Organolithiums In Enantioselective Synthesis

#organolithium reagents #enantioselective synthesis #chiral organic synthesis #asymmetric reactions #stereoselective catalysis

Organolithium reagents play a pivotal role in enantioselective synthesis, enabling chemists to create highly specific chiral molecules. Their unique reactivity allows for the construction of carbon-carbon bonds with remarkable stereocontrol, a critical aspect in asymmetric reactions. This makes them indispensable tools for developing pharmaceuticals, agrochemicals, and other fine chemicals where precise stereoselective outcomes are essential for biological activity and purity.

Organolithiums In Enantioselective Synthesis
of the C Li bond,organolithium reagents are good nucleophiles and strong bases. For laboratory organic synthesis, many organolithium reagents are commercially... 55 KB (5,971 words) - 08:36, 6 March 2024
methodology was introduced in 1997 by Jonathan A. Ellman et al. Enantiopure tert-butanesulfinamide can be prepared by enantioselective oxidation of inexpensive... 7 KB (440 words) - 14:39, 27 October 2023
sec-BuLi or s-BuLi. This chiral organolithium reagent is used as a source of sec-butyl carbanion in organic synthesis. sec-BuLi can be prepared by the... 8 KB (642 words) - 16:37, 19 December 2023
A. E.; DiMichele, L.; Reider, P. J. Synthesis 1999, 1453-1458. Soai, Kenso; Niwa, Seiji (1992). "Enantioselective addition of organozinc reagents to aldehydes"... 33 KB (3,394 words) - 06:05, 9 December 2023
Weiss, Andrew H. (2009). "The enantioselective addition of alkyne nucleophiles to carbonyl groups". Advanced Synthesis & Catalysis. 351 (7–8): 963–983... 12 KB (1,249 words) - 22:52, 27 November 2023
addition and reductive elimination. Enantioselective versions of these reactions have been used in the synthesis of complex molecules, such as (R)-(-)-sporochnol... 11 KB (1,092 words) - 21:10, 31 January 2024
acting as nucleophiles in the presence of organic electrophiles. Organocopper reagents are now commonly used in organic synthesis as mild, selective nucleophiles... 15 KB (1,732 words) - 05:45, 8 November 2023
and G. Pairaudeau (1993). "Synthesis applications of cationic aza-Cope rearrangements. 26. Enantioselective total synthesis of ( )-strychnine". J. Am....4 KB (380 words) - 16:39, 19 December 2023
and can be used in synthesis to generate complexity. Organolithiums are highly reactive chemicals and

often the resulting organolithium reagent generated... 16 KB (1,689 words) - 17:47, 13 July 2023
dihalocyclopropanes and organolithium compounds (or metallic sodium or magnesium) in the Skattebøl rearrangement (Doering–LaFlamme allene synthesis) via rearrangement... 37 KB (4,081 words) - 22:02, 21 February 2024
oxazolidinones are used in conjunction with azo compounds, enantioselectivity is observed (see above). BINAP can also be used for this purpose in the amination... 18 KB (2,074 words) - 13:26, 17 February 2024
syntheses, and specifically, in the synthesis of natural products. Larry Overman's 19-step enantioselective total synthesis of quadrigemine C involves a... 47 KB (5,491 words) - 13:23, 22 February 2024
assembly. Also, cheap chiral protecting groups may often shorten an enantioselective synthesis (e.g. shikimic acid for oseltamivir). As a rule, the introduction... 57 KB (6,778 words) - 03:27, 15 March 2024
mechanism, an early, atypical example of enantioselective catalysis by gold was described by Hayashi and Ito in 1986. In this process, benzaldehyde and methyl... 26 KB (3,036 words) - 16:00, 20 November 2023
"Preparation of a Diisopropylselenophosphoramide Catalyst and its Use in Enantioselective Sulfenoetherification". Organic Syntheses. 96: 400–417. doi:10.15227/orgsyn... 8 KB (582 words) - 17:28, 2 January 2024
MacMillan, D. W. C.; Overman, Larry E. "Enantioselective Total Synthesis of ( )-7-Deacetoxyalcyonin Acetate. First Synthesis of a Eunicellin Diterpene" J. Am... 5 KB (664 words) - 16:24, 24 January 2023
(2004). "Unsaturated 1,2-amino alcohols and ethers from aziridines and organolithiums". Chem. Commun. Royal Society of Chemistry (RSC) (19): 2234–2235. doi:10... 4 KB (345 words) - 16:54, 25 August 2022
carbanion is one of several reactive intermediates in organic chemistry. In organic synthesis, organolithium reagents and Grignard reagents are commonly treated... 32 KB (3,430 words) - 18:35, 9 February 2024
catalyst or environment. Asymmetric induction is a key element in asymmetric synthesis. Asymmetric induction was introduced by Hermann Emil Fischer based... 29 KB (3,674 words) - 13:53, 11 February 2024
; Pairaudeau, G. (1993). "Synthesis applications of cationic aza-Cope rearrangements. 26. Enantioselective total synthesis of ( )-strychnine". J. Am....50 KB (5,704 words) - 09:31, 6 October 2023

Organolithium Reagents - Organolithium Reagents by Professor Dave Explains 32,115 views 4 years ago 5 minutes, 30 seconds - We've seen one organometallic reagent before, the Grignard reagent. That had magnesium in it. Well now let's learn another!
Introduction
Preparation
Properties
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Stereoselective,Stereospecific,Enantioselective,Enantiospecific,Diastereospecific,Diastereoselective -
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Defining Organometallic
Comparing Reactivity of Organometallics

Grignard Reagent - Organomagnesium
Grignard Reactions Overview
Organolithium Reagent
Gilman Reagent - Organocuprate
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add two carbons
using a grignard reagent
create a carbon-carbon bond
protonate the alkoxide
add a grinev agent to an aldehyde or ketone
attack the carbonyl carbon
convert the acid chloride into a ketone
convert it into the aldehyde
starting with the acid chloride
find the right reagents
use a phenyl magnesium bromide
add two different r groups
use the grignard reagent
making the organolithium reagent
draw two lithium atoms each with one valence electron
form an ionic bond
react it with copper chloride
add lithium to one of these alkyl halides
convert this alkyl halide into an organolithium reagent
add a copper chloride
add the other alkyl halide
adding copper chloride
react it with the other alkyl halide
combine two alkyl halides
expel the bromine
replace or substituted a bromine atom with a methyl group
replace the bromine atom with a methyl group
replace the most substituted hydrogen with a bromine atom
add sodium hydroxide
convert it into a carbocylic acid
convert it into an acid chloride
add an alcohol
add ammonia to this aldehyde
reduce the amine with cyano borohydride so sodium cyano borohydride
put the bromine atom on the less substituted carbon-reaction
attack the carbon from the back expelling the bromine
put two bromine atoms across the double bond
convert a ketone into an alkene
replace a secondary hydrogen with a bromine atom
add a ch2 with palladium catalyst
add a bromine atom
expel the bromine atom
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Catalysis
Asymmetric
Organo
Why Organo
First photograph

Catalysts
Naming
Generic activation mode
New directions
Applications
democratizing catalysis
the future of catalysis
thank you
family
other people
Carlos Barros
Mom and Dad
Would they have been proud
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Setting the scene for Canataxpropellane
Propellane nature, reactivity, utility (bicyclopentanes), history (Ginsberg)
Simple synthesis of [4.4.2] propellane
Total synthesis of Canataxpropellane by Professor Gaich and co-workers from the University of Konstanz (retrosynthetic analysis, disconnections, forward synthesis, mechanistic disussions, stereoselectivity)
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Carbon-Carbon Bond Forming Reactions
Dissecting a Carbon Skeleton Retrosynthetically
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Oil Bubblers
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Static Vacuum Distillation
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Introduction
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Transition State
Examples
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converting it to a ketone
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Ozonolysis
Deprotection
Amide Coupling
Appel Reaction

Pd Coupling
Amide Reduction
Transannular Oxidative Mannich Reaction
Methoxycarbonylation
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Ammonium cations
Recognition
General Scheme
Enrichment
Selective Rules
Synchronous alkaloids
Onepop process
Outro
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GRIGNARD REAGENTS
ORGANOLITHIUM COMPOUNDS
STRONG BASES
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