

Abstracts

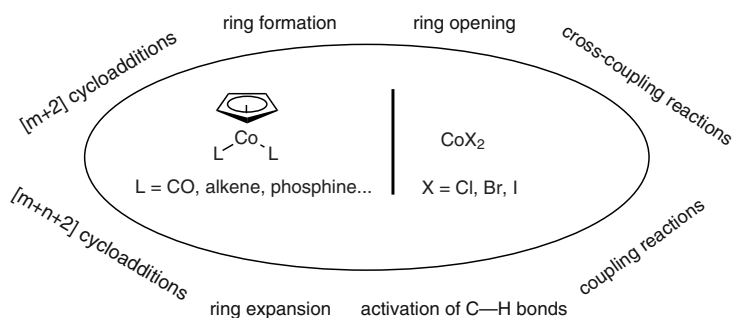
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1.4.5 Organometallic Complexes of Cobalt

M. Amatore, C. Aubert, M. Malacria, and M. Petit

This chapter is an update of the first report on organometallic cobalt complexes in *Science of Synthesis*, Section 1.4. It summarizes the more recent and most relevant advances concerning the synthesis and use of various cobalt complexes. During the decade 2000–2010, two major developments were made concerning cobalt complexes. The first involves the extensive use of cobalt- η^5 -dienyl complexes. The second major advance is the use of more-convenient and easy-to-handle complexes based on cobalt(II) or -(III) salts.



Keywords: cobalt complexes · cobalt catalysis · cocyclization · cyclic compounds · [m + n + 2] cycloadditions · [m + 2] cycloadditions · cross-coupling reactions · C–H bond activation · ring expansion · ring formation · ring opening

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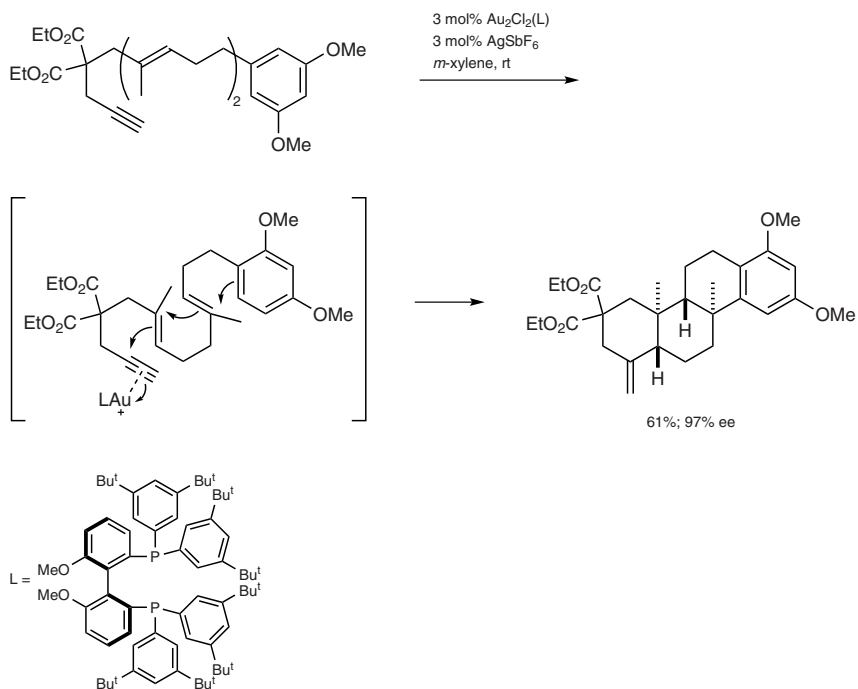
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3.6.14

Organometallic Complexes of Gold (Update 1)*M. J. Campbell and F. D. Toste*

This chapter is a comprehensive review of asymmetric transformations catalyzed by gold salts published between 2005 and 2011. It focuses primarily on gold(I)-catalyzed reactions using enantiomerically enriched chiral phosphines, phosphoramidites, phosphites, and N-heterocyclic carbene ligands.



Keywords: gold · catalysis · asymmetric · cycloisomerization · cyclopropanation · aldol · hydroalkoxylation · hydroamination · hydrogenation · cycloaddition · alkyne · allene · phosphine · phosphoramidite · N-heterocyclic carbene

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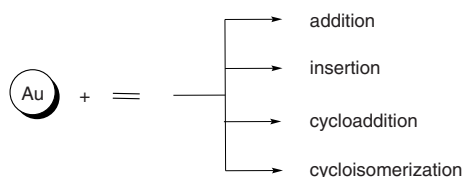
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3.6.15 **Organometallic Complexes of Gold (Update 2)**

T. de Haro, D. Garayalde, and C. Nevado

The strong relativistic effects governing the coordination chemistry of gold have triggered the development of a large number of transformation that take advantage of the interaction of gold(I) and gold(III) complexes with alkenes. In this account, we have aimed to summarize the most relevant reactivity modes stemming from these interactions in homogeneous catalysis.



Keywords: alkene · gold · activation · addition

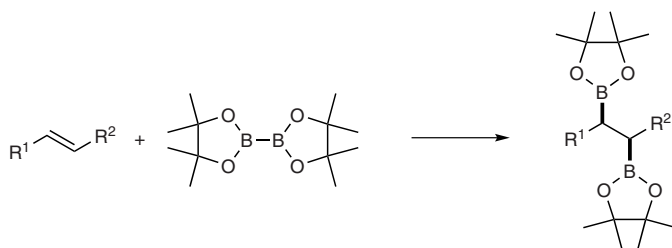
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6.1.3.8 **Diborane(4) Compounds**

G. E. Ferris, S. N. Mlynarski, and J. P. Morken

This chapter is an update to the earlier *Science of Synthesis* contribution describing reactions involving bis(pinacolato)diboron. It focuses primarily on enantioselective catalytic transformations covered in the literature over the period 2005-2011.



Keywords: alkenes · alkynes · allylic compounds · boron compounds · borylation · conjugate addition · cyclization · dienes · dihydroxylation · enones · hydroboration · ring opening · stereoselective synthesis · transition metals

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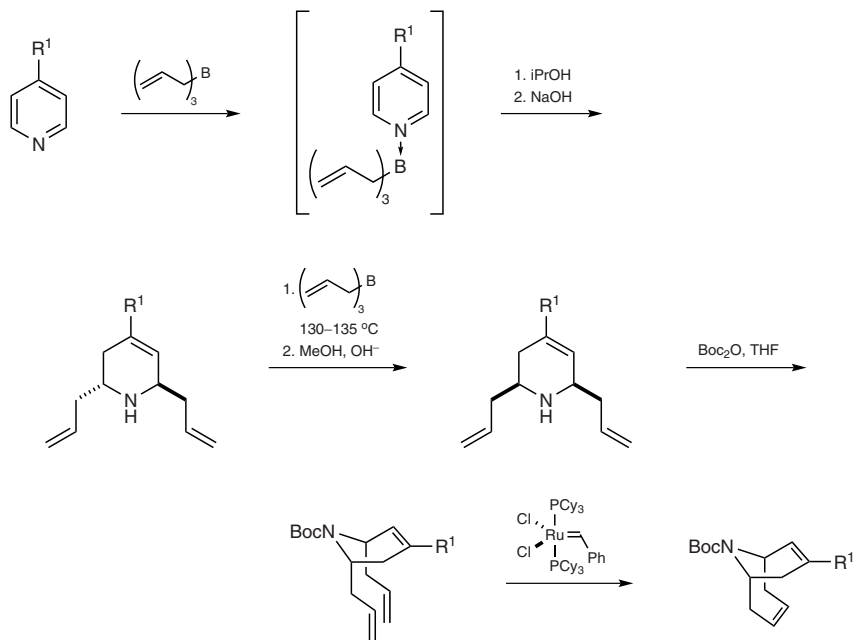
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6.1.35.20 **Allylboranes**

Yu. N. Bubnov and G. D. Kolomnikova

This chapter is an update to the earlier *Science of Synthesis* contribution describing methods for the synthesis of allylboranes and their application in organic synthesis. Libraries of chiral allylic boranes and boronates have been obtained and numerous natural substances and their analogues have been prepared with the use of compounds of this type.



Keywords: allylboranes · allylboronates · allylboration · hydroboration · diboration · silaboration · homologation · metathesis · cross coupling · asymmetric synthesis

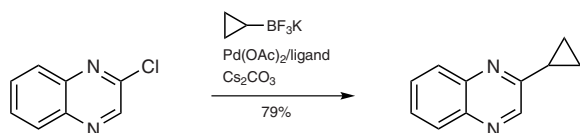
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16.15.5 **Quinoxalines**

D. O. Tymoshenko

This chapter is an update to the earlier *Science of Synthesis* contribution describing methods for the synthesis of quinoxalines and related compounds such as quinoxaline *N*-oxides and quinoxaline 1,4-dioxides. Classical routes to 2,3-substituted quinoxalines involve the intermolecular cyclization of benzene-1,2-diamines with keto aldehydes or 1,2-diketones. More recent developments with different approaches, including C–C bond-formation methods, are also surveyed.



Keywords: quinoxalines · quinoxalin-2-ones · quinoxaline-2,3-diones · 2-chloroquinoxalines · benzene-1,2-diamine cyclization · annulation · amination · Suzuki coupling

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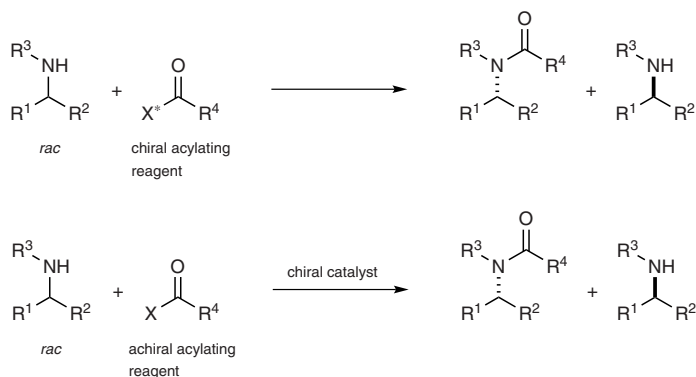
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21.16

Synthesis of Scalemic Amides by Kinetic Resolution*D. Seidel*

This chapter provides an overview of non-enzymatic methods for the kinetic resolution of racemic amines. Covered are approaches based on chiral small-molecule reagents and catalysts. The scope is limited to kinetic resolutions of amines and desymmetrizations of diamines that proceed via amine acylation.



Keywords: kinetic resolution · desymmetrization · amines · diamines · acylation · asymmetric catalysis

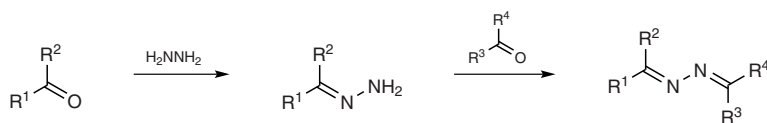
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27.16.3

Azines*A. Nodzewska and R. Łażny*

This update covers the literature published from the year 2001 up to 2011; the preparation and application of 1,4-disubstituted, trisubstituted, and tetrasubstituted azines is described.



Keywords: allenic compounds · azines · carbonyl compounds · diazo compounds · hydrazines · hydrazones · intramolecular reactions · nitrogen heterocycles · semicarbazones · Ugi reaction

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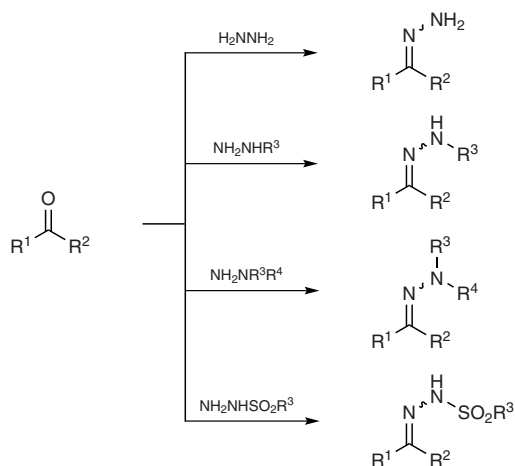
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Hydrazones

R. Łażny and A. Nodzevska

This chapter is an update to the earlier *Science of Synthesis* contribution describing methods for the synthesis of N-unsubstituted, N-monosubstituted, N,N-disubstituted, and N-sulfonylated hydrazones and their applications in organic synthesis. It focuses on the literature published in the period 2000–2011.



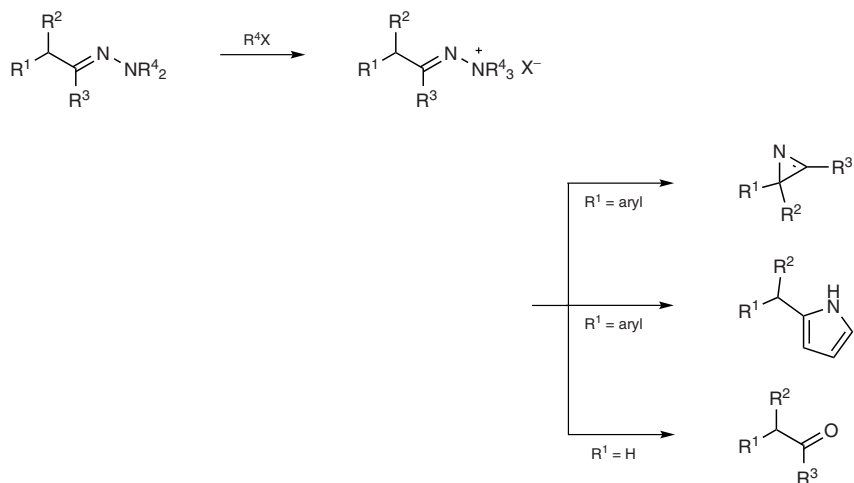
Keywords: alkenes · alkylation · allenes · arylation · cycloaddition · diazo compounds · hydrazines · hydrazones · nitrogen heterocycles · organometallic reagents · polymers · radical reaction

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27.18.3 **Hydrazonium Compounds***A. Nodzevska and R. Łażny*

This update covers the literature on hydrazonium compounds published from the year 2000 up to 2011, during which time only the preparation and application of 1,1,1-trialkyl-2-alkylidenehydrazinium compounds has been described.



Keywords: azirines · hydrazones · hydrazonium compounds · hydrazinium salts · hydrolysis · 1H-pyrroles

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