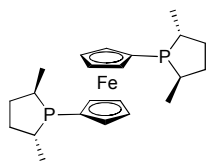
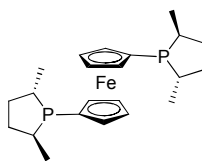




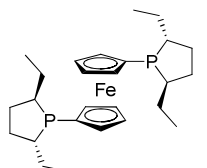
Ferrocene™ Ligands¹



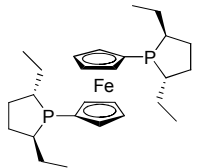
K26-0015
***R,R*-Me-Ferrocene™, ≥97.0%**
**(+)-1,1'-Bis((2*R*,5*R*)-2,5-dimethylphospho-
 lano)ferrocene**
 C₂₂H₃₂FeP₂; F.W: 414.28; [540475-45-4]



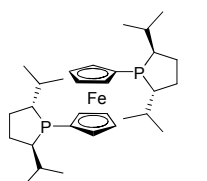
K26-0016
***S,S*-Me-Ferrocene™, ≥97.0%**
**(-)-1,1'-Bis((2*S*,5*S*)-2,5-dimethylphospho-
 lano)ferrocene**
 C₂₂H₃₂FeP₂; F.W: 414.28



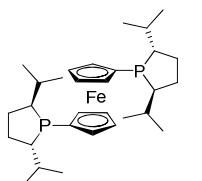
K26-0017
***R,R*-Et-Ferrocene™, ≥97.0%**
**(+)-1,1'-Bis((2*R*,5*R*)-2,5-diethylphospho-
 lano)ferrocene**
 C₂₆H₄₀FeP₂; F.W: 470.39; [147762-89-8]



K26-0018
***S,S*-Et-Ferrocene™, ≥97.0%**
**(-)-1,1'-Bis((2*S*,5*S*)-2,5-diethylphospho-
 lano)ferrocene**
 C₂₆H₄₀FeP₂; F.W: 470.39; [436863-50-2]

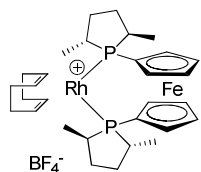


K26-0020
***R,R*-iPr-Ferrocene™, ≥97.0%**
**1,1'-Bis((2*R*,5*R*)-2,5-diisopropylphospho-
 lano)ferrocene**
 C₃₀H₄₈FeP₂; F.W: 526.49; [849950-54-5]

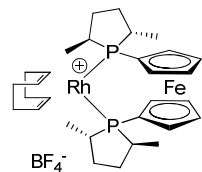


K26-0019
***S,S*-iPr-Ferrocene™, ≥97.0%**
**1,1'-Bis((2*S*,5*S*)-2,5-diisopropylphospho-
 lano)ferrocene**
 C₃₀H₄₈FeP₂; F.W: 526.49; [540475-73-8]

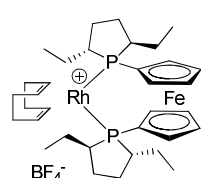
Rhodium Ferrocene™ Catalysts



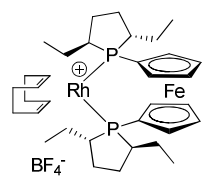
K45-0021
[(*R,R*-Me-Ferrocene)Rh(COD)]BF₄, ≥97.0%
**1,1'-Bis((2*R*,5*R*)-2,5-dimethylphospholano)-
 ferrocene (cyclooctadiene)rhodium(I)
 tetrafluoroborate**
 C₃₀H₄₄BF₄FeP₂Rh; F.W: 712.17



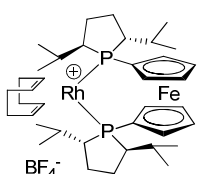
K45-0022
[(*S,S*-Me-Ferrocene)Rh(COD)]BF₄, ≥97.0%
**1,1'-Bis((2*S*,5*S*)-2,5-dimethylphospholano)-
 ferrocene (cyclooctadiene)rhodium(I)
 tetrafluoroborate**
 C₃₀H₄₄BF₄FeP₂Rh; F.W: 712.17



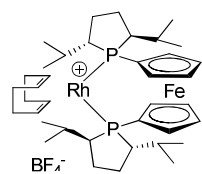
K45-0023
[(*R,R*-Et-Ferrocene)Rh(COD)]BF₄, ≥97.0%
**1,1'-Bis((2*R*,5*R*)-2,5-diethylphospholano)-
 ferrocene (cyclooctadiene)rhodium(I)
 tetrafluoroborate**
 C₃₄H₅₂BF₄FeP₂Rh; F.W: 768.28



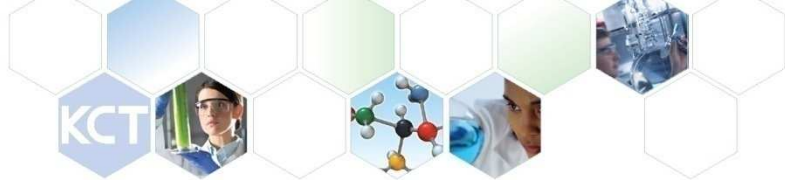
K45-0024
[(*S,S*-Et-Ferrocene)Rh(COD)]BF₄, ≥97.0%
**1,1'-Bis((2*S*,5*S*)-2,5-diethylphospholano)-
 ferrocene (cyclooctadiene)rhodium(I)
 tetrafluoroborate**
 C₃₄H₅₂BF₄FeP₂Rh; F.W: 768.28



K45-0026
[(*R,R*-iPr-Ferrocene)Rh(COD)]BF₄, ≥97.0%
**1,1'-Bis((2*R*,5*R*)-2,5-diisopropylphospho-
 lano)ferrocene (cyclooctadiene)rhodium(I)
 tetrafluoroborate**
 C₃₈H₆₀BF₄FeP₂Rh; F.W: 825.39

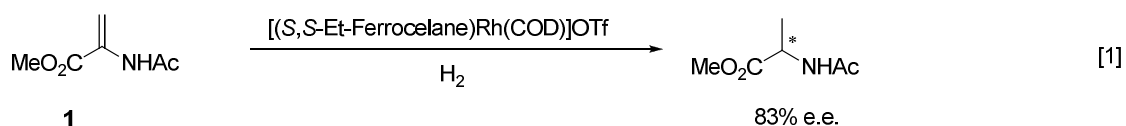


K45-0025
[(*S,S*-iPr-Ferrocene)Rh(COD)]BF₄, ≥97.0%
**1,1'-Bis((2*S*,5*S*)-2,5-diisopropylphospho-
 lano)ferrocene (cyclooctadiene)rhodium(I)
 tetrafluoroborate**
 C₃₈H₆₀BF₄FeP₂Rh; F.W: 825.39

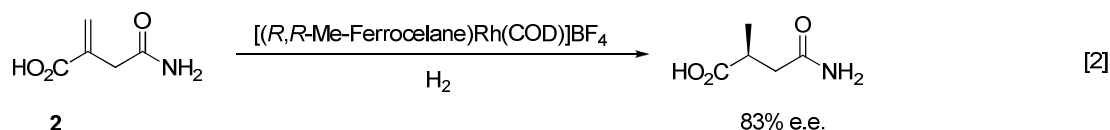


Phospholanes are used extensively in asymmetric catalysis (hydrogenation,² allylboration of ketones,³ dialkylzinc addition to β -nitro-alkenes⁴) exhibiting high activity and enantioselectivity. A recent addition to our portfolio are the FerrocenesTM which feature increased air-stability and shelf-life. FerroceneTM ligands show promise for various enantioselective hydrogenations: pertinent examples are depicted in below. The Rh catalysts are used in the asymmetric hydrogenation of *N*- α -acetamidoacrylate,⁵ (Reaction 1) and 2-methylenesuccinamic acid, (Reaction 2).⁶ More recently, outstanding results for the asymmetric hydrogenation of α -substituted cinnamic acid salts using the Ph-Ferrocene derivative have been reported (Reactions 3-4).⁷ The reduction of **4** provides an intermediate for the renin inhibitor aliskiren.⁸

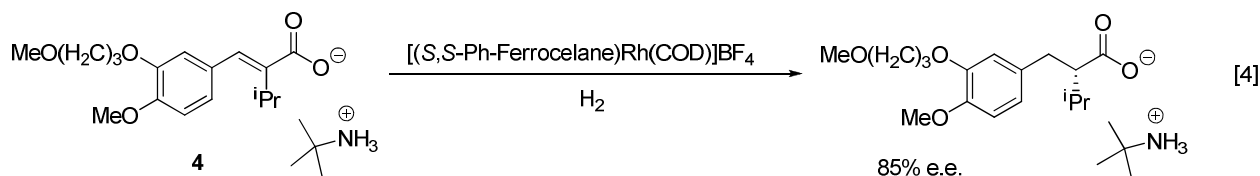
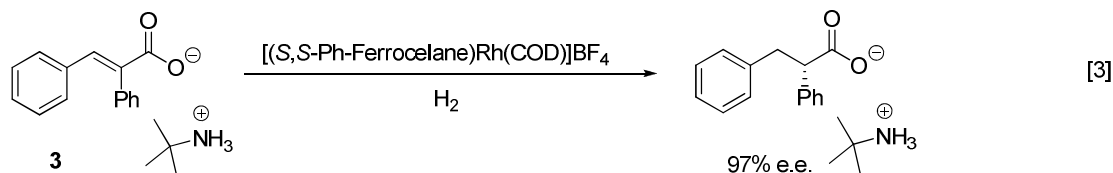
Asymmetric Hydrogenation of *N*- α -acetamidoacrylate:⁵



Asymmetric Hydrogenation of 2-Methylenesuccinamic Acid:⁶



Asymmetric Hydrogenation of α -Substituted Cinnamic Acid Salts:⁷



References

1. Sold under license from Dupont for research purposes.
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