Supporting Information
for
Dynamic Kinetic Asymmetric Allylic Alkylations of Allenes
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Spectra

1-Cyclohexyl-4-(tert-butyldimethylsilyloxy)-but-2-yne-1-ol (E1)

^1H NMR 400MHz in CDCl_3 with TMS

1-Cyclohexyl-4-(tert-butyldimethylsilyloxy)-but-2-yne-1-ol (E1)

C13 125MHz CDCl3 w/TMS

CC1(CCCC1)C(OC2CCOCC2)C#CCOTBS

1-(*tert*-Butyldimethylsilyloxy)-4-cyclohexyl-4-(tetrahydro-2H-pyran-2-yloxy)-but-2-yne (E2)

4-Cyclohexyl-4-(tetrahydro-2H-pyran-2-yloxy)but-2-yn-1-ol (E3)

¹H NMR 400MHz in CDCl₃ with TMS

4-Cyclohexyl-4-(tetrahydro-2H-pyran-2-yloxy)but-2-yn-1-ol (E3)

4-Cyclohexylbuta-2,3-dien-1-ol (E4)

4-Cyclohexylbuta-2,3-dien-1-ol (E4)

4-Cyclohexylbuta-2,3-dienyl acetate (5)

4-Cyclohexylbuta-2,3-dienyl acetate (5)

Octa-2,3-dienyl acetate (4)

^1H NMR 300MHz in CDCl_3 with TMS

Octa-2,3-dienyl acetate (4)

C13 125MHz CDCl₃

5,5-Dimethylhexa-2,3-dienyl acetate (6)

^1H NMR 400MHz in CDCl_3 with TMS

5,5-Dimethylhexa-2,3-dienyl acetate (6)

1-((2-Methylbut-3-yn-2-yloxy)methyl)benzene (E5)

^1H NMR 300MHz in CDCl_3 with TMS

1-((2-Methylbut-3-yn-2-yloxy)methyl)benzene (E5)

C13 75MHz CDCl₃

Ethyl 5-(benzyloxy)-5-methylhexa-2,3-dienoate (E6)

^1H NMR 400MHz in CDCl_3 with TMS

Ethyl 5-(benzyloxy)-5-methylhexa-2,3-dienoate (E6)

5-(Benzyloxy)-5-methylhexa-2,3-dien-1-ol (E7)

^1H NMR 400MHz in CDCl_3 with TMS

5-(Benzyloxy)-5-methylhexa-2,3-dien-1-ol (E7)

C13 100MHz CDCl₃

5-(Benzyloxy)-5-methylhexa-2,3-dienyl acetate (7)

^1H NMR 400MHz in CDCl_3 with TMS

5-(Benzyloxy)-5-methylhexa-2,3-dienyl acetate (7)

C13 100MHz CDCl₃

(S)-(+)-Diethyl 2-methyl-2-(octa-2,3-dienyl)malonate (**10**)

^1H NMR 400MHz in CDCl_3 with TMS

(S)-(+)-Diethyl 2-methyl-2-(octa-2,3-dienyl)malonate (**10**)

C13 100MHz CDCl₃

(S)-Diethyl 2-(4-cyclohexylbuta-2,3-dienyl)-2-methylmalonate (**11**)

(S)-Diethyl 2-(4-cyclohexylbuta-2,3-dienyl)-2-methylmalonate (**11**)

(S)-(+)-Diethyl 2-methyl-2-(5,5-dimethylhexa-2,3-dienyl)malonate (**12**)

(S)-(+)-Diethyl 2-methyl-2-(5,5-dimethylhexa-2,3-dienyl)malonate (12)

C13 100MHz CDCl₃

(S)-(+)-Diethyl 2-(5-(benzyloxy)-5-methylhexa-2,3-dienyl)-2-methylmalonate (**13**)

¹H NMR 300MHz in CDCl₃ with TMS

(S)-(+)-Diethyl 2-(5-(benzyloxy)-5-methylhexa-2,3-dienyl)-2-methylmalonate (13)

(S)-(+)-Dimethyl 2-(5-(benzyloxy)-5-methylhexa-2,3-dienyl)malonate (**14**)

¹H NMR 500MHz in CDCl₃ with TMS

(S)-(+)-Dimethyl 2-(5-(benzyloxy)-5-methylhexa-2,3-dienyl)malonate (**14**)

(S)-(+)- Dimethyl 2-((2E,4E)-hexa-2,4-dienyl)-2-(octa-2,3-dienyl)malonate (15)

(S)-(+)- Dimethyl 2-((2*E*,4*E*)-hexa-2,4-dienyl)-2-(octa-2,3-dienyl)malonate (15)

C13 100MHz CDCl₃

(S)-(+)-Dimethyl 2-((*S*)-5-(benzyloxy)-5-methylhexa-2,3-dienyl)-2-((2*E*,4*E*)-hexa-2,4-dienyl)malonate (**16**)

^1H NMR 500MHz in CDCl_3 with TMS

(S)-(+)-Dimethyl 2-((S)-5-(benzyloxy)-5-methylhexa-2,3-dienyl)-2-((2E,4E)-hexa-2,4-dienyl)malonate (16)

(S)-(+)- *N*-Benzyl-5-(benzyloxy)-*N*,5-dimethylhexa-2,3-dien-1-amine (19)

^1H NMR 400MHz in CDCl_3 with TMS

(S)-(+)- *N*-Benzyl-5-(benzyloxy)-*N*,5-dimethylhexa-2,3-dien-1-amine (19)

C13 100MHz CDCl₃

(S)-(+)-1-(5-(Benzyloxy)-5-methylhexa-2,3-dienyl)pyrrolidine (20)

^1H NMR 400MHz in CDCl_3 with TMS

(S)-(+)-1-(5-(Benzyloxy)-5-methylhexa-2,3-dienyl)pyrrolidine (20)

C13 100MHz CDCl₃

(S)-(+)-2-(*N*-benzyl-*N*-(5-(benzyloxy)-5-methylhexa-2,3-dienyl)amino)ethanol (**21**)

¹H NMR 400MHz in CDCl₃ with TMS

(S)-(+)-2-(*N*-benzyl-*N*-(5-(benzyloxy)-5-methylhexa-2,3-dienyl)amino)ethanol (**21**)

(R)-(-)-1-(5-(Benzyloxy)-5-methylhexa-2,3-dienyl)indoline (22)

(R)-(-)-1-(5-(Benzyloxy)-5-methylhexa-2,3-dienyl)indoline (22)

(S)-(+)-*N*-benzyl-*N*-methylocta-2,3-dien-1-amine (23)

¹H NMR 400MHz in CDCl₃ with TMS

(S)-(+)-N-benzyl-N-methylocta-2,3-dien-1-amine (23)

(S)-(+)-1-(*tert*-butyldimethylsilyloxy)-3-buten-2-ol (*E*9)

¹H NMR 500MHz in CDCl₃ with TMS

(S)-(+)-1-(*tert*-butyldimethylsilyloxy)-3-butyne-2-ol (*E9*)

(S)-(+)-1-(*tert*-butyldimethylsilyloxy) but-3-yn-2-yl acetate (*E10*)

^1H NMR 500MHz in CDCl_3 with TMS

(S)-(+)-1-(*tert*-butyldimethylsilyloxy) but-3-yn-2-yl acetate (*E10*)

(S)-(+)-*tert*-Butyldimethyl(octa-2,3-dienyloxy)silane (*E11*)

(S)-(+)-*tert*-Butyldimethyl(octa-2,3-dienyloxy)silane (*E11*)

(S)-(+)-Octa-2,3-dien-1-ol (E12)

(S)-(+)-Octa-2,3-dien-1-ol (E12)

(3a*S*,6*R*,7*Z*,7a*S*)-(+)-Dimethyl 3,3a,7,7a-tetrahydro-6-methyl-7-pentylidene-1*H*-indene-2,2(6*H*)-dicarboxylate (24)

(3aS,6R,7Z,7aS)-(+)-Dimethyl 3,3a,7,7a-tetrahydro-6-methyl-7-pentylidene-1H-indene-2,2(6H)-dicarboxylate (24)

(3a*S*,6*R*,7*Z*,7a*S*)-(+)-Dimethyl 7-(2-(benzyloxy)-2-methylpropylidene)-3,3a,7,7a-tetrahydro-6-methyl-1*H*-indene-2,2(6*H*)-dicarboxylate (25)

(3aS,6R,7Z,7aS)-(+)-Dimethyl 7-(2-(benzyloxy)-2-methylpropylidene)-3,3a,7,7a-tetrahydro-6-methyl-1H-indene-2,2(6H)-dicarboxylate (25)