Abstracts

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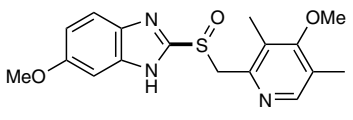
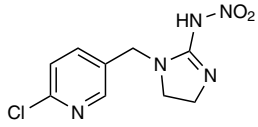
15.1.4 **Pyridines**

D. Spitzner

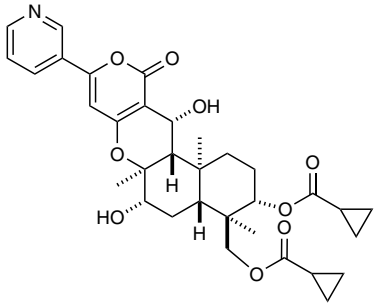
This chapter is an update to the 2004 *Science of Synthesis* contribution on pyridines. It covers the literature up until early 2016. This update covers the synthesis of pyridines, pyridine 1-oxides, pyridinium salts, and some di- and tetrahydropyridines. Pyridines and their derivatives are substructures in many natural products, drugs, pesticides, and other molecules of interest, and numerous methods are available for their synthesis.



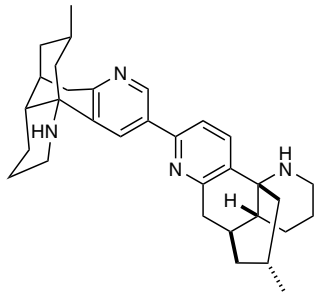
esomeprazole (Nexium)



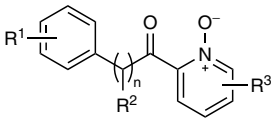
imidacloprid



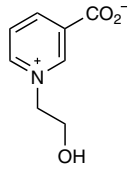
afidopyropen



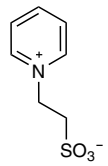
complanadine A



human SARS inhibitors



pyridinebetaine A



pyridinebetaine B

Keywords: pyridines · pyridine 1-oxides · pyridinium salts · heterocycles · heteroaromatics · cyclization · aromatization

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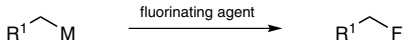
34.1.2.6 **Synthesis by Substitution of Metals**

M. Shevchuk and G.-V. Röschenthaler

This update summarizes recent developments in the synthesis of organic compounds with one C—F bond by substitution of metals. Because classical organometallic reagents, such as organolithiums and organomagnesiums, are highly basic and tend to decompose typical "F+" sources, their application as substrates for electrophilic fluorination has

been limited. Instead, new approaches utilizing either mild organometalloid precursors, such as organoboron compounds, or transition-metal-mediated transformations have been brought into focus. These state-of-the-art approaches form the main part of this review.



M = BX_2, SiX_3, K, AuL_n, PtL_n, PdL_n

Keywords: boron compounds · carbon—metal bonds · deboronation · desilylation · electrophilic substitution · fluorine compounds · fluorination · fullerenes · radical reactions · transition metals

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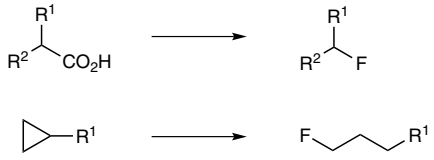
34.1.3.4 Synthesis by Substitution of Carbon Functionalities

J. Desroches and J.-F. Paquin

This chapter is an update to the earlier *Science of Synthesis* contribution describing methods for the synthesis of alkyl fluorides by substitution of carbon functionalities. It focuses on the literature published in the period 2000–2015.



Keywords: carbon—carbon bond cleavage · decarboxylation · fluorination · fluorine compounds · photochemistry · cycloalkane ring opening

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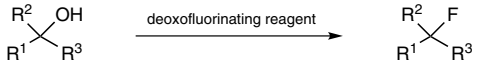
34.1.4.2.9 Synthesis by Substitution of Hydroxy Groups in Alcohols

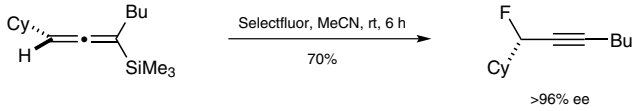
M. Vandamme and J.-F. Paquin

This chapter is an update to the earlier *Science of Synthesis* contribution describing methods for the synthesis of fluoroalkanes by substitution of hydroxy groups in alcohols. It focuses on the literature published in the period 2005–2015.



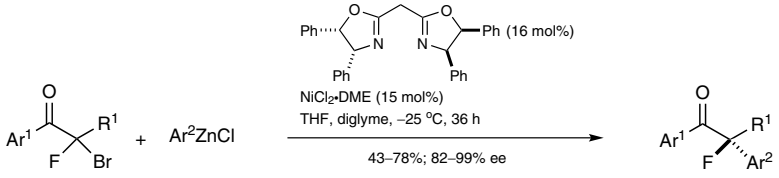
Keywords: nucleophilic substitution · fluorodehydroxylation · alcohols · fluoroalkanes · elimination side-reactions · stereoselectivity · chemoselectivity

This chapter is an update to the earlier *Science of Synthesis* contribution describing methods for the synthesis of propargylic fluorides. It focuses on the literature published in the period 2006–2015.



Keywords: allenoates · allenylsilanes · dehydroxyfluorination · electrophilic fluorination · fluorinated sulfones · homologation · nucleophilic fluorination · organocatalysis · propargylic alcohols · stereoselectivity

This chapter is an update to the earlier *Science of Synthesis* contribution of 2005 describing methods for the synthesis of benzylic fluorides. It focuses on the literature published in the period 2005–2015.



Keywords: fluorination · fluorine compounds · benzylic compounds · regioselectivity · stereoselectivity