

Abstracts

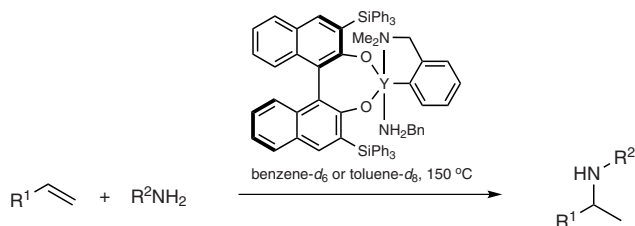
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2.12.16 Organometallic Complexes of Scandium, Yttrium, and the Lanthanides

J. Hannedouche

The topic of this update is rare earth metal catalyzed hydroamination reactions. This chapter covers the syntheses and catalytic applications of rare-earth complexes in the direct addition of an amine onto unactivated carbon–carbon triple and double bonds, the so-called hydroamination reaction. The relevant literature up until mid-2012 is covered.



Keywords: hydroamination · rare-earth complexes · asymmetric catalysis · salt metathesis · silylamine or alkane elimination · C=C bonds · C≡C bonds · C–N bonds · amines · nitrogen heterocycles · chiral compounds

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18.3.7 Carbonyl Acid Halides

R. A. Aitken and Y. Boubalouta

This chapter is an update to the earlier *Science of Synthesis* contribution on carbonyl acid halides and concentrates on compound classes not adequately covered in the earlier contribution, especially mixed carbonyl dihalides, alkyl fluoroformates, halocarbonylsulfonyl halides, and carbamoyl fluorides.



Keywords: alkyl fluoroformates · bromine compounds · carbamoyl fluorides · carbon–halogen bonds · chlorine compounds · fluorine compounds · halocarbonylsulfonyl halides · iodo compounds · mixed carbonyl dihalides

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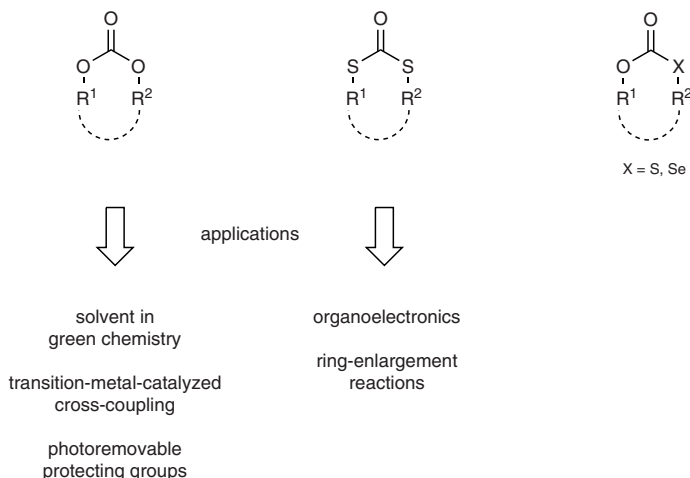
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18.4.45

Acyclic and Cyclic Carbonic Acids and Esters, and Their Sulfur, Selenium, and Tellurium Analogues

R. Zimmer and D. Trawny

This chapter is an update to the earlier *Science of Synthesis* contribution describing methods for the synthesis of acyclic and cyclic carbonic acid derivatives, and their sulfur, selenium, and tellurium analogues. It is mainly focused on the literature published in the period 2005–2012. Moreover, special focus is given to the application of the title compounds.



Keywords: carbonates · formates · chloroformates · thiocarbonyl compounds · dithiocarbonates · selenium compounds · green chemistry · coupling reactions · carbon–oxygen bonds

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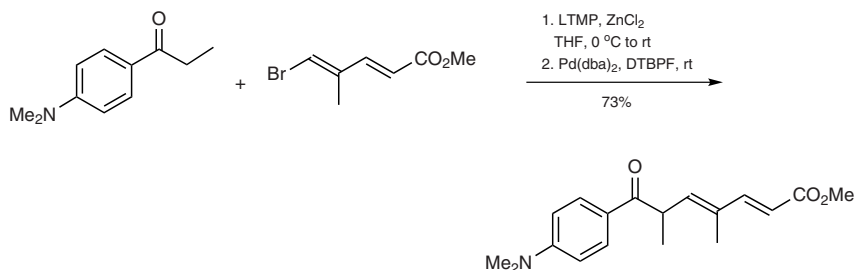
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26.9.5

Enones

J. C. Collings

This chapter is an update to the earlier *Science of Synthesis* contribution describing methods for the synthesis of β,γ -unsaturated ketones. It focuses on the literature published from 2004, although some earlier methods which were absent from the original contribution are included.

DTBPF = 1,1'-bis(di-*tert*-butylphosphino)ferrocene

Keywords: β,γ -unsaturated ketones · oxidation · allylation · vinylation · transition-metal catalysis · cross coupling · hydration dimerization

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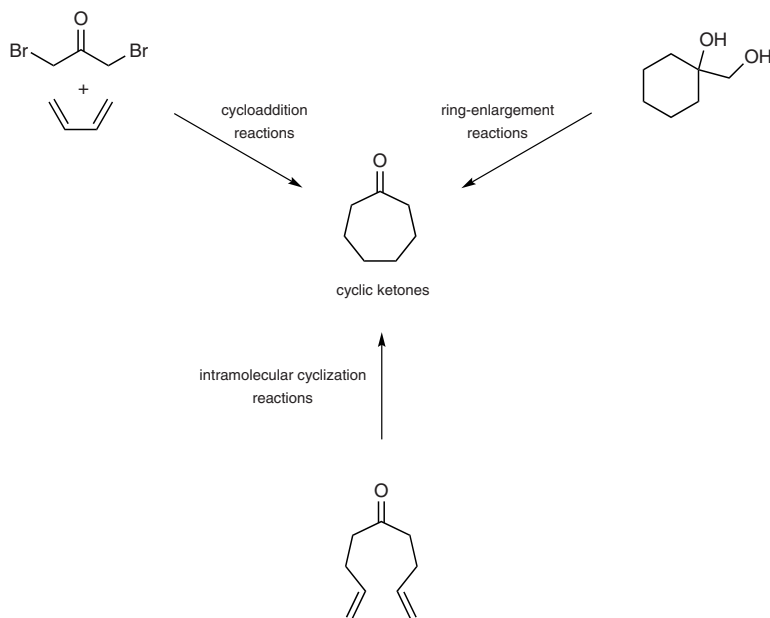
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26.12

Product Class 12: Seven-Membered and Larger-Ring Cyclic Ketones*P. J. H. Scott*

This chapter describes methods for the synthesis of cycloheptanones and larger-ring cyclic ketones. General methods for the synthesis of such compounds are highlighted in the introduction. The chapter then describes principal routes to cyclic ketones with an emphasis on those approaches that generate the ring of the cyclic ketone. Strategies covered include intramolecular cyclization reactions, cycloaddition reactions, and methods for ring enlargement.



Keywords: cycloheptanones · ketones · cyclic compounds · Ziegler cyclization · acyloin condensation · intramolecular reactions · ring-closing metathesis · Heck reactions · cycloaddition reactions · pinacol rearrangement · ring enlargement · electrocyclic reactions

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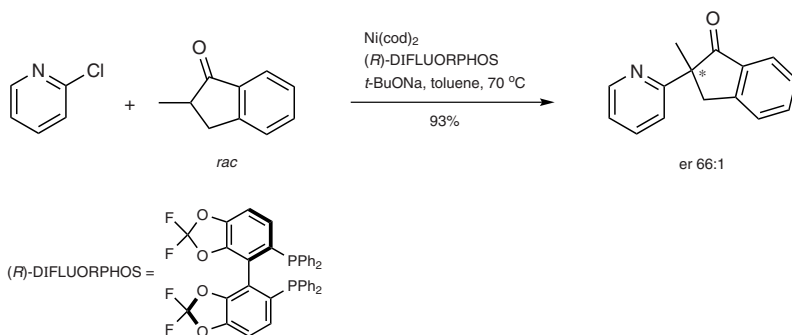
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26.13

Product Class 13: α -Aryl and α -Hetaryl Ketones

J. C. Collings

This chapter outlines many of the methods used to synthesize α -aryl ketones and α -hetaryl ketones. Attention is focused on transition-metal-catalyzed cross-coupling reactions of (het)aryl halides and pseudohalides with ketones and ketone derivatives, which are particularly useful for enantioselective synthesis, but other methods such as nucleophilic aromatic substitutions are also discussed.



Keywords: α -aryl ketones · α -hetaryl ketones · nucleophilic substitution · transition-metal catalysis · cross-coupling reactions · monophosphines · bisphosphines · N-heterocyclic carbenes · enantioselectivity · C—C bond formation

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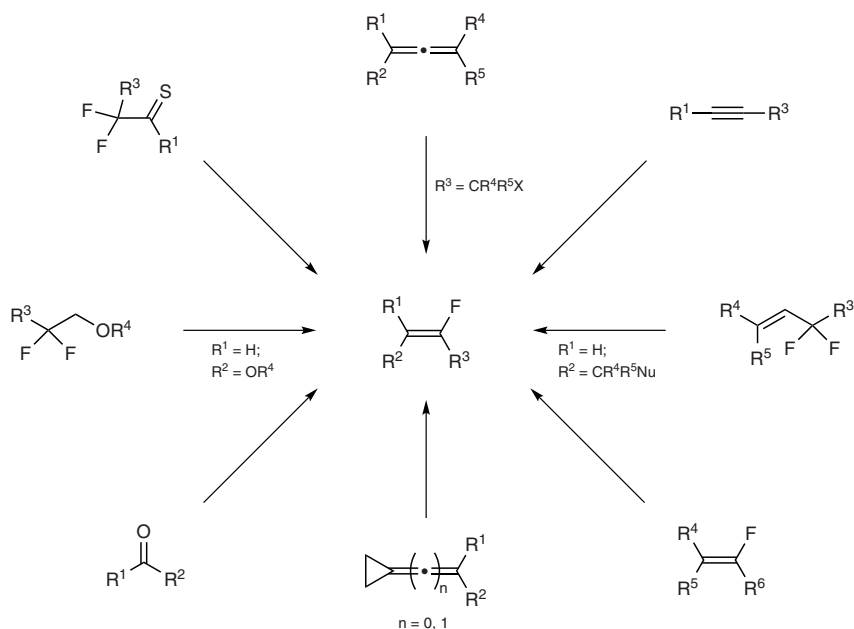
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32.4.3

Haloalkenes

B. Egart and C. Czekelius

This chapter is an update to the earlier *Science of Synthesis* contribution describing general synthetic methods to access fluoroalkenes. This update addresses new developments as well as transformations that were not covered in the original contribution.



Keywords: activation of C–F bonds · alkenation · alkenes · carbon–halogen bonds · dehalogenation · dehydrohalogenation · elimination · fluorination · fluorine compounds · halo addition reactions · halogenation

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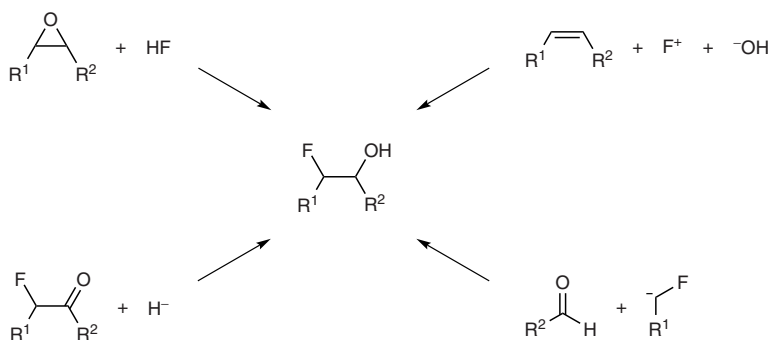
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34.9.2

 β -Fluoro Alcohols

J. A. Kalow and A. G. Doyle

This manuscript is an update to the earlier *Science of Synthesis* contribution describing methods for the synthesis of β -fluoro alcohols. It focuses on the literature published in the period 2005–2012. Routes discussed include epoxide opening by fluoride, reduction of α -fluoro ketones, fluoromethylation of aldehydes, and hydroxyfluorination of alkenes. Special attention is given to the stereoselective synthesis of β -fluoro alcohols.



Keywords: alkene hydroxyfluorination · asymmetric synthesis · carbon–halogen bonds · carbonyl fluoromethylation · desulfonation · epoxide ring opening · fluorides · fluorine compounds · β -fluoro alcohols · stereoselective synthesis · transfer hydrogenation

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