions of readily available activated or unactivated aromatic rings often occur with a high degree of selectivity. Developments in the intramolecular version of this process known as dearomatizing cyclization have allowed access to various polycyclic frameworks with well-defined relative stereochemistry. Several strategies have been employed to carry out asymmetric organolithium-mediated dearomatizations efficiently and some of them have been used as key steps in the synthesis of natural compounds.



Keywords: organolithium · dearomatization · dearomatizing addition · dearomatizing cyclization · rearrangements · stereospecificity

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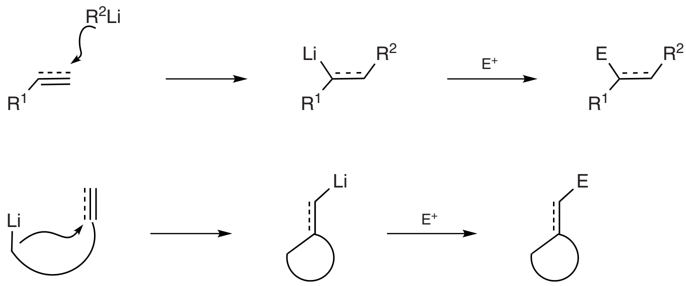
8.1.30 Carbolithiation of Carbon–Carbon Multiple Bonds

E. Lete and N. Sotomayor

This chapter describes relevant synthetic applications of carbolithiation reactions of alkenes and alkynes. Both inter- and intramolecular reactions are discussed, including also enantioselective transformations.



Keywords: carbolithiation · lithiation · lithium compounds · carbanions · carbon–carbon double bonds · carbon–carbon triple bonds · cyclization · diastereoselectivity · enantioselectivity · intramolecular reactions

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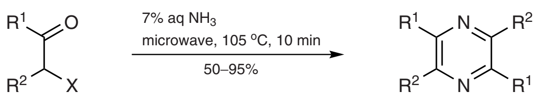
16.14.5 Pyrazines

N. Sato

This manuscript is an update to the earlier *Science of Synthesis* contribution describing methods for the synthesis of pyrazines. It focuses on the literature published in the period 2002–2010, together with some selected references for 2011.



R^1 = aryl, Pr; R^2 = H, Et; R^1,R^2 = $(CH_2)_3$, $(CH_2)_4$, $(CH_2)_6$

Keywords: pyrazines · cyclocondensation · dimerization · cyclization · metalation · halo compounds · cross-coupling reactions · Suzuki coupling · palladium catalyst · microwave irradiation

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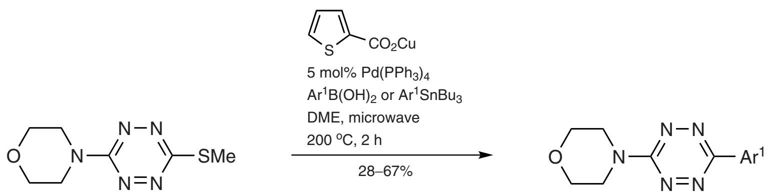
17.3.4 **Six-Membered Hetarenes with More than Three Heteroatoms**

S. L. Castle

This manuscript is an update to the earlier *Science of Synthesis* contribution describing methods for the synthesis of aromatic tetrazines. It focuses on the literature published in the period 2003–2010.



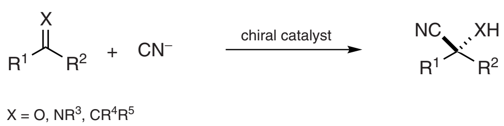
Keywords: nitrogen heterocycles · tetrazines · annulation · aromatization · cross-coupling reactions · dimerization · nucleophilic aromatic substitution

New p 377

19.5.16 **Asymmetric Synthesis of Nitriles**

W. T. Wang, L. L. Lin, X. H. Liu, and X. M. Feng

This manuscript provides an update to the methods for the synthesis of chiral nitriles previously covered in *Science of Synthesis*, Section 19.5. It focuses on the literature published in the period 2003–2011.



Keywords: asymmetric synthesis · cyanation · nitriles · cyanohydrins · cyanosilylation · α-amino nitriles · hydrocyanation · conjugate addition.

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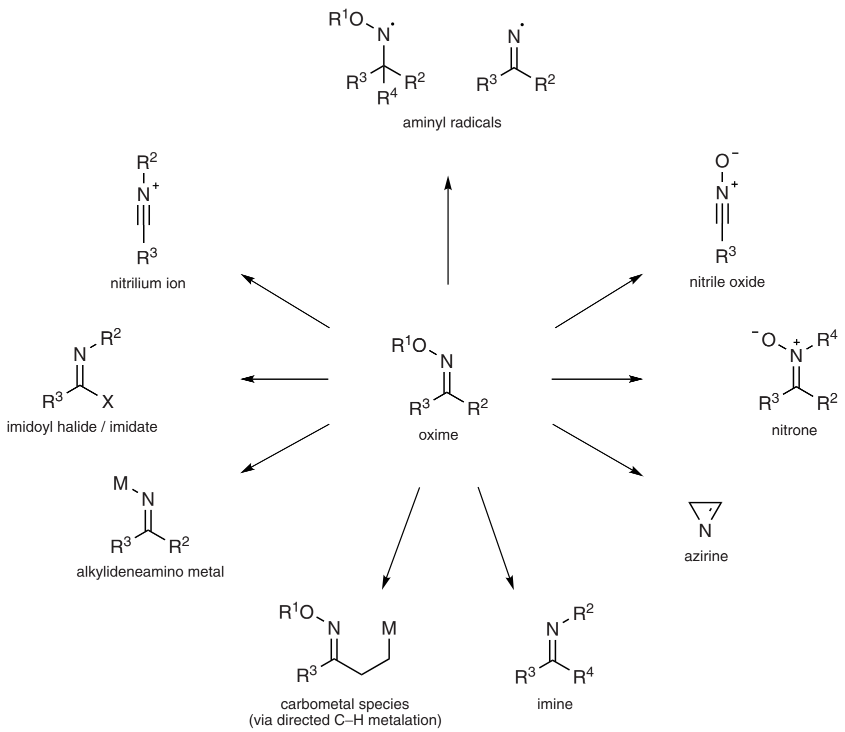
27.15 **Product Class 15: Oximes**

S. Chiba and K. Narasaka

The chemical reactions of oximes are much more diverse than those of N-substituted imines and carbonyl compounds such as ketones. This wide range in the chemical reactivity of oximes is derived from their unique chemical structure, which includes three different atoms (carbon, nitrogen, and oxygen) and a polarized C=N bond. In this chapter, preparation methods and synthetic reactions of oximes and their derivatives are reviewed, covering not only classical but also more-recent literature precedents.



Keywords: oximes · amination · amino compounds · azaheterocycles

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