

Abstracts

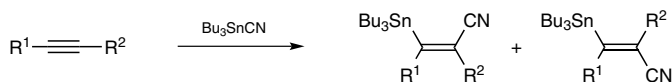
2014

p 1

5.2.16.11 Tin Cyanides and Fulminates

P. B. Wyatt

This chapter is an update to the earlier *Science of Synthesis* contribution (Section 5.2.16) describing synthetic methods that involve tin cyanides and fulminates. It focuses on applications of these compounds reported in the period 2000–2013.



Keywords: cyanation · cyanometalation · ynamines · platinum · catalysis

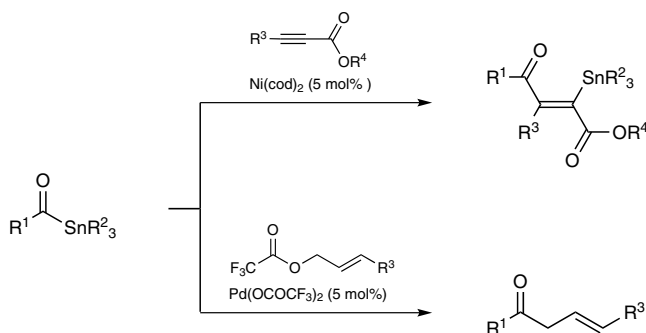
2014

p 3

5.2.17.9 Acylstannanes (Including S, Se, and Te Analogues)

P. B. Wyatt

This chapter is an update to the earlier *Science of Synthesis* contribution (Section 5.2.17) describing synthetic methods that involve acylstannanes and analogues incorporating heavier chalcogens. This update focuses on applications of acylstannanes reported in the period 2000–2013. These include cross-coupling reactions with carbon electrophiles and transition-metal-catalyzed additions to carbon–carbon multiple bonds.



Keywords: acylmetalation · allenes · palladium · nickel · catalysis

2014

p 11

5.2.18.8 Imidoystannanes, Diazoalkylstannanes, Tin Isocyanates, and Tin Isothiocyanates

P. B. Wyatt

This chapter is an update to the earlier *Science of Synthesis* contribution (Section 5.2.18) describing synthetic methods that involve imidoystannanes, diazoalkylstannanes, tin isocyanates, and tin isothiocyanates. It focuses on applications of these compounds reported in the period 2000–2013.

2014

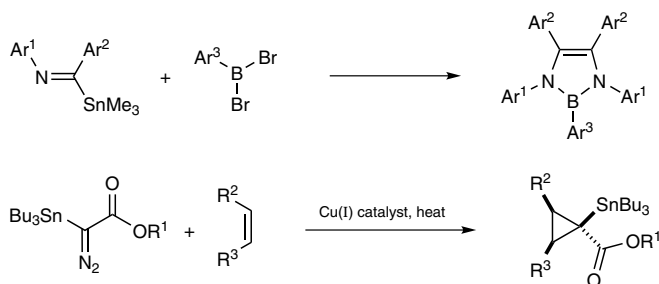
Updated Section ·

2014

Completely Revised Contributions ·

New

New Contributions



Keywords: 1,3,2-diazaboroles · cyclopropanes · copper · N-heterocyclic carbene complexes

New

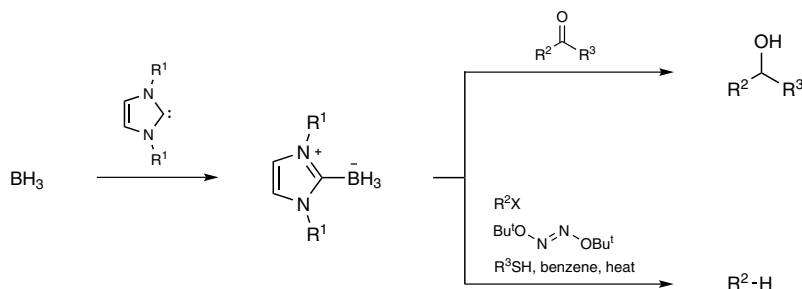
p 13

6.1.42

Product Subclass 42: N-Heterocyclic Carbene Borane Complexes

A.-L. Vallet and E. Lacôte

N-Heterocyclic carbene borane complexes are a family of new reagents for organic chemistry and polymer synthesis. This chapter summarizes first the preparations and modifications of these reagents. It then focuses on the applications of the title compounds as radical hydrogen-atom donors, hydrides, hydroborating reagents, and radical photopolymerization initiators.



Keywords: anionic reagents · boranes · borohydrides · boron compounds · carbenes · hydroboration · polymers · radical reactions · reductions

2014

p 51

10.1

Product Class 1: Benzo[b]furans

H. Kwiecień

This chapter is a revision of the earlier Section 10.1 in *Science of Synthesis*. It describes methods for the synthesis of benzo[b]furans and related compounds such as benzo[b]furan-3(2*H*)- and benzo[b]furan-2(3*H*)-ones. Classical routes to benzo[b]furans involve intramolecular cyclizations of suitably substituted arenes, most often phenols and aryl-oxy carbonyl compounds and their derivatives, or intermolecular cyclization reactions based on 2-halophenols and alkynes. However, very popular metal-catalyzed developments, with various approaches, are also included. Methods for the synthesis of benzo[b]furans from furans by construction of the homocyclic aromatic ring, including homogeneous metal-catalyzed benzannulation, are also presented.

2014

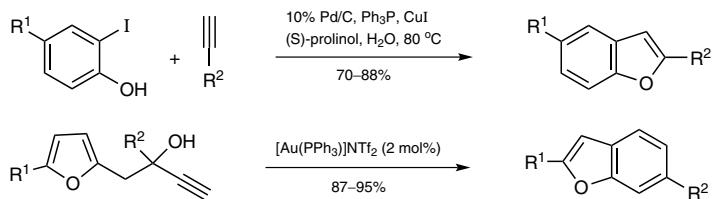
Updated Section ·

2014

Completely Revised Contributions ·

New

New Contributions



Keywords: benzo compounds · benzo[b]furans · benzo[b]furan-3(2*H*)-ones · benzo[b]furan-2(3*H*)-ones · phenols · alkenes · alkynes · halo compounds · carbonyl compounds · palladium catalysts · copper catalysts · cyclization · ring closure · annulation · cross-coupling reactions

2014

p 349

18.16.20 Other Tetraheterosubstituted Methanes

W. Kantlehner

This article is an update to the earlier *Science of Synthesis* contribution (Section 18.16) describing methods for the preparation of tetraheterosubstituted methanes. Tetraalkyl orthocarbonates have turned out to be useful starting compounds for the preparation of low-shrinking polymeric compounds. In addition, new compound types such as tetraazidomethane or tetrakis(oligonitroalkyl) orthocarbonates are reported, some of which have been prepared for the first time.



$X^1 = X^2 = X^3 = X^4 = \text{OR}^1, \text{SR}^1, \text{NR}^1\text{R}^2, \text{PO}(\text{OR}^1)_2$

Keywords: amino(alkylsulfanyl)dialkoxymethanes · aminobis(organosulfanyl)phosphinomethanes · aminobis(organosulfanyl)phosphorylmethanes · amino(organooxy)-bis(organosulfanyl)methanes · aminotris(organosulfanyl)methanes · alkoxybis(alkylsulfanyl)phosphorylmethanes · alkoxytriaminomethanes · alkoxytris(organosulfanyl)methanes · bis(organoamino)(organooxy)sulfanylmethanes · dialkoxybis(alkylsulfanyl)methanes · dialkoxybis(phosphino)methanes · dialkoxydiaminomethanes · diaminobis(organosulfanyl)methanes · tetraalkoxymethanes · tetraheterosubstituted methanes · tetrakis(dialkylamino)methanes · tetrakis(organosulfanyl)methanes · trialkoxy(phosphino)methanes · trialkoxy(phosphoryl)methanes · trialkoxy(alkylsulfanyl)methanes · triamino(organosulfanyl)methanes · triamino(organoselanyl)methanes · tris(alkylsulfanyl)phosphorylmethanes

2014

p 401

27.1.7 Sulfur Ylides

G. Mlostoń and H. Heimgartner

A comprehensive update of methods for the in situ generation of sulfonium ylides (sulfonium methanides, Corey–Chaykovsky reagents) and their applications for the synthesis of more complex molecules via methylene transfer is presented. Sulfonium ylides are widely applied in synthetically relevant reactions, such as cyclopropanation, aziridina-

2014

Updated Section ·

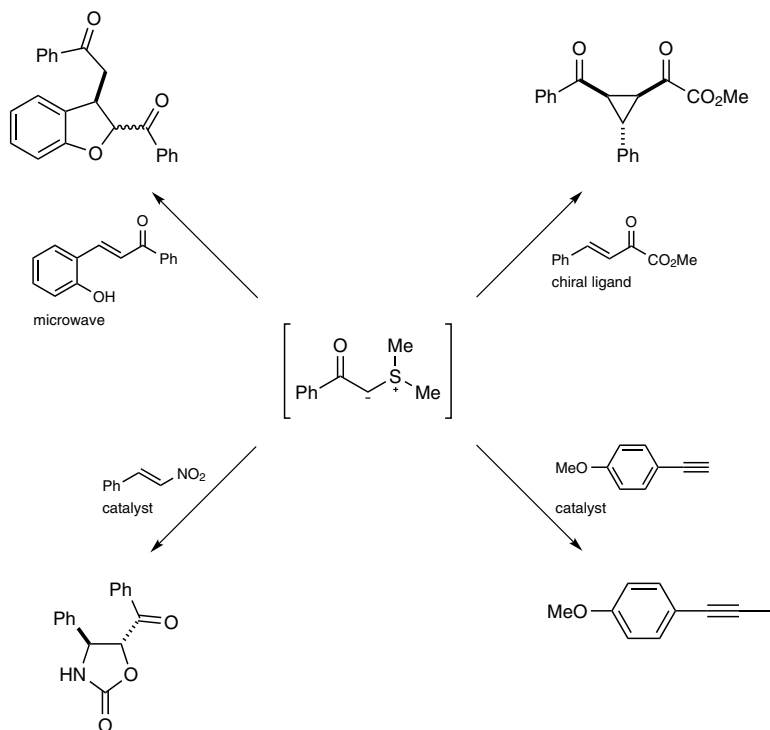
2014

Completely Revised Contributions ·

New

New Contributions

tion, and epoxidation. Asymmetric versions of these processes are also summarized. In the presence of appropriate catalysts, preferably metal salts and/or complexes of gold or palladium, sulfonium ylides can undergo cascade heterocyclizations or C–H-insertion reactions.



Keywords: asymmetric synthesis · aziridination · chemoselectivity · cyclopropanation · epoxidation · heterocycles · insertion reactions · sulfonium ylides · sulfur ylides

2014

p 425

32.3.1.3 1,2-Dihaloalkenes

A. Bredenkamp and S. F. Kirsch

The present chapter is an update to the earlier *Science of Synthesis* contribution Section 32.3.1 (written by Nubbemeyer in 2008) describing general synthetic methods to access 1,2-dihaloalkenes. It focuses on new synthetic developments for this rather broad class of compounds, covering the literature from 2005 until the end of 2013. Some exceptions from before 2005 are included if they are of current interest and are not covered in the original contribution. Due to the vast number of examples in the literature, the current overview does not include methods where new compounds with 1,2-dihaloalkene units

2014

Updated Section ·

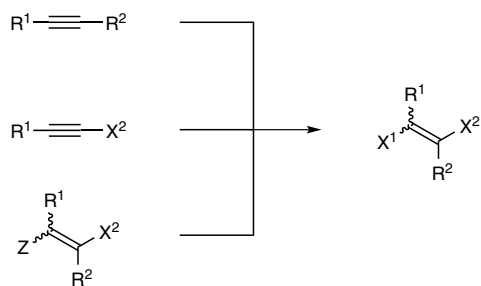
2014

Completely Revised Contributions ·

New

New Contributions

are formed from compounds with the same 1,2-dihaloalkene unit through side-chain manipulations. The focus is on synthetic methods that are capable of newly creating the title 1,2-dihaloalkene moiety. The update does not include halogenations of aromatics or heteroaromatics.



Z = leaving group; $X^1 = X^2 =$ halogen; $R^1 = R^2 =$ H, hydrocarbon

Keywords: iodine · bromine · chlorine · alkynes · halogenations · alkenes