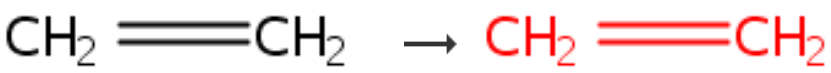
**1. Single Step**



sulfonated

**98%**

Overview

**Steps/Stages**

1.1 R:$ClSO_3H$, S:$CCl_4$, 20 min, 70-75°C

**Notes**

Reactants: 1, Reagents: 1, Solvents: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

Composite materials based on ultra high molecular weight polyethylene and rare-earth element oxides

By Nemeryuk, Alexey Mikhailovich et al

From Oriental Journal of Chemistry, 34(2), 1026-1032; 2018



**2. Single Step**

**100%**

Overview

**Steps/Stages**

1.1 550°C

**Notes**

thermal, optimized on phosphorus content,water presence,reaction time, fixed-bed reactor used, fixed-bed quartz reactor used, flow system used, optimization study, phosphorus modified P-ZSM-5 zeolite used, Reactants: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

Effects of added phosphorus on conversion of ethanol to propylene over ZSM-5 catalysts

By Takahashi, Atsushi et al

From Applied Catalysis, A: General, 423-424, 162-167; 2012



**3. Single Step**

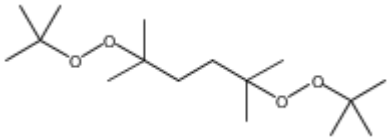
maleated

**95%**

Overview

**Steps/Stages**

1.1 R:



20 min, 110°C; 60 min, 110°C → 190°C

**Notes**

optimization study, optimized on time, temperature and reagent, Reactants: 2, Reagents: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

Acyloxyimide derivatives as efficient promoters of polyolefin C-H functionalization: application in the melt grafting of maleic anhydride onto polyethylene

By Rakotonirina, Mamy Daniel et al

From Polymer Chemistry, 10(31), 4336-4345; 2019



**4. Single Step**

**99%**

Overview

**Steps/Stages**

1.1 R:$Al_2O_3$, 2 h, 500°C; 500°C → 350°C

**Notes**

fixed bed reactor used, alumina used, gas phase, thermal, Reactants: 1, Reagents: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

Conjugated diene-nonconjugated olefin copolymers, manufacture thereof, rubber compositions therefrom, and tires therewith

By Horikawa, Yasuo and Shiono, Takeshi

From Jpn. Kokai Tokkyo Koho, 2014001279, 09 Jan 2014



**5. Single Step**

99%

Overview

**Steps/Stages**

1.1 350°C

**Notes**

Reactants: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

Conjugated diene-nonconjugated olefin copolymers, manufacture thereof, rubber compositions therefrom, and tires therewith

By Horikawa, Yasuo and Shiono, Takeshi

From Jpn. Kokai Tokkyo Koho, 2014001278, 09 Jan 2014



**6. Single Step**

95%

Overview

**Steps/Stages**

1.1 573K

**Notes**

hiearchical MOR zeolite used, Reactants: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

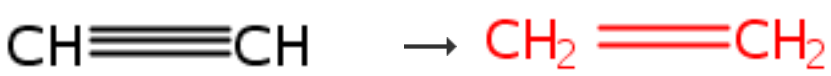
Synthesis and catalytic performance of hierarchically structured MOR zeolites by a dual-functional templating approach

By Wang, Shiyao et al

From Journal of Colloid and Interface Science, 527, 339-345; 2018



**7. Single Step**



92%

Overview

**Steps/Stages**

1.1 R:$H_2$, 120-160°C, 0.25 MPa

**Notes**

Reactants: 1, Reagents: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

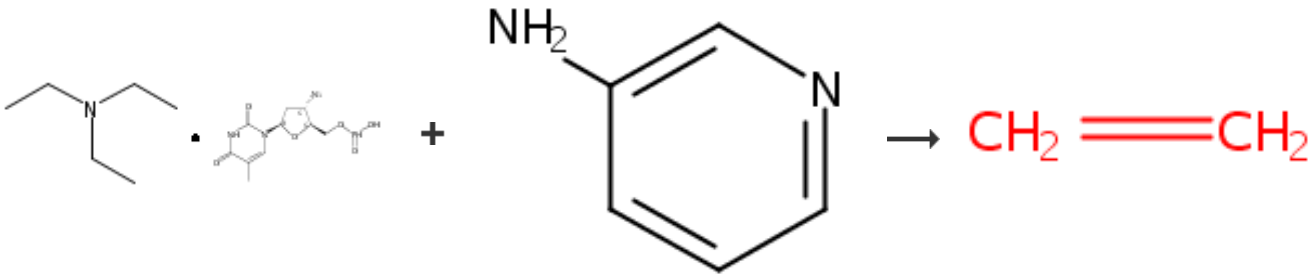
Method and reaction column for preparing ethylene through acetylene hydrogenation

By Yu, Haipeng et al

From Faming Zhuanli Shenqing, 105175208, 23 Dec 2015



**8. Single Step**




**92%**

Overview

**Steps/Stages**

1.1 R:$(PhO)_2P(=O)Cl$, R:$C_5H_5N$, S:$CH_2Cl_2$, 5 min, rt

1.2 R:$C_5H_5N$, R:$I_2$, 5 min, rt

1.3 R:$H_2O$, R:$C_5H_5N$, 5 min, rt

1.4 R:EtSH, rt

**Notes**

Reactants: 2, Reagents: 5, Solvents: 1, Steps: 1, Stages: 4, Most stages in any one step: 4

**References**

Aryl H-Phosphonates 18. Synthesis, properties, and biological activity of 2',3'-dideoxynucleoside (N-heteroaryl)phosphoramidates of increased lipophilicity

By Kolodziej, Krystian et al

From European Journal of Medicinal Chemistry, 100, 77-88; 2015

Reaction Protocol

**Procedure** 1. Render nucleoside H-phosphonate (1 mmol) and 3-aminoquinoline (1.1 mmol) anhydrous by the evaporation of the added pyridine (3 x 10 mL).
2. Dissolve the mixture in 10 mL of DCM containing 10% (v/v) of pyridine.

View more...

View with MethodsNow

**9. Single Step**

**93%**

Overview

**Steps/Stages**

1.1 R:$H_2SO_4$, S:$H_2O$, 6-12 h, rt

1.2 R:$CaSO_4$, R:CaO, heated

**Notes**

Reactants: 1, Reagents: 3, Solvents: 1, Steps: 1, Stages: 2, Most stages in any one step: 2

**References**

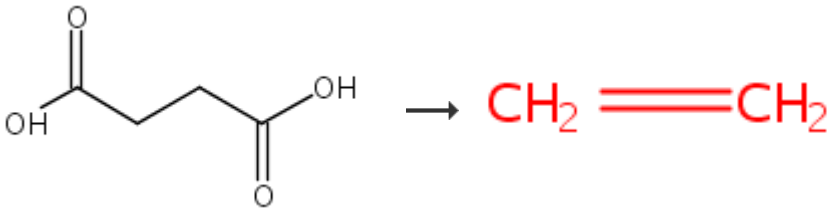
A method for preparing ethylene in laboratory

By Ren, Youliang et al

From Faming Zhuanli Shenqing, 104744198, 01 Jul 2015



**10. Single Step**



**86%**

Overview

**Steps/Stages**

1.1 R:KOH, S:$H_2O$, 10 min, rt; 10 min, 30°C; 30 min, 30°C

**Notes**

electrochemical, Pt used as a working electrode, Pt mesh used as a counter electrode, Hg/HgO used as a reference electrode., constant voltage 3.5V, Ethene selectivity 85.4%, optimization study, optimized on reaction conditions, Reactants: 1, Reagents: 1, Solvents: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

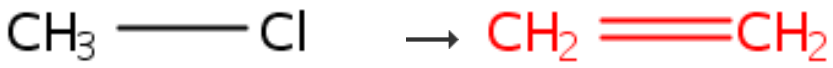
Electrochemical preparation method of ethylene by electrolysis of succinic acid

By Wang, Qingfa et al

From Faming Zhuanli Shenqing, 110016687, 16 Jul 2019



**11. Single Step**



90%

Overview

**Steps/Stages**

1.1 S:*o*-Dichlorobenzene, 4-20 h, 180-500°C, 2-4 atm; 500°C → rt, 1 atm; heated

**Notes**

Reactants: 1, Solvents: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

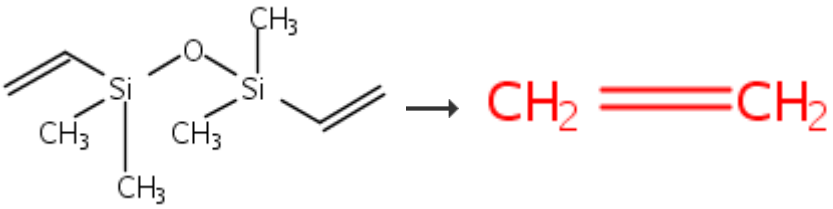
Preparation of methyl aluminoxane, titanium dioxide, white carbon black, and phosgene, and applications of carbon tetrachloride and hexachloroethane

By Li, Jian

From Faming Zhuanli Shenqing, 103087085, 08 May 2013



**12. Single Step**



90%

Overview

**Steps/Stages**

1.1 R:$Bu_4N^+ \bullet F^-$, S:DMF, 1.5 h, 80°C

**Notes**

sealed tube used, Reactants: 1, Reagents: 1, Solvents: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

Hiyama coupling reaction of fluorous alkenyl-fluorosilanes: Scope and mechanistic considerations

By Rabai, Jozsef et al

From Journal of Fluorine Chemistry, 137, 85-92; 2012



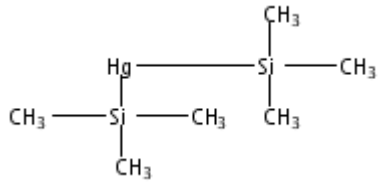
**13. Single Step**

96%

Overview

**Steps/Stages**

1.1 R:



S:Benzene, rt

**Notes**

safety, bis(trimethylsilyl)mercury is highly toxic, Reactants: 1, Reagents: 1, Solvents: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

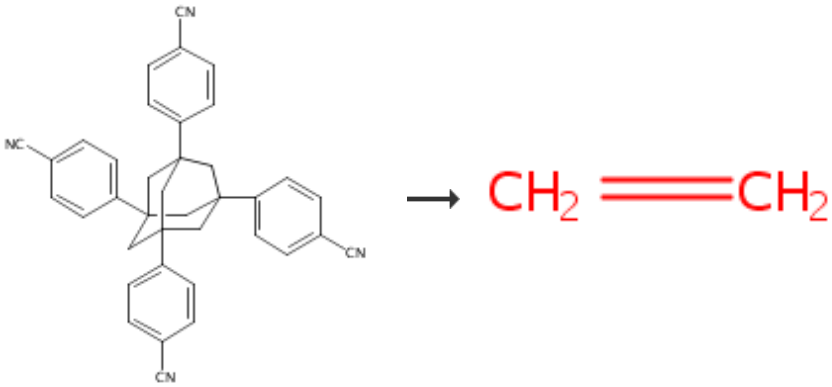
Bis(trimethylsilyl)mercury

By Shipman, Michael

From e-EROS Encyclopedia of Reagents for Organic Synthesis, , 1pp.; 2001



**14. Single Step**



**84%**

Overview

**Steps/Stages**

1.1 R:$AgClO_4$, S:$MeNO_2$, overnight, rt

**Notes**

safety, yield based on tetrakis(4-cyanophenyl)adamantane, solvothermal, Reactants: 1, Reagents: 1, Solvents: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

Synthesis of Diamondoid and Lonsdaleite Networks from the Same Ag(I)-Ligand Combination, with Lonsdaleite the Softer Network

By Patil, Komal M. et al

From Crystal Growth & Design, 16(2), 1038-1046; 2016

Reaction Protocol

**Procedure**

1. Dissolve a mixture of solid $AgClO_4 \cdot H_2O$ (57.5 mg, 0.277 mmol) and ligand (15 mg, 0.028 mmol) in 8 mL $CH_3NO_2$ under a blanket of $N_2$ gas.
2. Stir the resultant solution overnight.

View more...

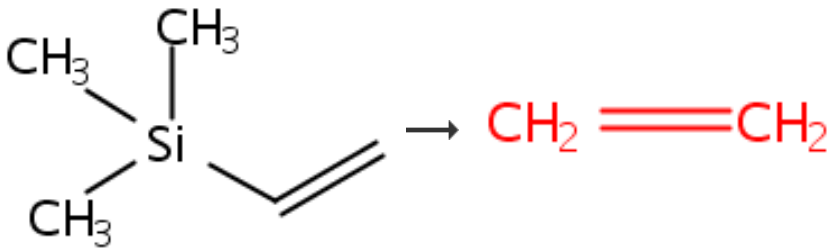
**Available Experimental Data**

IR

View with MethodsNow



**15. Single Step**




**100%**

Overview

**Steps/Stages**

1.1 R:$F_3CCO_2H$

**Notes**

TFA, 120 C, C-Desilylation, Desilylation, Electrophilic substitution, SE, Reactants: 1, Reagents: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

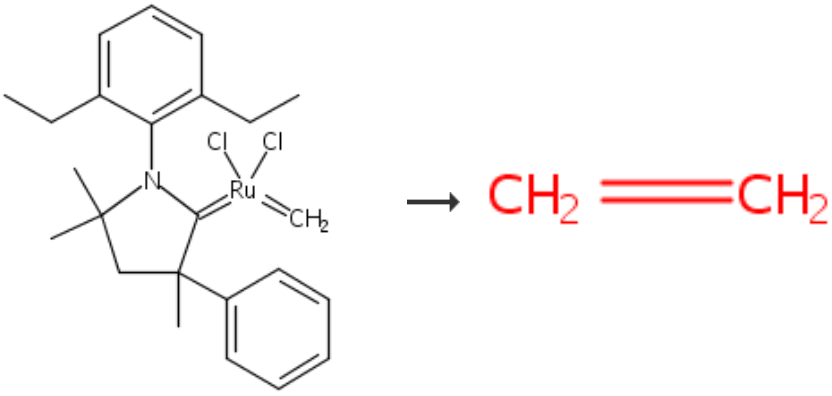
The electrophilic substitution of allylsilanes and vinylsilanes

By Fleming, Ian et al

From Organic Reactions (Hoboken, NJ, United States), 37, No pp. given; 1989



**16. Single Step**




**81%**

Overview

**Steps/Stages**

**Notes**

1.1 5 min, -20°C → 23°C

other products also detected, Reactants: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

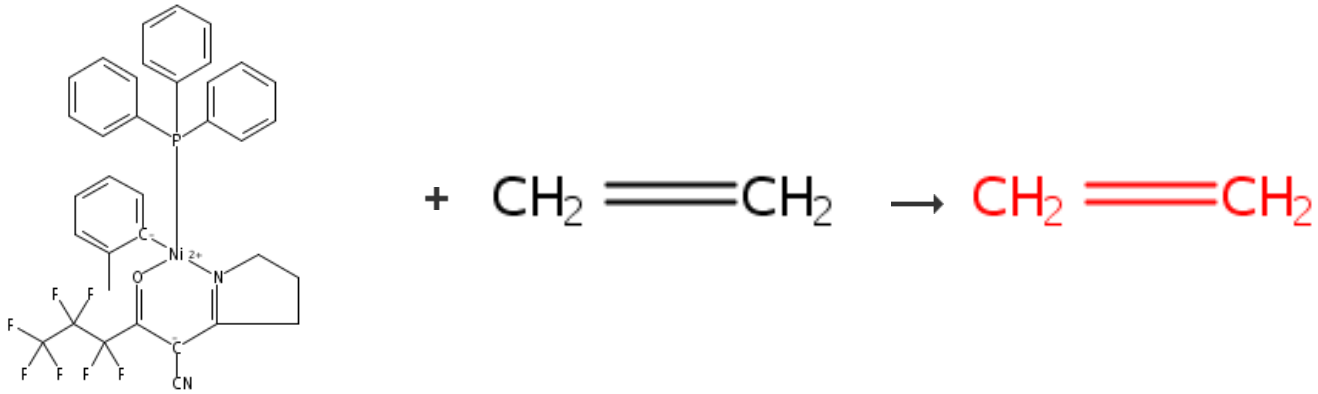
Origin of the Breakthrough Productivity of Ruthenium-Cyclic Alkyl Amino Carbene Catalysts in Olefin Metathesis

By Nascimento, Daniel L. and Fogg, Deryn E.

From Journal of the American Chemical Society, 141(49), 19236-19240; 2019



**17. Single Step**




oligomer

**82%**

Overview

**Steps/Stages**

1.1 S:PhMe, 72 h, rt, 70 bar

**Notes**

autoclave used, high pressure, other products also detected, Reactants: 2, Solvents: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

Square-planar mesitylenido(triphenylphosphane)nickel(II) complexes containing bidendate N,O-ligands: Changes in catalytic efficiency upon small alterations in the ligand backbone

By Beckmann, Udo et al

From Journal of Organometallic Chemistry, 720, 73-80; 2012



**18. Single Step**

99%

Overview

**Steps/Stages**

1.1

**Notes**

Reactants: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

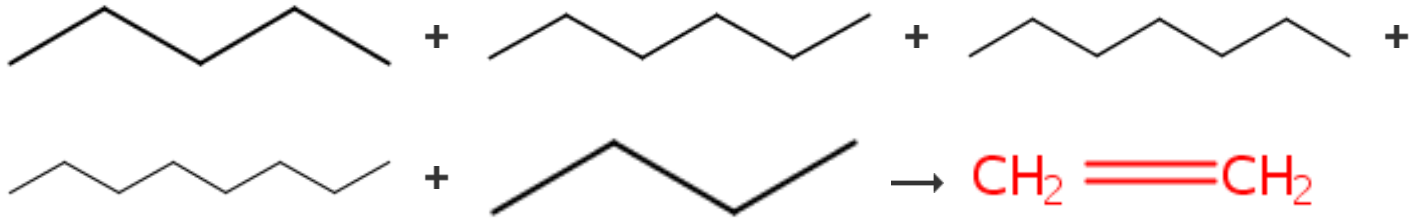
Dehalogenation of organic halides using phase-transfer catalysts. I. Dehalogenation of halogen derivatives of ethane

By Chukhadzhyan, G. A. et al

From Armyanskii Khimicheskii Zhurnal, 34(10), 866-71; 1981



**19. Single Step**



73%

Overview

**Steps/Stages**

1.1

**Notes**

other products also detected, no experimental detail, Reactants: 5, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

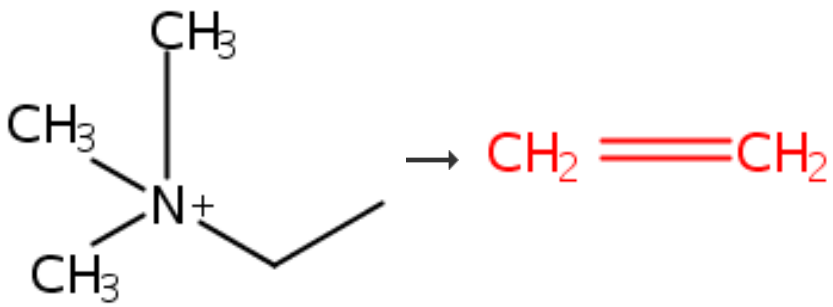
Method for producing ethylene

By Lu, Hepan et al

From Faming Zhuanli Shenqing, 109422607, 05 Mar 2019



**20. Single Step**



100%

Overview

**Steps/Stages**

1.1

**Notes**

Classification: Elimination; Pyrolysis; # Conditions: HEAT 200 deg 20mn; # Comments: reactant as hydroxide salt, Reactants: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

A polarographic, potentiometric, and spectrophotometric study of lead nitrate complexes

By Hershenson, Herbert M. et al

From Journal of the American Chemical Society, 75, 507-11; 1953



**21. Single Step**


**100%**

Overview

**Steps/Stages**

1.1 R:$CH_2N_2$

**Notes**

Classification: Dehydroxylation; Demercuration; Elimination; # Conditions: CH2N2, Reactants: 1, Reagents: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

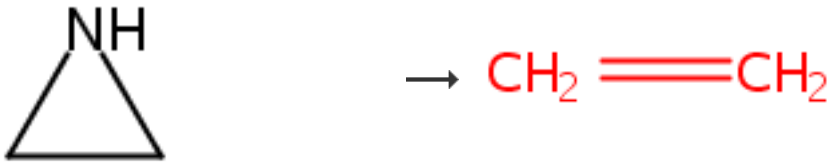
The addition compounds of olefins with mercuric salts

By Chatt, J.

From Chemical Reviews (Washington, DC, United States), 48, 7-43; 1951



**22. Single Step**




**83%**

Overview

**Steps/Stages**

**Notes**

1.1 R:

rt

Reactants: 1, Reagents: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

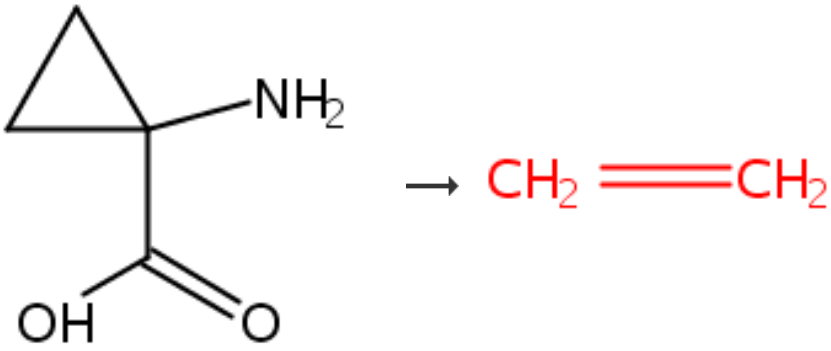
Difluoramine

By Anon.

From e-EROS Encyclopedia of Reagents for Organic Synthesis, , 1-2; 2001



**23. Single Step**



**75%**

Overview

**Steps/Stages**

1.1 R:$O_2$, R:PhI=O, S:DMF, 3 h, rt

**Notes**

alternative preparation shown, sealed vial used, Reactants: 1, Reagents: 2, Solvents: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

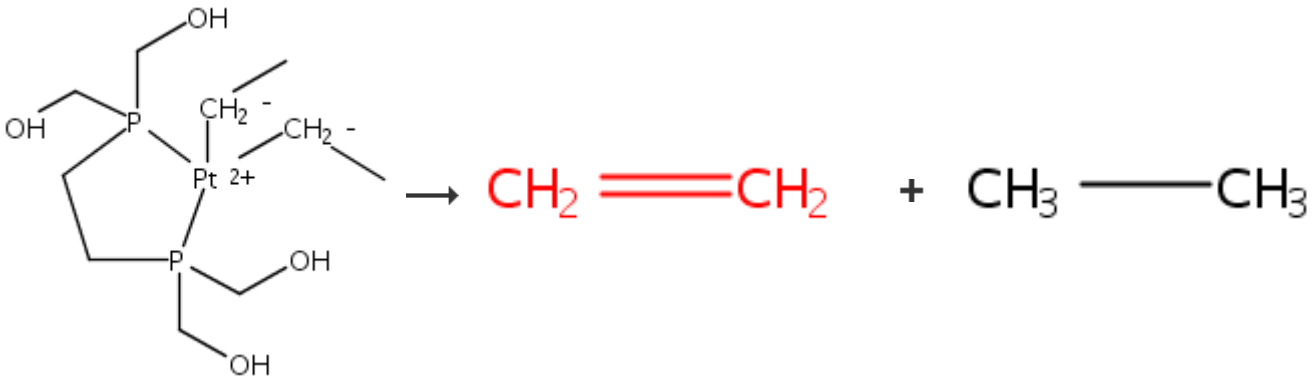
A Structural and Functional Model for the 1-Aminocyclopropane-1-carboxylic Acid Oxidase

By Sallmann, Madleen et al

From Angewandte Chemie, International Edition, 54(42), 12325-12328; 2015



**24. Single Step**




40%

100%

Overview

**Steps/Stages**

1.1 S:$D_2O$

**Notes**

thermal, Reactants: 1, Solvents: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

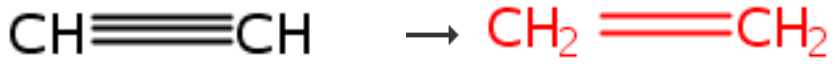
Synthesis and reactions of water-soluble diorganoplatinum(II) complexes

By Komiva, Sanshiro et al

From Chemistry Letters, (1), 72-73; 2002



**25. Single Step**




98%

Overview

**Steps/Stages**

1.1 R:Fe

**Notes**

Reactants: 1, Reagents: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

Unit process review-hydrogenation and dehydrogenation

By Alexander, Bruce T. et al

From Industrial and Engineering Chemistry, 53, 767-71; 1961



**26. Single Step**

98%

Overview

**Steps/Stages**

1.1 R:$Al_2O_3$

**Notes**

Classification: Elimination; Dehydration; # Conditions: Al2O3; 400 deg, Reactants: 1, Reagents: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

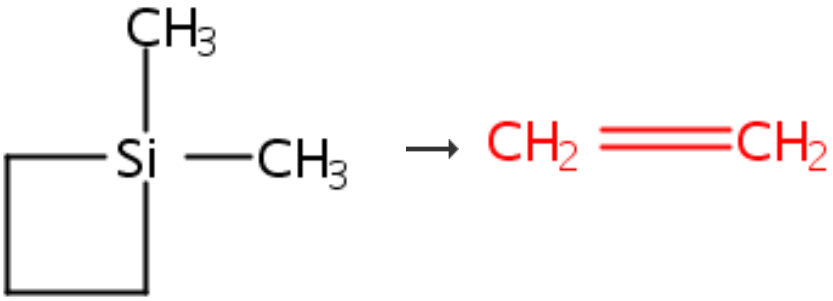
The production of ethylene for the preparation of ethylene bromide by the contact process

By Kesting, Wilhelm

From Angewandte Chemie, 38, 362-3; 1925



**27. Single Step**

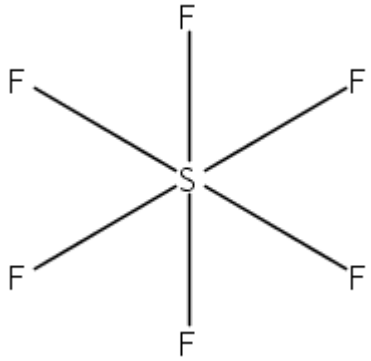


90%

Overview

**Steps/Stages**

1.1 R:



**Notes**

Reactants: 1, Reagents: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

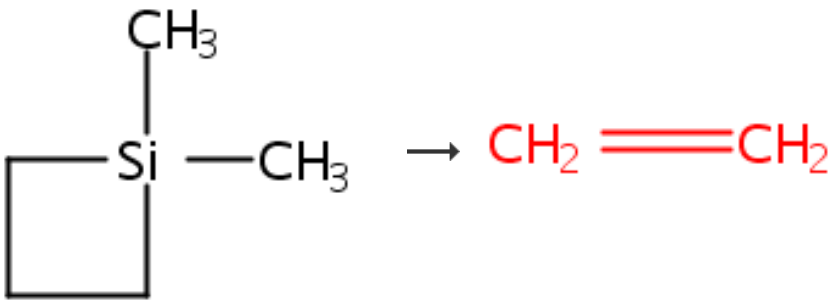
**References**

The infrared multiphoton-induced decomposition of silicon-containing four-membered rings. A new source of silaolefins

By Frey, Henry M. et al

From Journal of the Chemical Society, Chemical Communications, (17), 915-17; 1981

**28. Single Step**

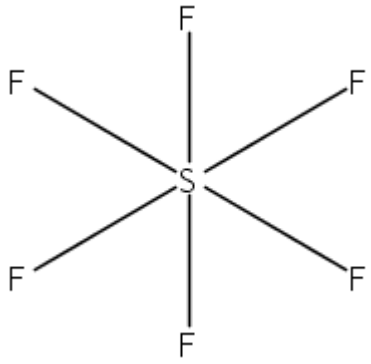


90%

Overview

**Steps/Stages**

1.1 R:



**Notes**

Reactants: 1, Reagents: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

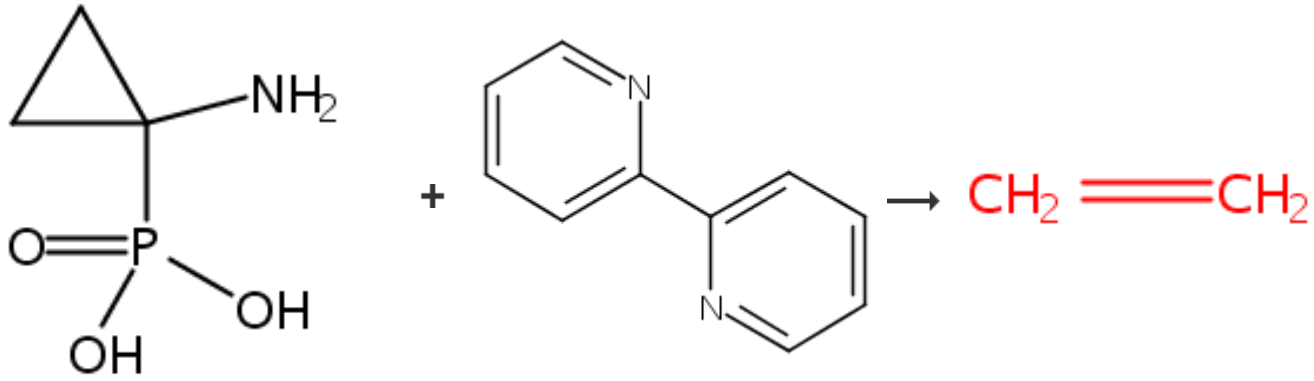
The infrared multiphoton-induced decomposition of silicon-containing four-membered rings. A new source of silaolefins

By Frey, Henry M. et al

From Journal of the Chemical Society, Chemical Communications, (17), 915-17; 1981



**29. Single Step**



70%

Overview

**Steps/Stages**

**Notes**

1.1 R:$H_2O_2$, R:NaOH, R:$CuSO_4$, S:$H_2O$, S:MeOH, 1 h, 20°C

sealed vial used, kinetic study, alternative preparation shown, Reactants: 2, Reagents: 3, Solvents: 2, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

Oxidative Degradation of Amino Acids and Aminophosphonic Acids by 2,2'-Bipyridine Complexes of Copper(II)

By Pap, Jozsef S. et al

From European Journal of Inorganic Chemistry, 2014(17), 2829-2838; 2014

Reaction Protocol

**Procedure**

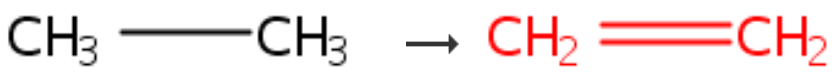
1. Examine the reactivity of the isolated complexes in a 3:1 DMF/$H_2O$ (or $D_2O$) mixture at 35 °C.
2. Dissolve $10^{-4}$ mol of complex in a standard 20 mL screw-cap vial 8.76 × in DMF (5.5 mL).

View more...

View with MethodsNow



**30. Single Step**



**75%**

Overview

**Steps/Stages**

1.1 R:$ZrO_2$, 870°C

**Notes**

green chemistry, dense hydrogen transport membrane technology used, 84% selectivity, Reactants: 1, Reagents: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

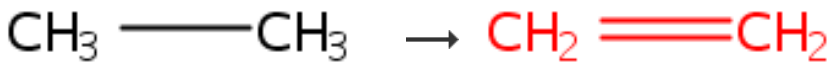
Novel membrane technology for green ethylene production

By Balachandran, U. et al

From Clean Technology 2008: Bio Energy, Renewables, Green Building, Smart Grid, and Water, Technical Proceedings of the CTSI Clean Technology and Sustainable Industries Conference and Trade Show, Boston, MA, United States, June 1-5, 2008, , 31-34; 2008



**31. Single Step**



86%

Overview

**Steps/Stages**

1.1

**Notes**

Reactants: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

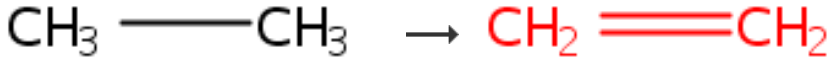
Oxidative dehydrogenation and cracking of paraffins with a promoted cobalt catalyst

By Eastman, Alan D. et al

From U.S., 4497971, 05 Feb 1985



**32. Single Step**



94%

Overview

**Steps/Stages**

1.1 S:MeOH

**Notes**

Classification: Dehydrogenation, Reactants: 1, Solvents: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

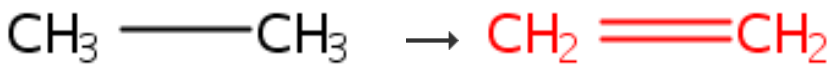
Unit process review-hydrogenation and dehydrogenation

By Alexander, Bruce T. et al

From Industrial and Engineering Chemistry, 53, 767-71; 1961



**33. Single Step**



64%

Overview

**Steps/Stages**

**Notes**

1.1 R:$O_2$, 12 h, 1023K, 1 atm

selective reaction, selectivity = 75%, sealed tube used, oxygen-transport (Dy2O3-MgO) supported alkali chlorides (LiCl and KCl) membrane reactor used, alternative reaction conditions shown, optimization study, optimized on temperature, Reactants: 1, Reagents: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

Selective production of ethylene via continuous oxidative dehydrogenation of ethane in (Dy2O3/MgO)-(Li-K)Cl composite membrane reactor

By Li, Maoshuai and van Veen, Andre C.

From Chemical Engineering Journal (Amsterdam, Netherlands), 365, 344-350; 2019



**34. Single Step**


**85%**

Overview

**Steps/Stages**

**Notes**

1.1 R:PhCHO, R:PhLi, S:$Et_2O$, 25°C

Cleavage, Deoxygenation, Elimination, Reactants: 1, Reagents: 2, Solvents: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

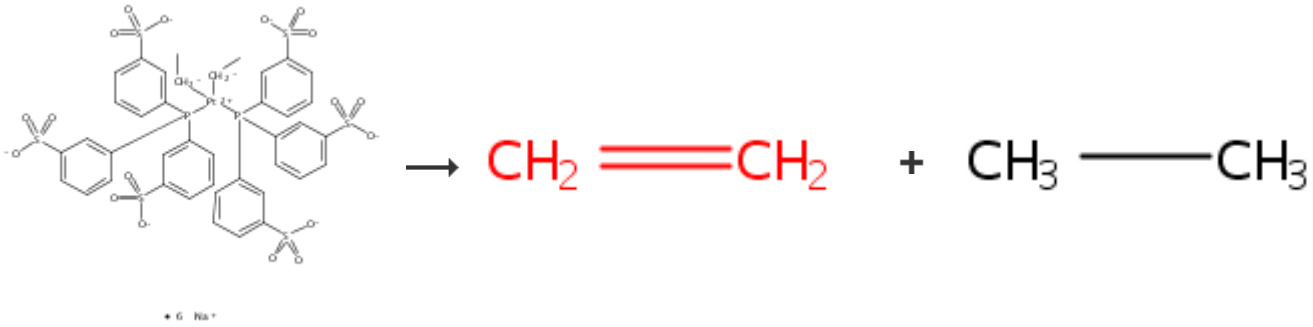
Olefin synthesis by deoxygenation of vicinal diols

By Block, Eric

From Organic Reactions (Hoboken, NJ, United States), 30, No pp. given; 1984



**35. Single Step**




**94%** **90%**

Overview

**Steps/Stages**

1.1 S:$H_2O$, 2 h, 80°C

**Notes**

Reactants: 1, Solvents: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

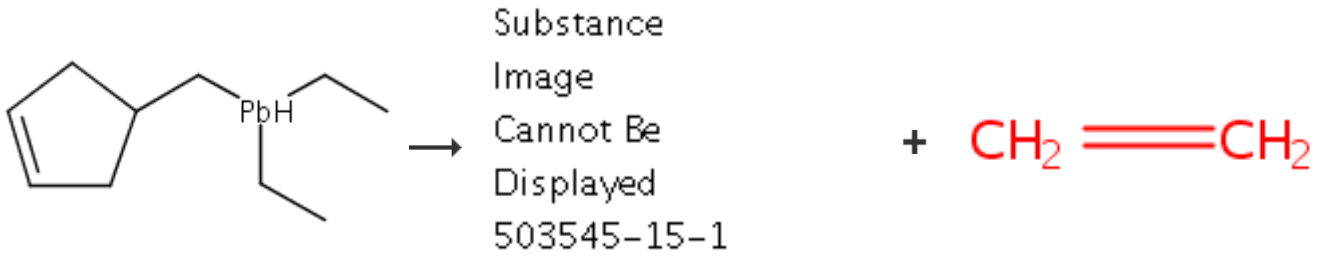
Synthesis and β-hydrogen elimination of water-soluble dialkylplatinum(II) complexes in water

By Komiya, Sanshiro et al

From Bulletin of the Chemical Society of Japan, 76(1), 183-188; 2003



**36. Single Step**

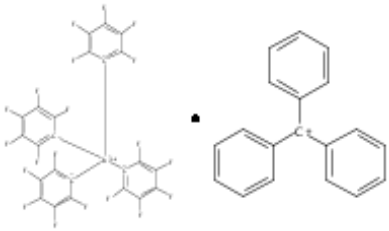



**95%**

Overview

**Steps/Stages**

1.1 R:



S:$C_6D_6$, rt

Experimental Procedure

**2,2-Diethyl-2-plumbanorbornyl Cation (4i).** Slow addition of **5i** (193 mg, 0.515 mmol) to a vigorously stirred solution of TPFPB (0.461 g, 0.5 mmol) in dry $C_6D_6$ (3 mL) results in evolution of ethene[24] and the disappearance of the red color of the solution. The reaction mixture is allowed to separate into two layers, an upper colorless layer and a lower light brown layer. The upper layer contains the byproduct triphenylmethane and is removed. The lower phase is transferred via a flexible Teflon pipe into an NMR tube. After evaporation of the solvent in a vacuum and washing of the oily residue with 2 mL portions of pentane, a white crystalline powder is obtained (486.9 mg, 95% yield). **2,2-Diethyl-2-plumbanorbornyl Cation (4i)**, yield 95%, 486.9 mg; ethene $^1$H NMR (250.133 MHz, $C_6D_6$, 303 K): δ 5.29 (s, 2H, -CH=CH-), 4.41 (m, 1H, -CH-, $^3J_{Pb,H}$ = 333 Hz), 2.07 (dd, 2H, -C$H_2$CHC$H_2$-, $^2J_{H,H}$ = 15.5 Hz, $^3J_{H,H}$ = 5.5 Hz), 1.80 (br, 4H, -C$H_2$CH$_3$), 1.62 (t, 6H, -CH$_3$, $^3J_{H,H}$ = 7.5 Hz), 1.51 (d, 2H, -CHC$H_2$Pb-, $^3J_{H,H}$ = 2.9 Hz, $^2J_{Pb,H}$ = 21 Hz), 1.35 (d, 2H, -C$H_2$CHC$H_2$-, $^2J_{H,H}$ = 15.5 Hz). $^{13}$C NMR (62.860 MHz, $C_6D_6$, 303 K): δ 138.0 (C6/7, $^1J_{Pb,C}$ = 16.2 Hz, $^1J_{C,H}$ = 170 Hz), 53.4 (C2, $^1J_{Pb,C}$ = 36.6 Hz), 39.3 (C4/5, $^3J_{Pb,C}$ = 44.2 Hz), 38.2 (-*C*H$_2$CH$_3$, $^1J_{Pb,C}$ = 36.7 Hz), 36.5 (C3, $^2J_{Pb,C}$ = 46.2 Hz), 12.0 (-CH$_3$, $^2J_{Pb,C}$ = 41.4 Hz). $^{207}$Pb NMR (52.304 MHz, $C_6D_6$, 303 K): δ 1049.

Reaction Protocol

**Procedure**

1. Add 3-cyclopentenemethyltriethylplumbane (193 mg) to a vigorously stirred solution of TPFPB (0.461 g, 0.5 mmol) in dry $C_6D_6$ (3 mL) results in evolution of ethane and the disappearance of the red color of the solution.
2. Separate the reaction mixture into two layers, an upper colorless layer and a lower light brown layer.

View more...

**Available Experimental Data**

$^1$H NMR, $^{13}$C NMR, State

View with MethodsNow



**37. Single Step**

**63%**

Overview

**Steps/Stages**

1.1 590°C, 0.011 MPa

**Notes**

optimization study, optimized on pressure, low pressure, Reactants: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

Process for producing ethylene

By Lu, Hepan et al

From PCT Int. Appl., 2019042449, 07 Mar 2019



**38. Single Step**

**90%**

Overview

**Steps/Stages**

**Notes**

1.1 R:Cu, S:Benzene

Classification: Dechlorination; Elimination; Reduction; # Conditions: Cu; benzene; 100 deg - 140 deg, Reactants: 1, Reagents: 1, Solvents: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

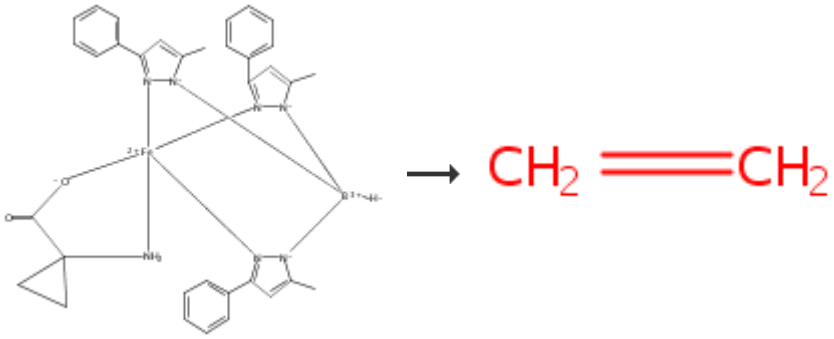
Reactions of diaryldiazomethanes with halogen-compounds

By Schoenberg, A. and Frese, E.

From Angewandte Chemie, 76(8), 343; 1964



**39. Single Step**




**65%**

Overview

**Steps/Stages**

1.1 R:$H_2O_2$, R:$O_2$, S:DMF, 20 min, rt

**Notes**

alternative preparation shown, sealed vial used, Reactants: 1, Reagents: 2, Solvents: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

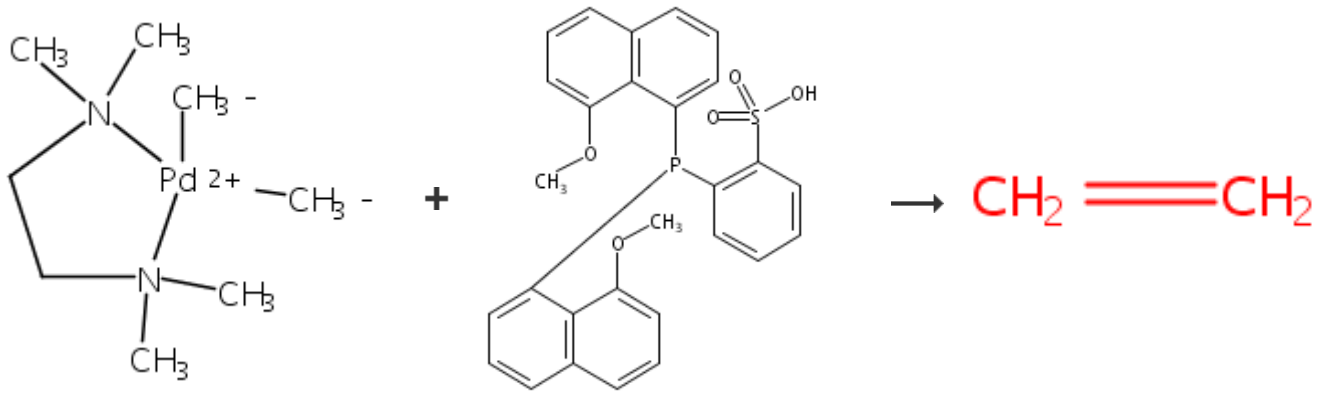
A Structural and Functional Model for the 1-Aminocyclopropane-1-carboxylic Acid Oxidase

By Sallmann, Madleen et al

From Angewandte Chemie, International Edition, 54(42), 12325-12328; 2015



**40. Single Step**



67%

Overview

**Steps/Stages**

1.1 S:$CH_2Cl_2$, 30 min, rt

**Notes**

evolution of gas, Reactants: 2, Solvents: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

Structural Modification of Functionalized Phosphine Sulfonate-Based Palladium(II) Olefin Polymerization Catalysts

By Anselment, Timo M. J. et al

From Organometallics, 30(24), 6602-6611; 2011

Experimental Procedure

General/Typical Procedure: Synthesis of [{κ$^2$-(P,O)-2-(bis-8-methoxynaphthalene-1-phosphine)benzenesulfonate}PdMe (pyridine)], 9. 7 (200 mg, 0.40 mmol, 1 equiv) was dissolved in methylene chloride (10 mL), and (tmeda)$PdMe_2$(100 mg, 0.40 mmol, 1 equiv) was added. Evolution of gas was observed during formation of a pale yellow solution, which was stirred for 20 min followed by pyridine addition (0.25 mL, excess). After stirring for 1 h at room temperature the solution was reduced to 2 mL and precipitated by addition of pentane (8 mL). The solvent was filtered off, and the obtained solid was recrystallized from $CHCl_3$ (7 mL)/pentane (20 mL). Due to overlapping peaks, most quaternary carbon atoms could not be assigned and detected. Synthesis of [κ$^1$-(N)-tmeda][{κ $^2$-(P,O)-2-(bis-8-methoxynaph-thalene-1-phosphine)benzene sulfonate}$PdMe]_2$, 10. This intermediary product for the reaction of 7 to 9 could be obtained as a pale yellow solid from a synthesis of 9 without addition of pyridine. Precipitation of 10 by addition of $Et_2O$ (yield 67.2%) was followed by recrystallization from $CHCl_3$/pentane. The low solubility of 10 in $CHCl_3$ precludes characterization by $^{13}C$ NMR spectroscopy. As observed from X-ray diffraction the compound cocrystallizes with $CHCl_3$ and the residual solvent could not be removed. $^1H$ NMR (300 MHz, $CDCl_3$): δ 8.24 (dd, *J* = 7.4, 3.7 Hz, 1H), 7.90 (d, *J* = 8.1 Hz, 1H), 7.79 (d, *J* = 8.2 Hz, 1H), 7.65 (dd, *J* = 14.0, 7.3 Hz, 1H), 7.53-7.36 (m, 5H), 7.34-7.19 (m, 4H), 7.09 (t, *J* = 7.5 Hz, 1H), 7.03-6.86 (m, 3H), 6.66 (d, *J* = 6.6 Hz, 1H), 3.68 (s, 3H), 2.98 (s, 3H), 2.17 (s, 3H), 1.55 (s, 3H), 0.16 (s, 3H). $^{31}P\{^1H\}$ NMR (121 MHz, $CDCl_3$): δ +47.6. Anal. Calcd for $C_{64}H_{66}N_2P_2Pd_2S_2O_{10}$: C 56.43, H 4.88, N 2.06, S 4.71. Found: C 53.18, H 4.77, N 2.01, S 4.17. Crystal Data: Molecular Formula: $C_{65}H_{67}Cl_3N_2O_{10}P_2Pd_2S_2$, ($C_{64}H_{66}N_2O_{10}P_2Pd_2S_2$), ($CHCl_3$), Crystal Color/Shape: Yellow fragment, Crystal Size: Approximate size of crystal fragment used for data collection: 0.30 × 0.36 × 0.46 mm; Molecular Weight: 1481.44 a.m.u., Space Group: Monoclinic P $2_1/c$; a = 2315.06(9) pm; b = 1473.12(6) pm; β = 110.6878(17)°; c = 2453.48(9) pm. Z = 4.

Reaction Protocol

**Procedure**

1. Dissolve 2-(bis-8-methoxynaphthalene-1-phosphine)-benzenesulfonic acid (0.40 mmol) in methylene chloride (10 mL).
2. Add (tmeda)$PdMe_2$(100 mg, 0.40 mmol, 1 equivalent) to the mixture.

View more...

**Available Experimental Data**

$^1H$ NMR, $^{31}P$ NMR, Crystal Structure Data, Elemental Analysis

View with MethodsNow



**41. Single Step**

**89%**

Overview

**Steps/Stages**

1.1

**Notes**

Reactants: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

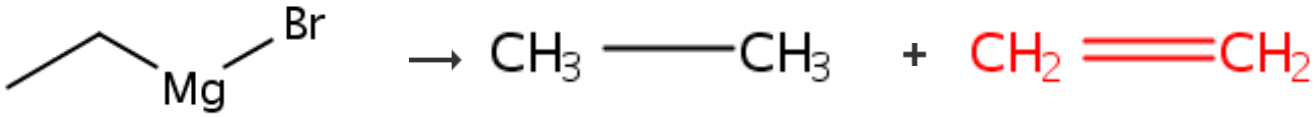
Synthesis of carbon-13-enriched monochlorobutadienes for microwave and carbon-13 NMR spectroscopy

By Karlsson, Fred and Granberg, Lena

From Chemica Scripta, 13(4), 147-9; 1979



**42. Single Step**



**88%** **1%**

Overview

**Steps/Stages**

1.1 R:Ti(OPr-*i*)$_4$, S:Et$_2$O, 9 min, rt

**Notes**

product depends on reaction time and stoichiometry, Reactants: 1, Reagents: 1, Solvents: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

Alkylative reduction of titanium(IV) isopropoxide with EtMgBr: Convenient method for the generation of subvalent titanium alkoxide reagents and their reactivity in pinacol coupling reactions

By Matiushenkov, Evgenii A. et al

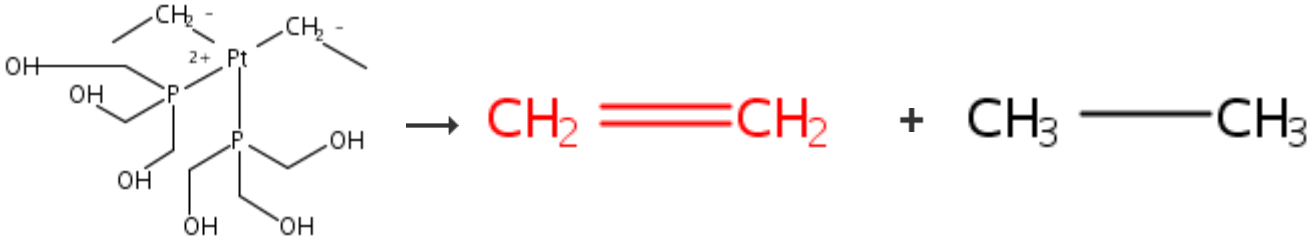
From Synlett, (1), 77-80; 2004

Experimental Procedure

When titanium(IV) isopropoxide (**1**) was treated with a 10-fold excess of ethylmagnesium bromide in diethyl ether at room temperature, the intensive gas evolution was only observed during addition of the first 5 equivalents of the Grignard reagent (Table 1, entry 1-5). Ethane and ethene were the main components of the gaseous products. Ethylene, yield <1%; Ethane, yield 88%.



**43. Single Step**




**46%** **84%**

Overview

**Steps/Stages**

1.1 S:$D_2O$

**Notes**

thermal, Reactants: 1, Solvents: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

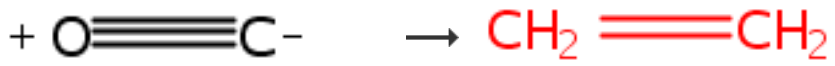
Synthesis and reactions of water-soluble diorganoplatinum(II) complexes

By Komiva, Sanshiro et al

From Chemistry Letters, (1), 72-73; 2002



**44. Single Step**




Overview

**Steps/Stages**

1.1 R:$H_2$, S:$H_2O$, 5 h, 50°C, 1.3 kPa

**Notes**

low pressure, Reactants: 1, Reagents: 1, Solvents: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

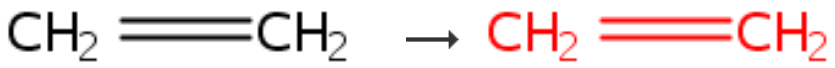
Method for preparing pregnenolone

By Wang, Youfu et al

From Faming Zhuanli Shenqing, 109970835, 05 Jul 2019



**45. Single Step**



Overview

**Steps/Stages**

1.1

**Notes**

no experimental detail, Reactants: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

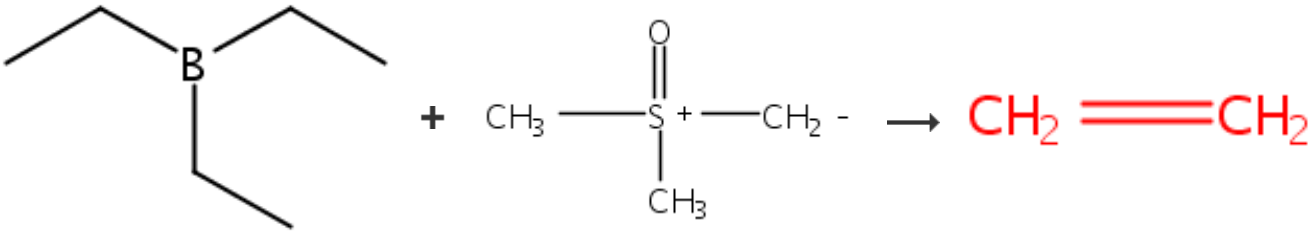
Separations system for recovering hydrocarbons from synthesis of polyethylene polymers

By Blood, Mark W. and Sherman, Brent J.

From PCT Int. Appl., 2019241341, 19 Dec 2019



**46. Single Step**



hydroxy-terminated

Overview

**Steps/Stages**

1.1 30 min

1.2 R:$Me_3N{=}O$, 16 h, 80°C; cooled

**Notes**

conversion = 100%, Reactants: 2, Reagents: 1, Steps: 1, Stages: 2, Most stages in any one step: 2

**References**

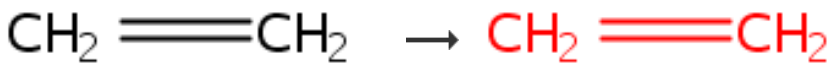
A new tricrystalline triblock terpolymer by combining polyhomologation and ring-opening polymerization. synthesis and thermal properties

By Ladelta, Viko et al

From Journal of Polymer Science, Part A: Polymer Chemistry, 57(24), 2450-2456; 2019



**47. Single Step**



Overview

**Steps/Stages**

1.1

**Notes**

plasma polymerization, graphite used, 100W used, no experimental detail, Reactants: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

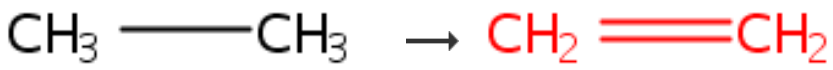
Thermal conductivity of high density polyethylene: Cold plasma modified graphite composites

By Ramos-de Valle, Luis F. et al

From Polymer Composites, 40(11), 4228-4237; 2019



**48. Single Step**



Overview

**Steps/Stages**

1.1 $S:H_2O$, 873-943K

**Notes**

thermal, Reactants: 1, Solvents: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

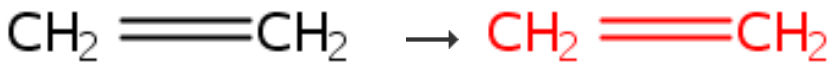
Steam reforming of ethylene over manganese-chromium spinel oxides

By Yang, Lu et al

From Journal of Catalysis, 380, 224-235; 2019



**49. Single Step**

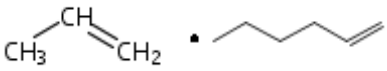


Overview

**Steps/Stages**

**Notes**

1.1 R:



75°C, 24.99 bar

alternate reaction conditions also shown,gas phase reactor used, high pressure, Reactants: 1, Reagents: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

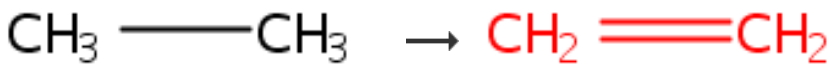
Polypropylene-ultrahigh-molecular-weight-polyethylene composition and its preparation

By Leskinen, Pauli et al

From PCT Int. Appl., 2019215125, 14 Nov 2019



**50. Single Step**



Overview

**Steps/Stages**

1.1

**Notes**

no experimental detail, Reactants: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

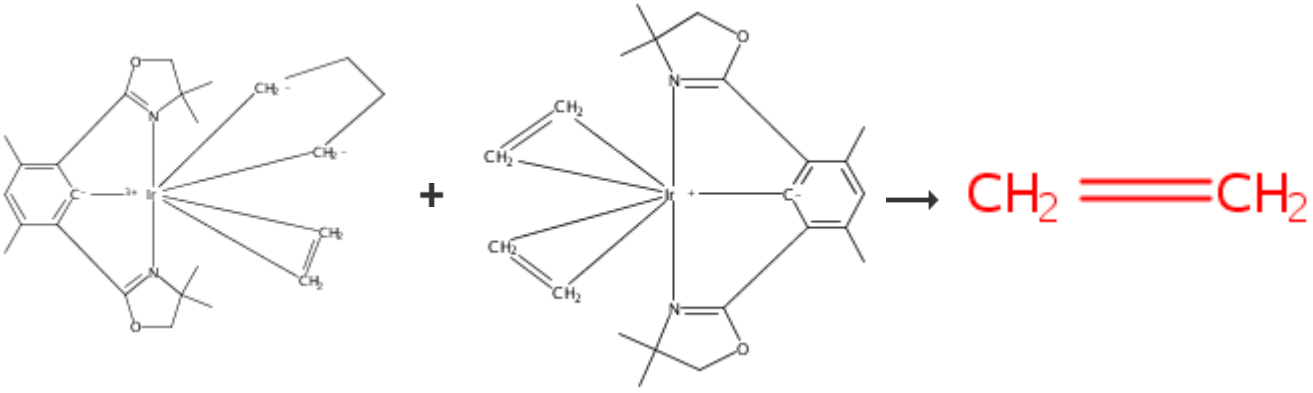
Method for coupling light hydrocarbon cracking front-deethanization process and PDH (propane dehydrogenation) process

By Peng, Tingting et al

From Faming Zhuanli Shenqing, 109809957, 28 May 2019



**51. Single Step**



Overview

**Steps/Stages**

**Notes**

1.1 S:41051-88-1, 1 h, 90°C, 1 atm

Reactants: 2, Solvents: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

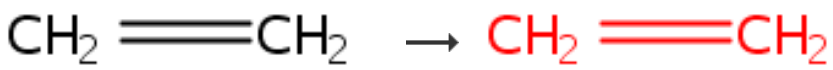
Catalysts for selective coupling of olefins, and methods of making and using same

By Goldman, Alan S. and Gao, Yang

From U.S. Pat. Appl. Publ., 20190126260, 02 May 2019



**52. Single Step**



Overview

**Steps/Stages**

1.1 100-350°C, 110 MPa → 500 MPa

**Notes**

Reactants: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

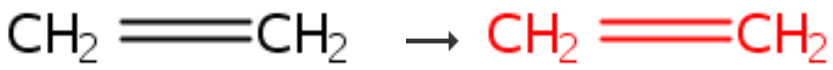
Manufacturing plant for high-pressure ethylene polymerization and method for emergency shutdown

By Littmann, Dieter et al

From Eur. Pat. Appl., 3505541, 03 Jul 2019



**53. Single Step**



Overview

**Steps/Stages**

1.1 100-350°C, 110 MPa → 500 MPa

**Notes**

Reactants: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

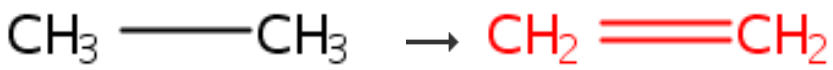
**References**

Manufacturing plant for high-pressure ethylene polymerization and method for emergency shutdown

By Littmann, Dieter et al

From PCT Int. Appl., 2019134886, 11 Jul 2019

**54. Single Step**



Overview

**Steps/Stages**

1.1

**Notes**

no experimental detail, Reactants: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

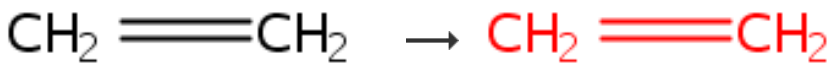
Method for coupling PDH and pyrolysis front depropanization of naphtha and ethane

By Zhou, Ruying et al

From Faming Zhuanli Shenqing, 109761733, 17 May 2019



**55. Single Step**



Overview

**Steps/Stages**

1.1 R:$AlEt_3$, 6 h, 85°C

**Notes**

fluidized bed reactor used, Reactants: 1, Reagents: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

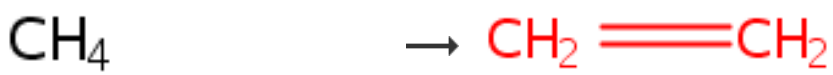
Preparing and monitoring a seed bed for polymerization reactor startup

By Singh, Diwaker

From PCT Int. Appl., 2019173030, 12 Sep 2019



**56. Single Step**



Overview

**Steps/Stages**

1.1 R:$O_2$, R:CO, S:BuOH, 24°C

**Notes**

other product also detected, Reactants: 1, Reagents: 2, Solvents: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

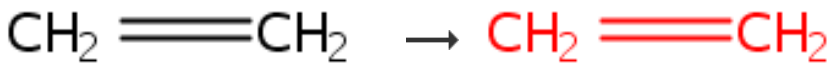
Method and apparatus for separating reaction gas generated in methane-to-ethylene oxidative coupling process

By Luo, Shujuan et al

From Faming Zhuanli Shenqing, 109678641, 26 Apr 2019



**57. Single Step**



Overview

**Steps/Stages**

1.1

**Notes**

no experimental detail, Reactants: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

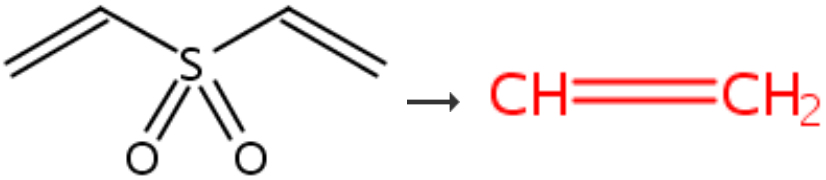
XPE foaming material and preparation method thereof

By Liu, Rugan

From Faming Zhuanli Shenqing, 110317385, 11 Oct 2019



**58. Single Step**



Overview

**Steps/Stages**

**Notes**

1.1

no experimental detail, Reactants: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

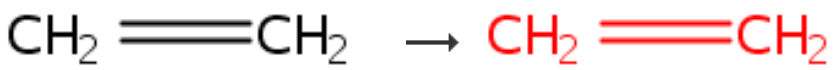
The ionization energy of the vinyl radical: a Mexican standoff with a happy ending

By Wu, Xiangkun et al

From Physical Chemistry Chemical Physics, 21(40), 22238-22247; 2019



**59. Single Step**



Overview

**Steps/Stages**

1.1 S:Me$(CH_2)_4$Me, 10 min, 85°C, 5 kg/cm2

**Notes**

aluminoxane used, reaction carried out with various reaction conditions, thermal, Reactants: 1, Solvents: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

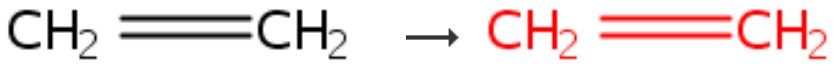
Method for producing polyethylene wax having low molecular weight and narrow molecular weight distribution

By Kim, In Tae and Kim, Yeong Hwan

From Repub. Korea, 2005861, 31 Jul 2019



**60. Single Step**



Overview

**Steps/Stages**

1.1

**Notes**

no experimental detail, Reactants: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

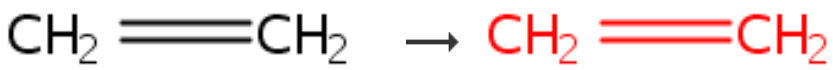
**References**

Fluorinated polyethylene composite superhydrophobic waterproof nano film

By Yang, Funian and Zheng, Xiwen

From Faming Zhuanli Shenqing, 109880143, 14 Jun 2019

**61. Single Step**



Overview

**Steps/Stages**

1.1 R:$H_2$, S:75-28-5, 130 min, 100°C, 1.4 MPa

**Notes**

autoclave used, high pressure, Reactants: 1, Reagents: 1, Solvents: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

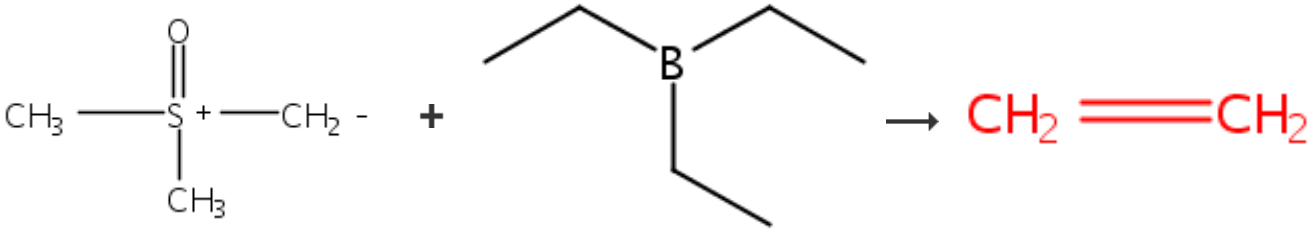
Manufacturing method of ethylene polymerization catalyst and method for of manufacturing ethylene-based polymer

By Yamamoto, Kazuhiro and Hirokane, Hirisati

From Jpn. Kokai Tokkyo Koho, 2019172990, 10 Oct 2019



**62. Single Step**



hydroxy-terminated

Overview

**Steps/Stages**

1.1 S:$Me(CH_2)_4Me$, 30 min

1.2 R:$Me_3N{=}O$, 16 h, 80°C

**Notes**

in the dark, Reactants: 2, Reagents: 1, Solvents: 1, Steps: 1, Stages: 2, Most stages in any one step: 2

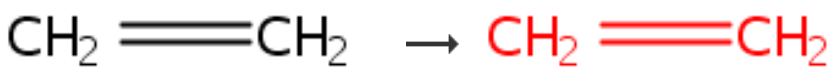
**References**

Tetracrystalline Tetrablock Quarterpolymers: Four Different Crystallites under the Same Roof

By Ladelta, Viko et al

From Angewandte Chemie, International Edition, 58(45), 16267-16274; 2019

**63. Single Step**



Overview

**Steps/Stages**

1.1 300-304°C, 31 MPa

**Notes**

high pressure reactor used, high pressure, Reactants: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

Load adjusting method for high-pressure polyethylene device

By Huang, Qizhong et al

From Faming Zhuanli Shenqing, 110240666, 17 Sep 2019



**64. Single Step**

Overview

**Steps/Stages**

1.1

**Notes**

reaction conducted in presence of oxygen, no experimental detail, photochemical, Reactants: 2, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

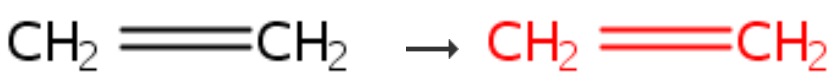
Integrated process for polyolefin production with reduced greenhouse gas emission

By Fowler, Nick et al

From U.S. Pat. Appl. Publ., 20190084902, 21 Mar 2019



**65. Single Step**



Overview

**Steps/Stages**

**Notes**

1.1

no experimental detail, Reactants: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

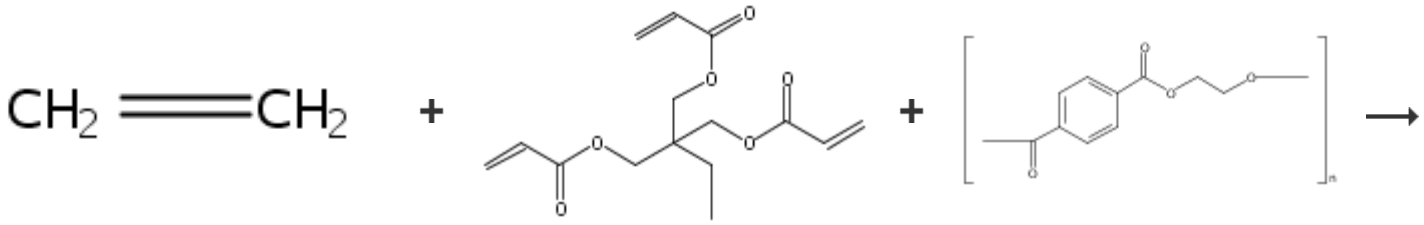
Spun-bonded nonwoven fabric, sanitary material and method for manufacturing spun-bonded nonwoven fabric

By Ichikawa, Taiichiro et al

From PCT Int. Appl., 2019146656, 01 Aug 2019



**66. Single Step**



esters with glycidyl methacrylate, polymer

polymers with PET glycidyl methacrylate es

Overview

**Steps/Stages**

1.1

**Notes**

UV irradiation, no experimental detail, photochemical, Reactants: 3, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

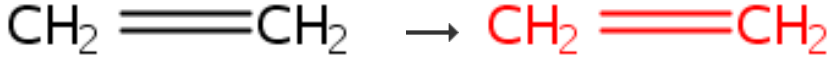
PET/PE blend alloy and preparation method thereof

By He, Guangjian et al

From Faming Zhuanli Shenqing, 110054872, 26 Jul 2019



**67. Single Step**

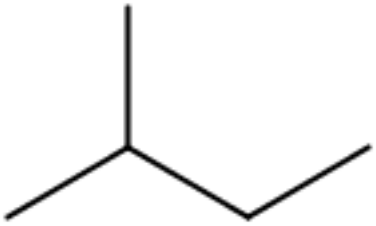


Overview

**Steps/Stages**

**Notes**

1.1 R:



R:$H_2$

Reactants: 1, Reagents: 2, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

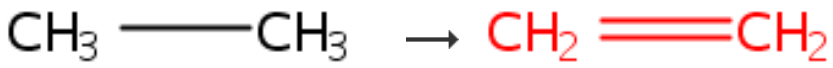
Thermal-Stability Analysis of Ethylene-Polymerization Fluidized-Bed Reactors under Condensed-Mode Operation through a TPM-PBM Integrated Model

By Fan, Xiaoqiang et al

From Industrial & Engineering Chemistry Research, 58(22), 9486-9499; 2019



**68. Single Step**



Overview

**Steps/Stages**

1.1 R:$CO_2$, 450°C, 20 bar

**Notes**

other products also detected, high pressure, Reactants: 1, Reagents: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

Oxidative dehydrogenation of ethane using carbon dioxide

By Beauchamp, Damian et al

From U.S. Pat. Appl. Publ., 20190062236, 28 Feb 2019



**69. Single Step**

Overview

**Steps/Stages**

1.1 S:$Me(CH_2)_4Me$

1.2 R:$H_2O$

**Notes**

Reactants: 1, Reagents: 1, Solvents: 1, Steps: 1, Stages: 2, Most stages in any one step: 2

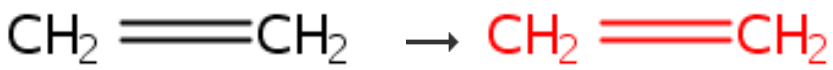
**References**

Grafting process after solution polymerization

By Guo, Feng et al

From Faming Zhuanli Shenqing, 109593162, 09 Apr 2019

**70. Single Step**



Overview

**Steps/Stages**

1.1

**Notes**

no experimental detail, Reactants: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

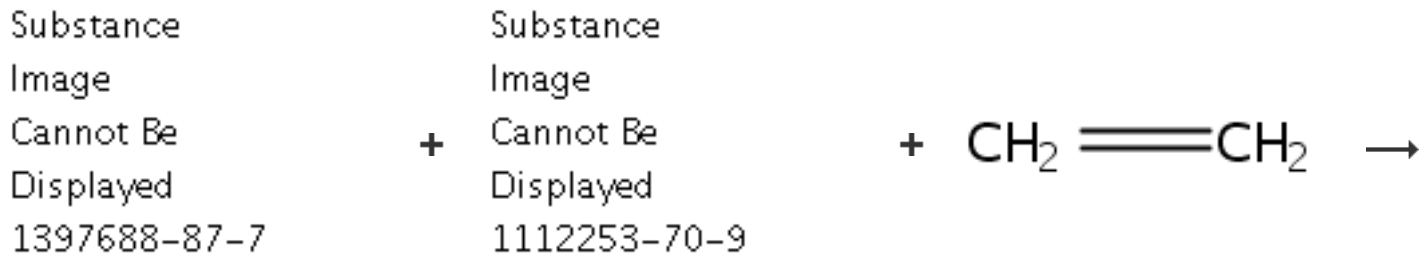
Clean closed-loop production method and system for polyolefins

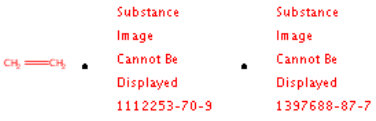
By Chang, Xibin et al

From Faming Zhuanli Shenqing, 109456431, 12 Mar 2019



**71. Single Step**




Overview

**Steps/Stages**

**Notes**

1.1 S:84540-57-8, S:$H_2O$

leveling agent and film-forming agent used, Reactants: 3, Solvents: 2, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

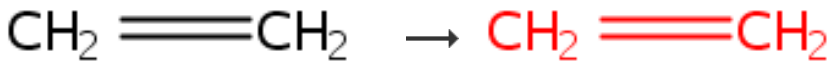
High-performance environmentally friendly water-based two-component topcoat for plastic substrate and production process thereof

By Zhang, Lei and Zhang, Tao

From Faming Zhuanli Shenqing, 109337549, 15 Feb 2019



**72. Single Step**



Overview

**Steps/Stages**

1.1

**Notes**

no experimental detail, Reactants: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

High pressure, free radical polymerizations to produce ethylene-based polymers

By Hosman, Cornelis J. F. and Dang, Nhi T. Y.

From PCT Int. Appl., 2019005812, 03 Jan 2019



**73. Single Step**

Overview

**Steps/Stages**

**Notes**

1.1

literature preparation,no experimental detail, Reactants: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

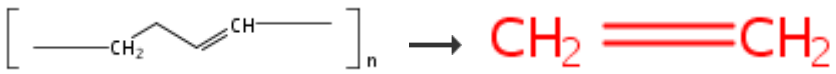
Synthesis and characterization of silica/ferric oxide nanofibers: Useful materials for catalysis in ethanol dehydration

By Yang, Huifang et al

From Journal of Solid State Chemistry, 270, 27-34; 2019



**74. Single Step**



carboxyl-terminated carboxyl-terminated

Overview

**Steps/Stages**

1.1 R:$Pr_3N$, R:*p*-$MeC_6H_4SO_2NHNH_2$, S:*o*-Xylene, 4 h, 135-140°C

**Notes**

sealed flask used, Reactants: 1, Reagents: 2, Solvents: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

Facile access to carboxyl-terminated polybutadiene and polyethylene from cis-polybutadiene rubber

By Dai, Lu et al

From Journal of Applied Polymer Science, 136(2), n/a; 2019

Reaction Protocol

**Procedure**

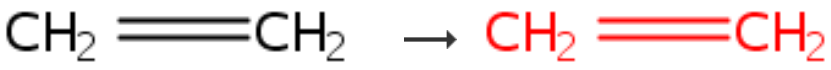
1. Perform hydrogenation of CTPB.
2. Purge a sealed flask loaded with CTPB and p toluene sulfonyl hydrazide via a nitrogen system for 10 min.

View more...

View with MethodsNow



**75. Single Step**



oxidized

Overview

**Steps/Stages**

1.1 R:$O_2$, 2-12 h, 145°C

**Notes**

Reactants: 1, Reagents: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

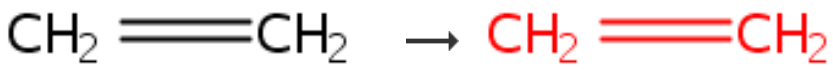
Valorization of polyethylene degradation products by blending with PHB biopolyester

By Kwiecien, Michal et al

From Journal of Chemical Technology and Biotechnology, 91(6), 1623-1628; 2016



**76. Single Step**



Overview

**Steps/Stages**

1.1

**Notes**

no experimental detail, Reactants: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

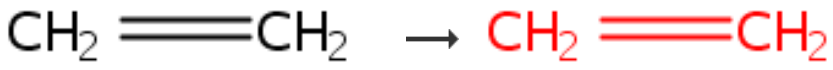
Coating process of particulate systems and films by insitu polymerization of monomers

By De Freitas, Rilton Alves and Bresolin, Tania Mari Belle

From Braz. Pedido PI, 2011006611, 06 Sep 2016



**77. Single Step**



fluorinated

Overview

**Steps/Stages**

1.1 180 min, 20°C

**Notes**

literature preparation, Reactants: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

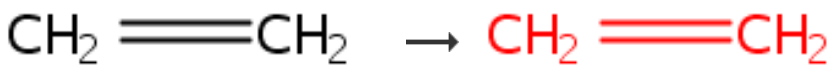
**References**

Effect of Fluorination of Ultrahigh-Molecular-Weight Polyethylene and Its Composites on the Surface Structure and Properties

By Nazarov, V. G. et al

From Russian Journal of Physical Chemistry B, 12(6), 1066-1075; 2018

**78. Single Step**



Overview

**Steps/Stages**

1.1 R:$H_2$

**Notes**

Reactants: 1, Reagents: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

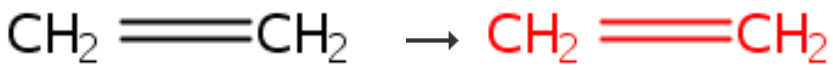
Non-adiabatic two-phase (liquid-liquid) polymerization process

By Brown, Stephen et al

From Can. Pat. Appl., 2969280, 30 Nov 2018



**79. Single Step**



Overview

**Steps/Stages**

1.1 R:$H_2$, 30 min, 60°C, 0.3 MPa

**Notes**

Reactants: 1, Reagents: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

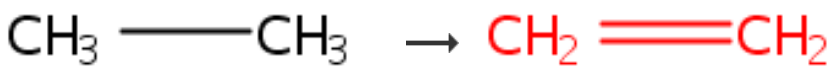
Preparation method of high-density polyethylene/ethylene-propylene copolymer in-situ alloy

By Zhang, Biao et al

From Faming Zhuanli Shenqing, 108752691, 06 Nov 2018



**80. Single Step**



Overview

**Steps/Stages**

**Notes**

1.1 R:

Substance Image Cannot Be Displayed

2332138-75-5

Reactants: 1, Reagents: 1, Solvents: 2, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

Slurry composition, thermosetting resin composition, prepreg, laminate, and printed circuit board with excellent dispersibility, stability, and dielectric properties

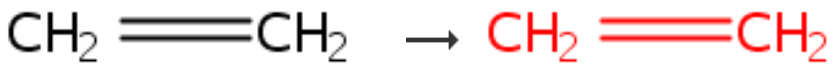
By Hao, Liangpeng et al

From Faming Zhuanli Shenqing, 109021292, 18 Dec 2018

S:Xylene, S:PhMe



**81. Single Step**



Overview

**Steps/Stages**

1.1

**Notes**

no experimental detail, Reactants: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

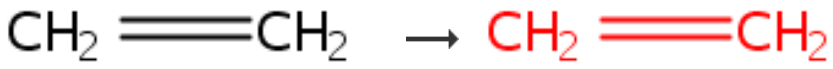
Analytical temperature rising elution fractionation of different polyethylene types using a column filled with carbon nanotubes

By Boborodea, Adrian and Hermans, Sophie

From International Journal of Polymer Analysis and Characterization, 23(5), 435-441; 2018



**82. Single Step**



Overview

**Steps/Stages**

**Notes**

1.1 R:$H_2$

Reactants: 1, Reagents: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

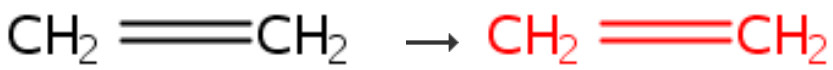
Non-adiabatic two-phase (liquid-liquid) polymerization process

By Brown, Stephen et al

From PCT Int. Appl., 2018220486, 06 Dec 2018



**83. Single Step**



Overview

**Steps/Stages**

1.1

**Notes**

no experimental detail, Reactants: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

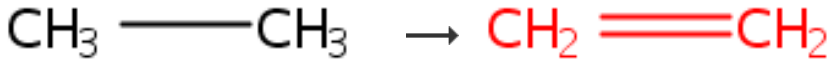
Fluorine-containing synthetic base oil, its preparation method and its application as lubricating oil

By Wei, Dongchu et al

From Faming Zhuanli Shenqing, 108484801, 04 Sep 2018



**84. Single Step**



Overview

**Steps/Stages**

1.1 R:CO, R:$O_2$

**Notes**

Reactants: 1, Reagents: 2, Steps: 1, Stages: 1, Most stages in any one step: 1

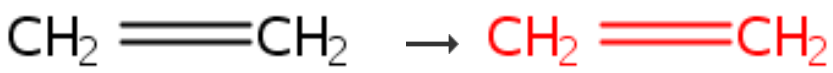
**References**

Method and system for producing olefins from paraffins via oxidative dehydration

By Fritz, Helmut et al

From Eur. Pat. Appl., 3318545, 09 May 2018

**85. Single Step**



Overview

**Steps/Stages**

1.1 R:$H_2$, 81-85°C, 650-700 kPa

**Notes**

Reactants: 1, Reagents: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

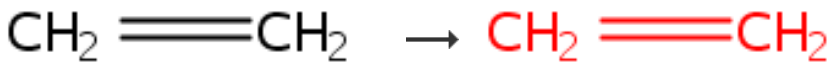
Multimodal polyethylene thin film, process and reactor system

By Mattayan, Arunsri et al

From PCT Int. Appl., 2018046656, 15 Mar 2018



**86. Single Step**



Overview

**Steps/Stages**

1.1

**Notes**

no experimental detail, Reactants: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

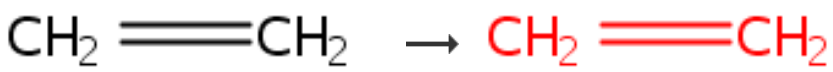
Monofunctional and Telechelic Polyethylenes Carrying Phosphonic Acid End Groups

By Nzahou Ottou, Winnie et al

From Macromolecular Rapid Communications, 39(19), n/a; 2018



**87. Single Step**



polymers

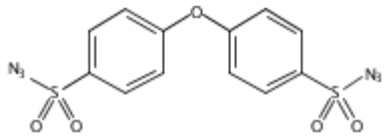
vinyl- and iodide-terminated, azidated

Overview

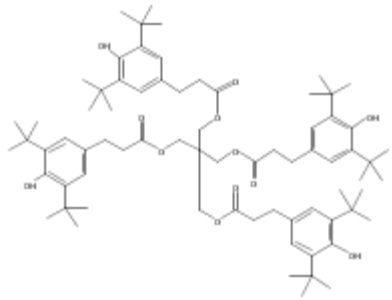
**Steps/Stages**

**Notes**

1.1 R:



R:



S:PhMe, 40°C; 30 min, 40°C

polymer with various monomer ratios prepared, Reactants: 1, Reagents: 2, Solvents: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

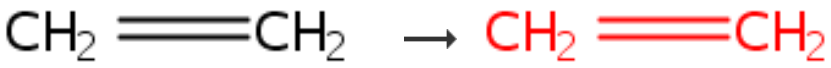
Azide-modified olefin as polymeric coupling agent, and method for production of polymeric coupling agent

By Few, Chip and Fernandes, Jonas Alves

From PCT Int. Appl., 2018191713, 18 Oct 2018



**88. Single Step**



Overview

**Steps/Stages**

1.1

**Notes**

no experimental detail, Reactants: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

Method and formulation for renewable polyethylene foams

By Ramesh, Natarajan et al

From PCT Int. Appl., 2018174988, 27 Sep 2018



**89. Single Step**

Overview

**Steps/Stages**

**Notes**

1.1

no experimental detail, Reactants: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

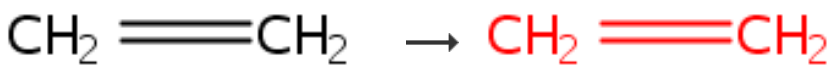
Method and formulation for renewable polyethylene foams

By Ramesh, Natarajan et al

From PCT Int. Appl., 2018174988, 27 Sep 2018



**90. Single Step**



Overview

**Steps/Stages**

1.1

**Notes**

no experimental detail, Reactants: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

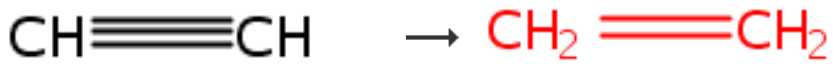
Polyolefin resin composition for matte film and film produced therefrom

By Kim, Dong Jin et al

From Repub. Korea, 1892870, 28 Aug 2018



**91. Single Step**



Overview

**Steps/Stages**

1.1

**Notes**

alternative preparation shown,no experimental detail, Reactants: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

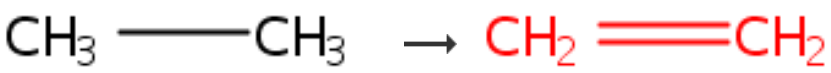
**References**

Efficient oxidative coupling of methane processes and systems

By Rafique, Humera A. et al

From U.S. Pat. Appl. Publ., 20180215682, 02 Aug 2018

**92. Single Step**



Overview

**Steps/Stages**

1.1

**Notes**

fixed bed reactor used,alternative preparation shown,no experimental detail, Reactants: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

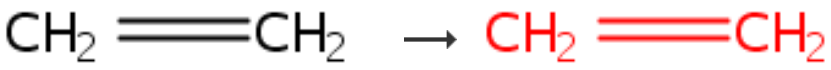
Efficient oxidative coupling of methane processes and systems

By Rafique, Humera A. et al

From U.S. Pat. Appl. Publ., 20180215682, 02 Aug 2018



**93. Single Step**



Overview

**Steps/Stages**

1.1

**Notes**

no experimental detail, Reactants: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

Resin composition for extrusion lamination and laminate film using the same

By Yasumitsu, Masahiko

From Jpn. Tokkyo Koho, 6420891, 07 Nov 2018



**94. Single Step**

Overview

**Steps/Stages**

**Notes**

1.1

no experimental detail, Reactants: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

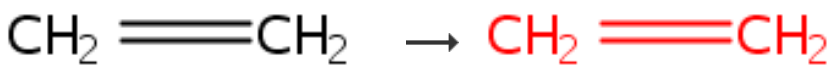
Artificial leather of polyester produced from biomass-derived ethylene glycol

By Ko, Gyeong Cheol et al

From Repub. Korean Kongkae Taeho Kongbo, 2018036001, 09 Apr 2018



**95. Single Step**



Overview

**Steps/Stages**

1.1 R:$AlEt_3$, R:$H_2$, S:$Me(CH_2)_4Me$, rt → 85°C; 0.18 MPa
1.2 2 h, 85°C, 1.03 MPa

**Notes**

low pressure, Reactants: 1, Reagents: 2, Solvents: 1, Steps: 1, Stages: 2, Most stages in any one step: 2

**References**

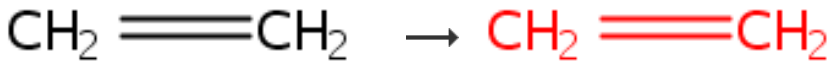
Catalyst composition for olefin polymerization, and its preparing method and catalyst

By Wang, Shibo et al

From Faming Zhuanli Shenqing, 107880195, 06 Apr 2018



**96. Single Step**



Overview

**Steps/Stages**

1.1 70°C, 1 MPa

**Notes**

Reactants: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

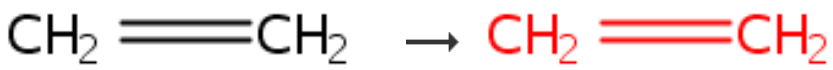
**References**

Preparing method and application of ultrahigh-molecular weight polyethylene resin

By Mei, Li et al

From Faming Zhuanli Shenqing, 107880197, 06 Apr 2018

**97. Single Step**



Overview

**Steps/Stages**

1.1 R:$(EtO)_2Mg$, R:$TiCl_4$, 85°C; 1 h, 85°C; 85°C → 65°C

1.2 R:$AlEt_3$, 1 h, 65°C; 2 h, 120°C

1.3 S:$Me(CH_2)_4Me$, 2 h, 80°C, 6 bar

**Notes**

stainless steel reactor used, isoparaffin used as solvent, Reactants: 1, Reagents: 3, Solvents: 1, Steps: 1, Stages: 3, Most stages in any one step: 3

**References**

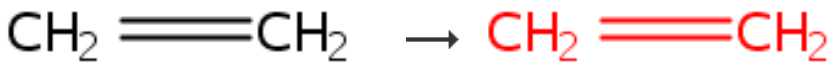
Effects of the Ethoxide in the Coordination Sphere of Titanium on the Performance of MgCl2-Based Ziegler-Natta Catalyst

By Fisch, Adriano G.

From Industrial & Engineering Chemistry Research, 57(18), 6141-6152; 2018



**98. Single Step**



Overview

**Steps/Stages**

1.1

**Notes**

no experimental detail, desiccant used, Reactants: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

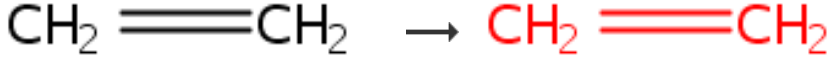
Rotational molding polyethylene composition

By Ma, Li et al

From Faming Zhuanli Shenqing, 108546352, 18 Sep 2018



**99. Single Step**



Overview

**Steps/Stages**

1.1

**Notes**

no experimental detail, Reactants: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

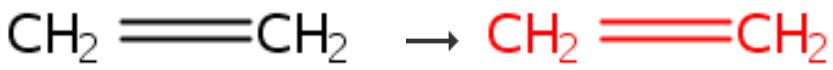
Selective catalytic hydrogenation of acetylene in the presence of excess ethylene

By Corma Canos, Avelino et al

From PCT Int. Appl., 2018134455, 26 Jul 2018



**100. Single Step**



Overview

**Steps/Stages**

1.1

**Notes**

carbon nanotubes used, no experimental detail, Reactants: 1, Steps: 1, Stages: 1, Most stages in any one step: 1

**References**

Terahertz dielectric properties of multiwalled carbon nanotube/polyethylene composites

By Dorozhkin, K. V. et al

From Materials Research Express, 4(10), 106201/1-106201/7; 2017