Catalysts

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Enabling Discovery

Heterogeneous Catalysts

Transition metals deposited on inert supports, in powder form, or as slurries, act as catalysts in myriad organic chemical reactions. Platinum group metals make up most heterogeneous catalysts, allowing for robust hydrogenations or oxidations in mild conditions. And, these heterogeneous catalysts can be filtered easily from the reaction mixture and in some cases, regenerated through oxidation.

Trilfate Catalysts

Metal triflate (trifluoromethanesulfonate) catalysts were developed in the search for catalysts that tolerated water and other protic solvents with high stability, selectivity, and turnover frequency. Whereas most Lewis acids used in organic solvents need strict anhydrous conditions to function, metal triflates are water soluble and can be removed from reactions with extraction. Kobayashi, coworkers and others showed these metal triflates can be used in a wide range of organic processes: Diels-Alder reactions, aldol condensations, radical additions, Friedel-Crafts alkylations and acylations, and aromatic nitrations.

Homogeneous Catalysts

Homogeneous catalysts include soluble transition metal complexes to complete a variety of organic synthesis transformations, some with great selectivity based on the ligands complexed to the metal. Some of the other advantages of homogeneous catalysis include greater enantiomeric selectivity, better metal utilization in the reaction, tailored catalysts with ligand selection, and improved kinetically and temperature-controlled reactions.

The types of reactions possible with these soluble transition metal complexes depend on the metal chosen, its oxidative state, the ligands bound to the metal, and the reaction conditions. Some include oxidative addition to form aromatic carbonyl compounds, reductive elimination (the reverse process), insertion of a one-electron ligand into a metal-alkyl bond, reductive displacement, and alkene metathesis.

Heterogeneous Catalysts

Reagent Grade | Trace Metals Grade

98823	Copper powder <75 um
99565	Copper powder 325 mesh
101546	Indium powder
98966 103890	Erbium(III) trifluoromethanesulfonate
102937	Osmium tetroxide Glass ampoules
75132	Palladium hydroxide on carbon, 20 wt.% 50% water
103499	Palladium acetate, microencapsulated in polyurea matrix extent of labeling: 0.4 mmol/g Pd loading
23236	10% Palladium on carbon wet
103695	Palladium on alumina extent of labeling: 5 wt. % loading (dry basis), powder, wet support <=50% water
103769	Palladium on barium sulfate, extent of labeling: 5 wt% loading unreduced
99971	Palladium on calcium carbonate, poisoned with 3.5% lead, 5% Pd
50112	Platinum 10% on carbon dry powder
99642	Raney(R) Nickel Catalyst, 50% slurry in H2O
44687	Raney Nickel ®2800 slurry, in H2O, active catalyst
13959 102620	Zinc trifluoromethanesulfonate

Triflate Catalysts

Reagent Grade | Trace Metals Grade

99320	Copper(I) trifluoromethanesulfonate benzene complex
99318	Copper(I) trifluoromethanesulfonate toluene complex
12761 102502	Copper (II) trifluoromethanesulfonate
101934 103889	Dysprosium(III) trifluoromethanesulfonate
6639	Indium(III) trifluoromethanesulfonate
99342 102596	Lanthanum(III) trifluoromethanesulfonate
6715 102503	Lithium trifluoromethanesulfonate
6720	Magnesium trifluoromethanesulfonate
103825	Neodymium(III) trifluoromethanesulfonate
7227 103002	Potassium trifluoromethanesulfonate
101933 103818	Samarium(III) trifluoromethanesulfonate
9343 102385	Scandium(III) triflate
7272 102367	Silver trifluoromethanesulfonate
7292 103003	Sodium trifluoromethanesulfonate
7294	Stannous trifluoromethanesulfonate

Homogeneous Catalysts

Reagent Grade | Trace Metals Grade | ACS Grade

48593 245713	1,1'-Bis(Diphenylphosphino) ferrocene-palladium(II) dichloride dichloromethane complex
361976	[1,1'-Bis(diphenylphosphino) ferrocene] dichloronickel(II)
44623	1,3-Bis(diphenylphosphino) propane nickel (II) chloride
50114	Chromium carbonyl
415350 103741	Copper(II) acetylacetonate
94486 99301	Copper (I) Chloride
44716 102617	Copper(I) Bromide
44771 102597	Copper (I) iodide
494110	Nickel(II) acetylacetonate
98898	Nickel(II) chloride
35785 102429	Palladium (II) acetate
34279 102427	Palladium (0) tetrakis (triphenylphosphine)
35787	Tris(Dibenzylideneacetone) dipalladium (0)
35788	Tris(Dibenzylideneacetone) dipalladium (0) chloroform adduct
361923	Benzylidenebis(tricyclohexylphosphine) -dichlororuthenium
102861	(1S,2S)-(+)-1,2-Cyclohexanediamino-N, N'-bis(3,5-di-t-butylsalicylidene) cobalt(II)
103537	(1,5-Cyclooctadiene)bis (methyldiphenylphosphine)-iridium(I) hexafluorophosphate
44344	1,1'-Bis(diphenylphosphino)ferrocene
98866	(R,R)-(-)-N N'-Bis(3,5-di-tert-butyl-salicylidene)-1,2-cyclohexanediami-nomanganese(III) chloride
46130	Allylpalladium(II) chloride dimer
46131	Bis(acetonitrile)palladium(II)chloride
35784 102426	Bis(Triphenylphosphine)palladium (II) chloride
35789 102402	Palladium (II) chloride
50673	Methyltrioxorhenium(VII)
48598	Chloro(1,5-cyclooctadiene) rhodium(I)dimer
48596	Chlorotris(triphenylphosphine) rhodium(I)
235636	Rhodium(III) chloride hydrate, Rh =>39%
99333	Titanocene dichloride
245745	Vanadyl acetylacetonate
102705	Bis(cyclopentadienyl)zirconium(IV) chloride hydride

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