Supporting Information

A Catalytic Highly Enantioselective Allene Approach to Oxazolines

Hongwen Luo,[b] Zheng Yang,[a] Weilong Lin,[a] Yangguangyan Zheng,[c] and Shengming Ma*[a,c]

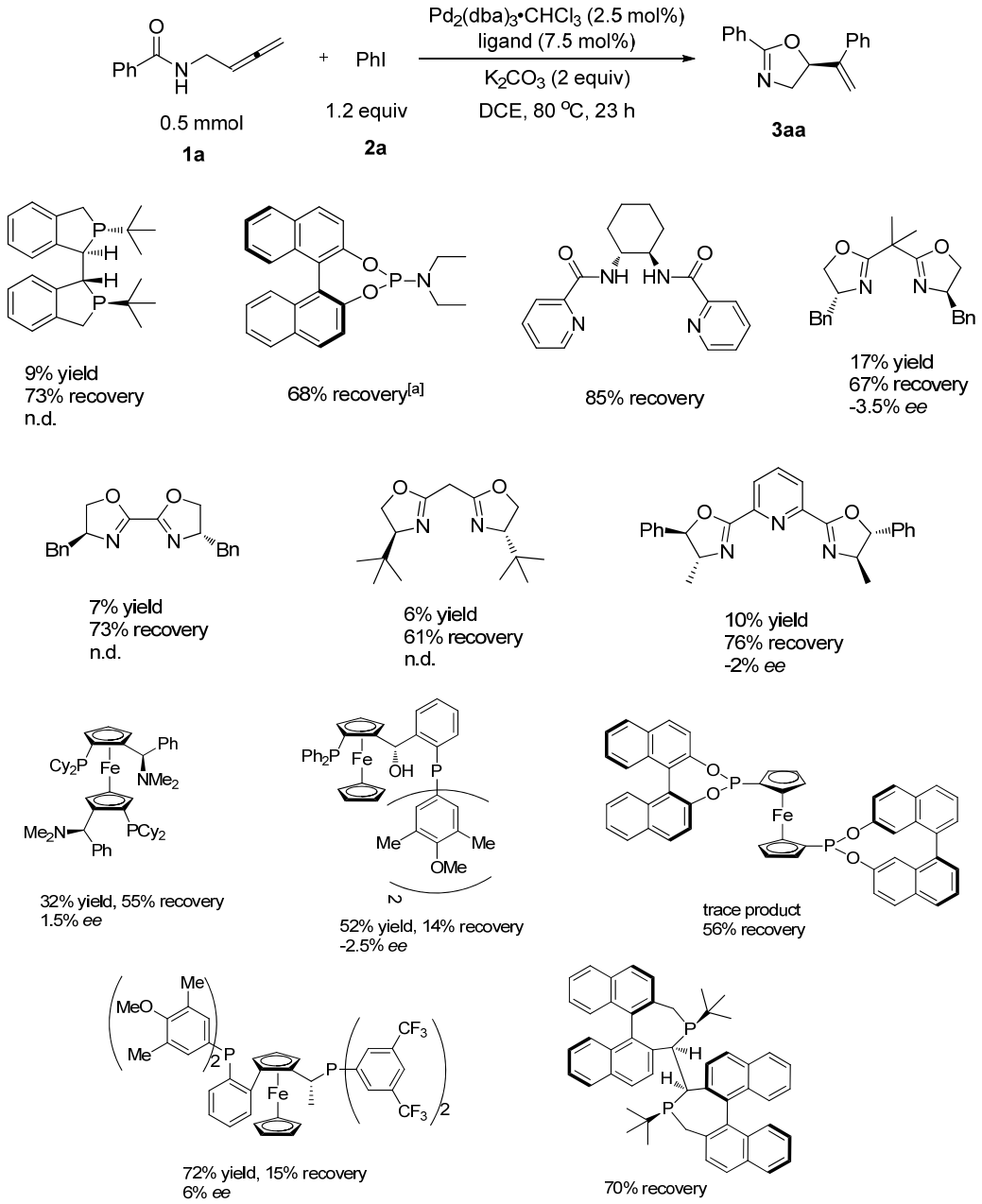
[a] State Key Laboratory of Organometallic Chemistry, Shanghai Institute of Organic Chemistry, Chinese Academy of Sciences, 345 Lingling Lu, Shanghai 200032, P. R. China

[b] Shanghai Key Laboratory of Green Chemistry and Chemical Process, Department of Chemistry, East China Normal University, 3663 North Zhongshan Lu, Shanghai 200062, P. R. China

[c] Department of Chemistry, Fudan University, 220 Handan Road, Shanghai 200433, P. R. China

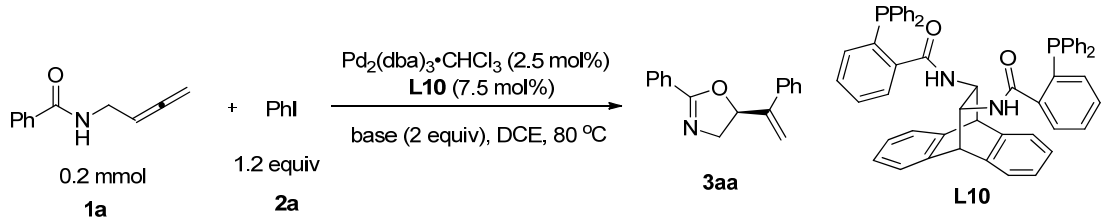
Fax: (+86)21-61647516 E-mail: masm@sioc.ac.cn

General Information. NMR spectra were taken with an Agilent-400 spectrometer (400 MHz for ^{1}H NMR, 100 MHz for ^{13}C NMR, and 376 MHz for ^{19}F NMR) in $CDCl_3$. Chemical shifts for ^{1}H NMR and ^{13}C NMR were recorded in ppm in relative to the TMS in $CDCl_3$, and those for ^{19}F NMR were recorded in ppm in relative to the $CFCl_3$ as internal standard, and coupling constants were reported in Hz. All reactions were carried out in flame-dried Schlenk tube under argon atmosphere. $Pd_2(dba)_3 \cdot CHCl_3$ was purchased from Alfa Aesar; (*R*,*R*)-ANDEN-Phenyl Trost ligand (**L10**) used in Scheme 1, Table 1-2 (except entry 13, Table 2), and Table S3-S4 was purchased from Sigma-Aldrich; (*R*,*R*)-ANDEN-Phenyl Trost ligand (**L10**) used in Table 3 and Table S5-S6 was synthesized according to the literature,[1] and the chiral material (11*R*,12*R*)-9,10-dihydro-9,10-ethanoanthracene-11,12-diamine (> 99% *ee*) used in reaction was purchased from AstaTech Pharmaceutical Co., Ltd. (Chengdu, China). Aryl iodides were all commercially available used as received except iodobenzene, which was distilled before used. Cesium carbonate and 5-chloro-1*H*-indole were purchased from Sun Chemical Technology Co., Ltd (Shanghai, China) and used as received. CuI and diethylamine were purchased from Sinopharm Chemical Reagent Co., Ltd (Shanghai, China) and used as received. Benzene and 1,4-dioxane were dried over sodium wire with benzophenone as the indicator and distilled freshly before use. All the temperatures are referred to the oil baths used. *N*-(Buta-2,3-dienyl)amide[2a] and racemic oxazolines[2b] were synthesized according to the reported procedures.



Scheme S1. Other ligands studied in the palladium-catalyzed asymmetric coupling-cyclization reaction of *N*-(buta-2,3-dienyl)amide **1a** with iodobenzene **2a**. Experiments were performed with **1a** (0.5 mmol), **2a** (0.6 mmol), $Pd_2(dba)_3 \cdot CHCl_3$ (0.0125 mmol), ligand (0.0375 mmol), and K_2CO_3 (1.0 mmol) in DCE (5 mL) for 23 h at 80 ^oC under Ar atmosphere. The yield of **3aa** and recovery of **1a** were determined by ^1H NMR analysis using 1,3,5-trimethylbenzene as the internal standard. The *ee* values were determined by HPLC analysis. n.d.= not determine. [a] 0.0625 mmol of ligand was used.

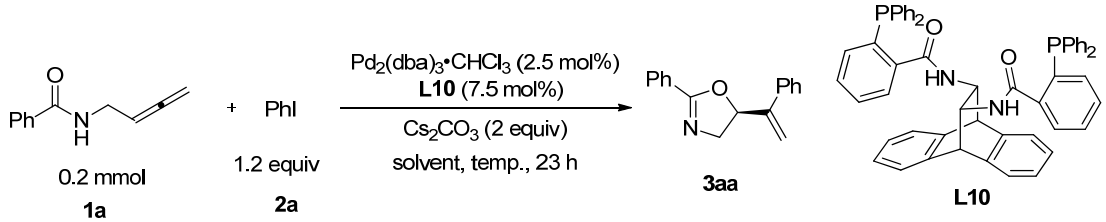
Table S1. Other bases studied in the palladium-catalyzed asymmetric coupling-cyclization reaction of *N*-(buta-2,3-dienyl)amide **1a** with iodobenzene **2a**.[a]



Entry	Base	Time (h)	**3aa**		Recovery of **1a** (%)[b]
			Yield (%)[b]	*ee* (%)[c]	
1	Li_2CO_3	22.5	-	-	80
2	$NaHCO_3$	23	35	47	61
3	$KHCO_3$	23	35	50	54
4	LiF	22.6	-	-	81
5	NaF	22.6	-	-	79
6	KF	22.3	29	10	56
7	CsF	22.3	35	13	46
8	K_2HPO_4	23	9	n.d.[d]	73
9	KH_2PO_4	23	-	-	80
10	NaO^tBu	23	7	n.d.[d]	65
11	KO^tBu	22.8	-	-	79
12	NaOMe	22.8	16	n.d.[d]	59
13	NaOEt	23	13	n.d.[d]	61
14	NaO^iPr	23	25	43	51
15	TMEDA	23	6	n.d.[d]	66
16	DMAP	23	-	-	48
17	DBU	23	-	-	41
18	DABCO	23	-	-	78

[a] Experiments were performed with **1a** (0.2 mmol), **2a** (0.24 mmol), $Pd_2(dba)_3 \cdot CHCl_3$ (0.005 mmol), **L10** (0.015 mmol), and base (0.4 mmol) in DCE (2 mL) at 80 °C under Ar atmosphere. [b] The yield and recovery were determined by ^1H NMR analysis using 1,3,5-trimethylbenzene as the internal standard. [c] The *ee* values were determined by HPLC analysis. [d] n.d.= not determined.

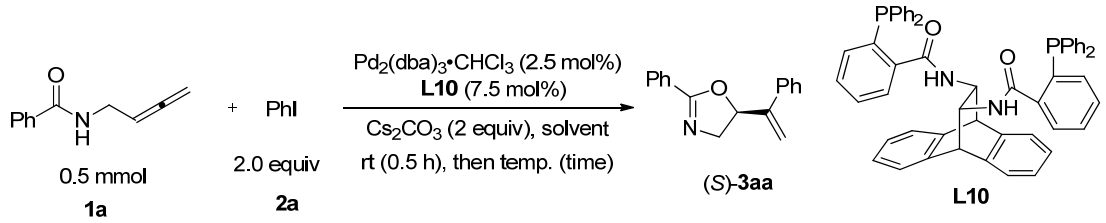
Table S2. Other solvents studied in the palladium-catalyzed asymmetric coupling-cyclization reaction of *N*-(buta-2,3-dienyl)amide **1a** with iodobenzene **2a**.[a]



Entry	Solvent	Temp. (°C)	**3aa**		Recovery of **1a**
			Yield (%)[b]	*ee* (%)[c]	(%)[b]
1	$CHCl_3$	70	9	n.d.[d]	60
2	CCl_4	80	-	-	63
3	$CHCl_2CHCl_2$	80	-	-	79
4	CH_2BrCH_2Br	80	55	7	7
5	*n*-Hexane	70	61	26	10
6	^{t}BuOH	80	68	39	3
7	DMF	80	75	3	7
8	DMSO	80	62	0	-
9	NMP	80	62	0	-
10	CH_3NO_2	80	-	-	54
11	CH_3CN	80	55	14	39
12	EtOAc	80	78	57	3
13	TEA	80	48	60	7

[a] Experiments were performed with **1a** (0.2 mmol), **2a** (0.24 mmol), $Pd_2(dba)_3 \cdot CHCl_3$ (0.005 mmol), **L10** (0.015 mmol), and Cs_2CO_3 (0.4 mmol) in solvent (2 mL) for 23 h under Ar atmosphere. [b] The yield and recovery were determined by ^{1}H NMR analysis using 1,3,5-trimethylbenzene as the internal standard. [c] The *ee* values were determined by HPLC analysis. [d] n.d.= not determined.

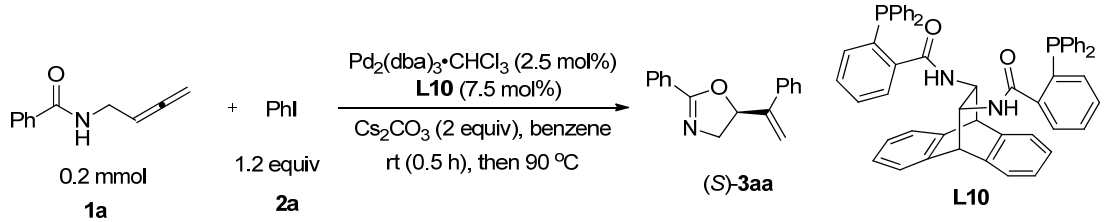
Table S3. Studies of solvent and temperature in the palladium-catalyzed asymmetric coupling-cyclization reaction of *N*-(buta-2,3-dienyl)amide **1a** with iodobenzene **2a**.[a]



Entry	Solvent	Temp. (°C)	Time (h)	(*S*)-**3aa**		Recovery of **1a** (%)[b]
				Yield (%)[b]	*ee* (%)[c]	
1	*c*-Hexane	90	16	84	85	-
2	PhF	90	19.5	87	86	-
3	*o*-Xylene	90	16	85	88	-
4	*m*-Xylene	90	16	80	90	-
5	*p*-Xylene	90	16	86	90	-
6	**Benzene**	**90**	**24**	**81**	**92**	**-**
7	Benzene	85	24	82	90	4
8	Benzene	80	24	82	91	4
9	Benzene	75	41	79	90	2
10	Benzene	70	44	77	91	8

[a] Experiments were performed with **1a** (0.5 mmol), **2a** (1.0 mmol), $Pd_2(dba)_3 \cdot CHCl_3$ (0.0125 mmol), **L10** (0.0375 mmol), and Cs_2CO_3 (1.0 mmol) in solvent (4 mL) at 90 °C under Ar atmosphere. [b] The yield and recovery were determined by ^1H NMR analysis using 1,3,5-trimethylbenzene as the internal standard. [c] The *ee* values were determined by HPLC analysis.

Table S4. Concentration effect in the palladium-catalyzed asymmetric coupling-cyclization reaction of *N*-(buta-2,3-dienyl)amide **1a** with iodobenzene **2a**.[a]

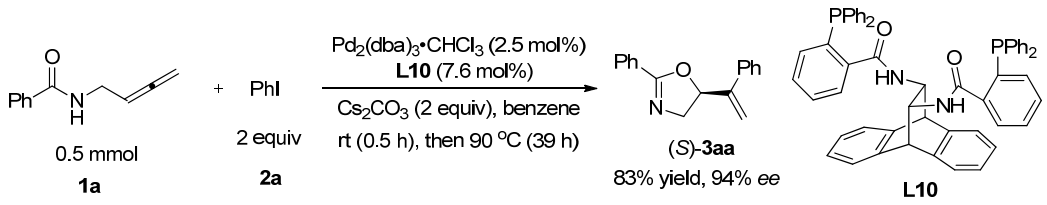


Entry	Benzene (mL)	Time (h)	(*S*)-**3aa**		Recovery of **1a** (%)[b]
			Yield (%)[b]	*ee* (%)[c]	
1	2	24	85	91	-
2	3	24	77	92	-
3	5	24	87	93	3
4	6	24	81	94	5
5	**6**	**39**	**90 (83[d])**	**94**	**-**
6	7	30	87	94	5
7	8	30	82	94	8

[a] Experiments were performed with **1a** (0.5 mmol), **2a** (1.0 mmol), $Pd_2(dba)_3 \cdot CHCl_3$ (0.0125 mmol), **L10** (0.0375 mmol), and Cs_2CO_3 (1.0 mmol) in benzene at 90 °C under Ar atmosphere. [b] The yield and recovery were determined by ^1H NMR analysis using 1,3,5-trimethylbenzene as the internal standard. [c] The *ee* values were determined by HPLC analysis. [d] Isolated yield.

Experimental details and analytical data

(1) (*S*)-2-Phenyl-5-(1-phenylvinyl)-4,5-dihydrooxazole ((*S*)-3aa) (Table 3) (lhw-13-145)

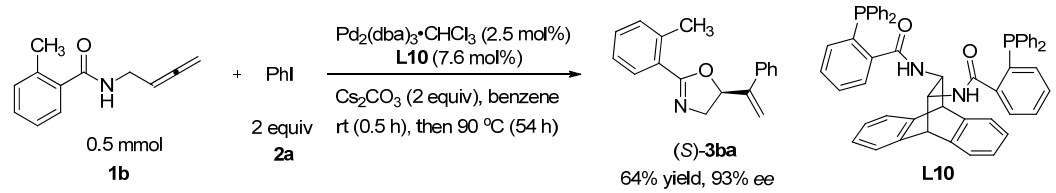


Typical Procedure I: After the Schlenk tube containing Cs_2CO_3 (326.3 mg, 1.0 mmol) was dried for 3 minutes with a heating gun under vacuum and filled with argon, $Pd_2(dba)_3$·$CHCl_3$ (12.9 mg, 0.0125 mmol), (*R*,*R*)-ANDEN-Phenyl Trost ligand (**L10**) (30.9 mg, 0.0380 mmol), and **1a** (86.1 mg, 0.5 mmol) were added sequentially. After replacing air with argon for three times under vacuum, **2a** (210.0 mg, 1.0 mmol)/benzene (6.0 mL) was added. The resulting mixture was stirred for 0.5 h at rt and then transferred to oil bath preheated at 90 ^oC. When the reaction was complete as monitored by TLC, the mixture was filtrated through a short pad of silica gel with Et_2O (25 mL) as eluent. After removal of the solvent under vacuum, the residue was purified by flash chromatography on silica gel to afford (*S*)-**3aa** (103.4 mg, 83%) (eluent: petroleum ether (b.p. 30-60 ^oC)/ethyl acetate = 15/1 to 10/1) as a liquid: 94% *ee* (HPLC conditions: PC-2 column, hexane/*i*-PrOH = 90/10, 1.0 mL/min, λ = 214 nm, t_R (minor) = 13.6 min, t_R (major) = 10.7 min); $[\alpha]^{20}_D$ = +200.6 (*c* = 1.02, $CHCl_3$); ^1H NMR (400 MHz, $CDCl_3$) δ = 8.05-7.99 (m, 2 H, Ar-H), 7.54-7.47 (m, 1 H, Ar-H), 7.47-7.41 (m, 2 H, Ar-H), 7.40-7.28 (m, 5 H, Ar-H), 5.64-5.57 (m, 1 H, OCH), 5.46 (s, 1 H, one proton in $=CH_2$), 5.42 (s, 1 H, one proton in $=CH_2$), 4.29 (dd, J_1 = 15.0 Hz, J_2 = 10.6 Hz, 1 H, one proton in NCH_2), 3.80 (dd, J_1 = 15.0 Hz, J_2 = 7.8 Hz, 1 H, one proton in NCH_2); ^{13}C NMR (100 MHz, $CDCl_3$) δ = 163.8, 146.8, 137.9, 131.4, 128.6, 128.4, 128.2, 128.1, 127.6, 126.5, 112.4, 80.0, 61.0; IR (neat, cm^{-1}): 1651, 1495, 1448, 1330, 1255, 1081, 1061, 1024; MS (70 eV, EI) *m/z* (%): 250 (M^++1, 6.07), 249 (M^+, 32.02), 117 (100); HRMS Calcd for $C_{17}H_{15}NO$ (M^+): 249.1154, Found: 249.1151.

The following compounds (*S*)-**3ba** to (*S*)-**3la**, and (*S*)-**3ab** to (*S*)-**3an** were

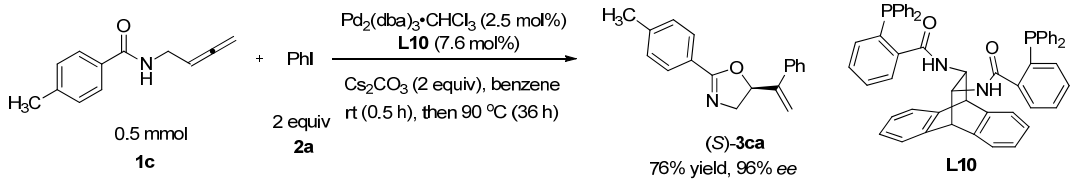
prepared according to this **Typical Procedure I**.

(2) (*S*)-2-(2-Methylphenyl)-5-(1-phenylvinyl)-4,5-dihydrooxazole ((*S*)-3ba) (Table 3) (lhw-13-173)



The reaction of $Pd_2(dba)_3$·$CHCl_3$ (12.8 mg, 0.0124 mmol), **L10** (30.8 mg, 0.0379 mmol), Cs_2CO_3 (326.1 mg, 1.0 mmol), **1b** (93.9 mg, 0.5 mmol), and **2a** (205.8 mg, 1.0 mmol) in benzene (4.0 mL) afforded (*S*)-**3ba** (84.5 mg, 64%) (eluent: petroleum ether (b.p. 30-60 ^oC)/ethyl acetate = 30/1 to 20/1) as a liquid: 93% *ee* (HPLC conditions: OJ-H column, hexane/*i*-PrOH = 95/5, 1.0 mL/min, λ = 214 nm, t_R (minor) = 20.4 min, t_R (major) = 16.2 min); $[\alpha]^{20}_D$ = +161.9 (*c* = 1.03, $CHCl_3$); ^1H NMR (400 MHz, $CDCl_3$) δ = 7.90 (d, *J* = 7.6 Hz, 1 H, Ar-H), 7.41-7.29 (m, 6 H, Ar-H), 7.28-7.21 (m, 2 H, Ar-H), 5.59-5.52 (m, 1 H, OCH), 5.45 (s, 1 H, one proton in $=CH_2$), 5.43 (s, 1 H, one proton in $=CH_2$), 4.33 (dd, J_1 = 14.8 Hz, J_2 = 10.4 Hz, 1 H, one proton in NCH_2), 3.85 (dd, J_1 = 15.0 Hz, J_2 = 7.8 Hz, 1 H, one proton in NCH_2), 2.61 (s, 3 H, CH_3); ^{13}C NMR (100 MHz, $CDCl_3$) δ = 164.2, 147.0, 138.9, 138.1, 131.3, 130.6, 129.8, 128.6, 128.1, 126.9, 126.6, 125.6, 112.5, 79.3, 61.4, 21.9; IR (neat, cm^{-1}): 1644, 1494, 1323, 1244, 1042; MS (70 eV, EI) *m/z* (%): 264 (M^++1, 16.64), 263 (M^+, 73.79), 130 (100); HRMS Calcd for $C_{18}H_{17}NO$ (M^+): 263.1310, Found: 263.1312.

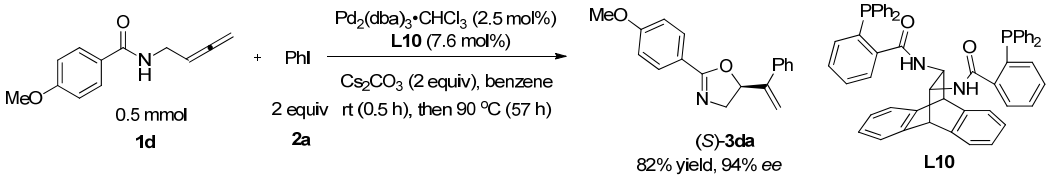
(3) (*S*)-2-(4-Methylphenyl)-5-(1-phenylvinyl)-4,5-dihydrooxazole ((*S*)-3ca) (Table 3) (lhw-13-172)



The reaction of $Pd_2(dba)_3$·$CHCl_3$ (13.0 mg, 0.0126 mmol), **L10** (30.7 mg, 0.0378 mmol), Cs_2CO_3 (325.9 mg, 1.0 mmol), **1c** (94.3 mg, 0.5 mmol), and **2a** (203.9 mg, 1.0

mmol) in benzene (6.0 mL) afforded (*S*)-**3ca** (100.7 mg, 76%) (eluent: petroleum ether (b.p. 30-60 °C)/ethyl acetate = 20/1 to 10/1) as a solid: M.P. 86-88 °C (petroleum ether/ethyl acetate); 96% *ee* (HPLC conditions: OZ-H column, hexane/*i*-PrOH = 95/5, 1.0 mL/min, λ = 214 nm, t_R (minor) = 19.4 min, t_R (major) = 14.3 min); $[\alpha]^{20}_D$ = +202.2 (*c* = 1.00, $CHCl_3$); ^{1}H NMR (400 MHz, $CDCl_3$) δ = 7.91 (d, *J* = 8.0 Hz, 2 H, Ar-H), 7.41-7.28 (m, 5 H, Ar-H), 7.28-7.21 (m, 2 H, Ar-H), 5.63-5.55 (m, 1 H, OCH), 5.45 (s, 1 H, one proton in $=CH_2$), 5.41 (s, 1 H, one proton in $=CH_2$), 4.27 (dd, J_1 = 14.6 Hz, J_2 = 10.2 Hz, 1 H, one proton in NCH_2), 3.78 (dd, J_1 = 14.4 Hz, J_2 = 7.6 Hz, 1 H, one proton in NCH_2), 2.41 (s, 3 H, CH_3); ^{13}C NMR (100 MHz, $CDCl_3$) δ = 163.9, 146.9, 141.8, 138.0, 129.1, 128.6, 128.14, 128.06, 126.6, 124.8, 112.4, 79.9, 61.0, 21.6; IR (neat, cm^{-1}): 1648, 1328, 1255, 1177, 1076; MS (70 eV, EI) *m/z* (%): 264 (M^++1, 6.56), 263 (M^+, 32.94), 131 (100); Anal. Calcd for $C_{18}H_{17}NO$: C 82.10, H 6.51, N 5.32; Found: C 82.09, H 6.45, N 5.19.

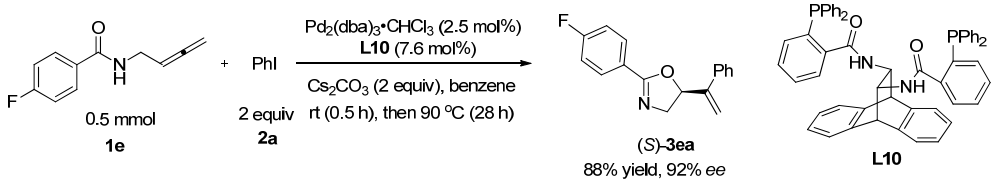
(4) (*S*)-2-(4-Methoxyphenyl)-5-(1-phenylvinyl)-4,5-dihydrooxazole ((*S*)-3da) (Table 3) (lhw-13-177)



The reaction of $Pd_2(dba)_3$·$CHCl_3$ (12.8 mg, 0.0124 mmol), **L10** (30.9 mg, 0.0380 mmol), Cs_2CO_3 (325.8 mg, 1.0 mmol), **1d** (101.8 mg, 0.5 mmol), and **2a** (208.8 mg, 1.0 mmol) in benzene (6.0 mL) afforded (*S*)-**3da** (115.3 mg, 82%) (eluent: petroleum ether (b.p. 60-90 °C)/ethyl acetate = 10/1 to 5/1) as a solid: M.P. 85-86 °C (petroleum ether/ethyl acetate); 94% *ee* (HPLC conditions: PC-2 column, hexane/*i*-PrOH = 80/20, 1.0 mL/min, λ = 214 nm, t_R (minor) = 12.7 min, t_R (major) = 8.7 min); $[\alpha]^{20}_D$ = +193.7 (*c* = 1.03, $CHCl_3$); ^{1}H NMR (400 MHz, $CDCl_3$) δ = 7.99-7.93 (m, 2 H, Ar-H), 7.40-7.29 (m, 5 H, Ar-H), 6.95 (dt, J_1 = 9.3 Hz, J_2 = 2.4 Hz, 2 H, Ar-H), 5.62-5.55 (m, 1 H, OCH), 5.45 (s, 1 H, one proton in $=CH_2$), 5.41 (s, 1 H, one proton in $=CH_2$), 4.27 (dd, J_1 = 14.6 Hz, J_2 = 10.2 Hz, 1 H, one proton in NCH_2), 3.86 (s, 3 H, OCH_3), 3.77

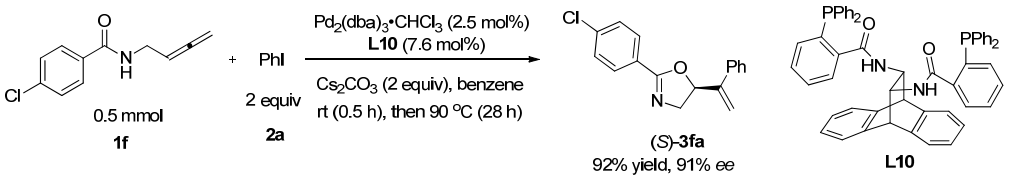
(dd, J_1 = 14.4 Hz, J_2 = 7.2 Hz, 1 H, one proton in NCH_2); ^{13}C NMR (100 MHz, $CDCl_3$) δ = 163.6, 162.1, 146.9, 138.0, 129.9, 128.6, 128.1, 126.5, 120.1, 113.7, 112.4, 79.9, 61.0, 55.4; IR (neat, cm^{-1}): 1651, 1510, 1248, 1168, 1075, 1027; MS (70 eV, EI) *m/z* (%): 280 (M^++1, 7.10), 279 (M^+, 36.83), 147 (100); Anal. Calcd for $C_{18}H_{17}NO_2$: C 77.40, H 6.13, N 5.01; Found: C 77.09, H 6.22, N 4.77.

(5) (*S*)-2-(4-Flurophenyl)-5-(1-phenylvinyl)-4,5-dihydrooxazole ((*S*)-3ea) (Table 3) (lhw-13-150)



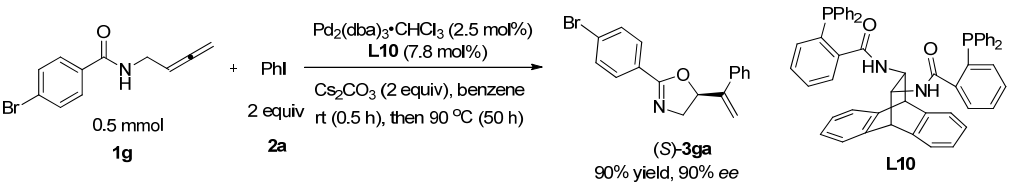
The reaction of $Pd_2(dba)_3$·$CHCl_3$ (13.0 mg, 0.0126 mmol), **L10** (31.0 mg, 0.0381 mmol), Cs_2CO_3 (327.9 mg, 1.0 mmol), **1e** (95.1 mg, 0.5 mmol), and **2a** (206.3 mg, 1.0 mmol) in benzene (6.0 mL) afforded (*S*)-**3ea** (117.4 mg, 88%) (eluent: petroleum ether (b.p. 60-90 °C)/ethyl acetate = 15/1 to 10/1) as a liquid: 92% *ee* (HPLC conditions: OZ-H column, hexane/*i*-PrOH = 95/5, 1.0 mL/min, λ = 214 nm, t_R (minor) = 12.9 min, t_R (major) = 11.0 min); $[\alpha]^{20}_D$ = +182.4 (*c* = 1.02, $CHCl_3$); ^1H NMR (400 MHz, $CDCl_3$) δ = 8.05-7.98 (m, 2 H, Ar-H), 7.40-7.29 (m, 5 H, Ar-H), 7.12 (t, *J* = 8.6 Hz, 2 H, Ar-H), 5.61 (t, *J* = 9.2 Hz, 1 H, OCH), 5.46 (s, 1 H, one proton in $=CH_2$), 5.40 (s, 1 H, one proton in $=CH_2$), 4.28 (dd, J_1 = 14.4 Hz, J_2 = 10.0 Hz, 1 H, one proton in NCH_2), 3.79 (dd, J_1 = 14.6 Hz, J_2 = 8.2 Hz, 1 H, one proton in NCH_2); ^{13}C NMR (100 MHz, $CDCl_3$) δ = 164.7 (d, *J* = 250.4 Hz), 162.9, 146.7, 137.8, 130.4 (d, *J* = 9.4 Hz), 128.6, 128.1, 126.5, 123.9 (d, *J* = 3.3 Hz), 115.6 (d, *J* = 22.0 Hz), 112.5, 80.2, 61.0; ^{19}F NMR (376 MHz, $CDCl_3$) -108.53; IR (neat, cm^{-1}): 1652, 1605, 1508, 1224, 1153, 1068; MS (70 eV, EI) *m/z* (%): 268 (M^++1, 6.47), 267 (M^+, 32.98), 135 (100); HRMS Calcd for $C_{17}H_{14}NOF$ (M^+): 267.1059, Found: 267.1061.

(6) (*S*)-2-(4-Chlorophenyl)-5-(1-phenylvinyl)-4,5-dihydrooxazole ((*S*)-3fa) (Table 3) (lhw-13-151)



The reaction of $Pd_2(dba)_3$·$CHCl_3$ (12.9 mg, 0.0125 mmol), **L10** (31.0 mg, 0.0381 mmol), Cs_2CO_3 (325.9 mg, 1.0 mmol), **1f** (104.7 mg, 0.5 mmol), and **2a** (205.5 mg, 1.0 mmol) in benzene (6.0 mL) afforded (*S*)-**3fa** (132.3 mg, 92%) (eluent: petroleum ether (b.p. 60-90 °C)/ethyl acetate = 15/1 to 10/1) as a solid: M.P. 86-87 °C (petroleum ether/ethyl acetate); 91% *ee* (HPLC conditions: OJ-H column, hexane/*i*-PrOH = 100/1, 1.0 mL/min, λ = 214 nm, t_R (minor) = 27.7 min, t_R (major) = 22.9 min); $[\alpha]^{20}_D$ = +185.3 (*c* = 1.02, $CHCl_3$); ^{1}H NMR (400 MHz, $CDCl_3$) δ = 7.95 (d, *J* = 8.0 Hz, 2 H, Ar-H), 7.42 (d, *J* = 8.0 Hz, 2 H, Ar-H), 7.39-7.28 (m, 5 H, Ar-H), 5.61 (t, *J* = 9.0 Hz, 1 H, OCH), 5.46 (s, 1 H, one proton in $=CH_2$), 5.40 (s, 1 H, one proton in $=CH_2$), 4.28 (dd, J_1 = 14.6 Hz, J_2 = 10.2 Hz, 1 H, one proton in NCH_2), 3.79 (dd, J_1 = 14.6 Hz, J_2 = 7.4 Hz, 1 H, one proton in NCH_2); ^{13}C NMR (100 MHz, $CDCl_3$) δ = 163.0, 146.6, 137.8, 137.6, 129.5, 128.7, 128.6, 128.1, 126.5, 126.1, 112.6, 80.3, 61.0; IR (neat, cm^{-1}): 1657, 1487, 1329, 1258, 1086, 1067, 1011; MS (70 eV, EI) *m/z* (%): 286 (M^+(^{37}Cl)+1, 2.29), 285 (M^+(^{37}Cl), 9.49), 284 (M^+(^{35}Cl)+1, 5.77), 283 (M^+(^{35}Cl), 29.46), 149 (100); Anal. Calcd for $C_{17}H_{14}ClNO$: C 71.96, H 4.97, N 4.94; Found: C 71.69, H 4.89, N 4.64.

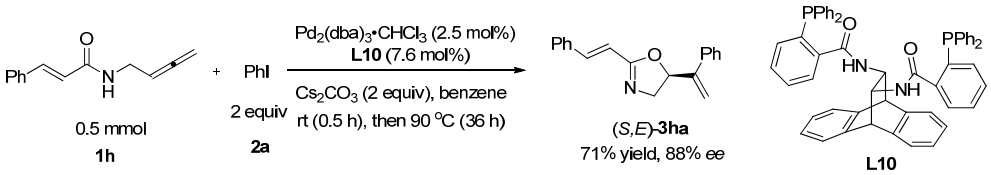
(7) (*S*)-2-(4-Bromophenyl)-5-(1-phenylvinyl)-4,5-dihydrooxazole ((*S*)-3ga) (Table 3) (lhw-14-188)



The reaction of $Pd_2(dba)_3$·$CHCl_3$ (12.9 mg, 0.0125 mmol), **L10** (31.6 mg, 0.0389 mmol), Cs_2CO_3 (329.5 mg, 1.0 mmol), **1g** (125.6 mg, 0.5 mmol), and **2a** (211.2 mg, 1.0 mmol) in benzene (6.0 mL) afforded (*S*)-**3ga** (146.5 mg, 90%) (eluent: petroleum ether (b.p. 60-90 °C)/ethyl acetate = 15/1 to 5/1) as a solid: M.P. 98-100 °C (petroleum

ether/ethyl acetate); 90% *ee* (HPLC conditions: OZ-H column, hexane/*i*-PrOH = 90/10, 0.7 mL/min, λ = 214 nm, t_R (minor) = 8.8 min, t_R (major) = 7.3 min); $[\alpha]^{20}_D$ = +151.2 (*c* = 1.02, $CHCl_3$); ^{1}H NMR (400 MHz, $CDCl_3$) δ = 7.87 (d, *J* = 8.8 Hz, 2 H, Ar-H), 7.58 (d, *J* = 8.8 Hz, 2 H, Ar-H), 7.40-7.28 (m, 5 H, Ar-H), 5.60 (t, *J* = 9.0 Hz, 1 H, OCH), 5.45 (s, 1 H, one proton in $=CH_2$), 5.39 (s, 1 H, one proton in $=CH_2$), 4.27 (dd, J_1 = 14.6 Hz, J_2 = 10.2 Hz, 1 H, one proton in NCH_2), 3.79 (dd, J_1 = 14.8 Hz, J_2 = 7.6 Hz, 1 H, one proton in NCH_2); ^{13}C NMR (100 MHz, $CDCl_3$) δ = 163.0, 146.6, 137.8, 131.7, 129.7, 128.6, 128.1, 126.5, 126.1, 112.6, 80.3, 61.0; IR (neat, cm^{-1}): 1657, 1589, 1500, 1258, 1070, 1007; MS (70 eV, EI) *m/z* (%): 330 ($M^+(^{81}Br)$+1, 5.09), 329 ($M^+(^{81}Br)$, 28.76), 328 ($M^+(^{79}Br)$+1, 6.97), 327 ($M^+(^{79}Br)$, 27.96), 195 (100); Anal. Calcd for $C_{17}H_{14}BrNO$: C 62.21, H 4.30, N 4.27; Found: C 62.26, H 4.30, N 4.11.

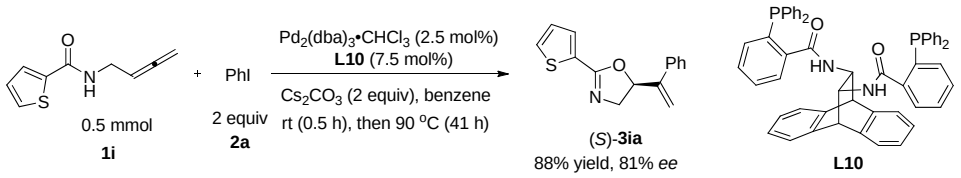
(8) (*S*,*E*)-5-(1-Phenylvinyl)-2-styryl-4,5-dihydrooxazole ((*S*,*E*)-3ha) (Table 3) (lhw-13-155)



The reaction of $Pd_2(dba)_3$·$CHCl_3$ (12.9 mg, 0.0125 mmol), **L10** (30.8 mg, 0.0379 mmol), Cs_2CO_3 (326.1 mg, 1.0 mmol), **1h** (99.9 mg, 0.5 mmol), and **2a** (202.7 mg, 1.0 mmol) in benzene (6.0 mL) afforded (*S*,*E*)-**3ha** (98.1 mg, 71%) (eluent: petroleum ether (b.p. 60-90 °C)/ethyl acetate = 10/1) as a solid: M.P. 85-87 °C (petroleum ether/ethyl acetate); 88% *ee* (HPLC conditions: OZ-H column, hexane/*i*-PrOH = 95/5, 1.0 mL/min, λ = 214 nm, t_R (minor) = 21.9 min, t_R (major) = 17.9 min); $[\alpha]^{20}_D$ = +217.7 (*c* = 1.00, $CHCl_3$); ^{1}H NMR (400 MHz, $CDCl_3$) δ = 7.55-7.48 (m, 3 H, Ar-H and =CH), 7.43-7.28 (m, 8 H, Ar-H), 6.69 (d, *J* = 16.0 Hz, 1 H, =CH), 5.52 (t, *J* = 9.0 Hz, 1 H, OCH), 5.46 (s, 1 H, one proton in $=CH_2$), 5.42 (s, 1 H, one proton in $=CH_2$), 4.23 (dd, J_1 = 15.0 Hz, J_2 = 10.2 Hz, 1 H, one proton in NCH_2), 3.73 (dd, J_1 = 15.2 Hz, J_2 = 7.6 Hz, 1 H, one proton in NCH_2); ^{13}C NMR (100 MHz, $CDCl_3$) δ = 163.7, 146.8,

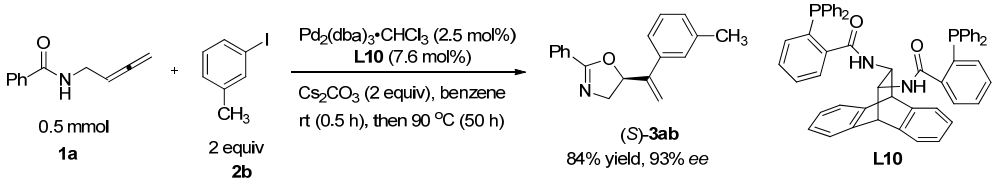
140.0, 137.9, 135.1, 129.5, 128.8, 128.6, 128.1, 127.5, 126.5, 115.1, 112.6, 79.8, 61.0; IR (neat, cm^{-1}): 1648, 1604, 1448, 1342, 1250; MS (70 eV, EI) *m/z* (%): 276 (M^++1, 5.97), 275 (M^+, 33.53), 115 (100); Anal. Calcd for $C_{19}H_{17}NO$: C 82.88, H 6.22, N 5.09; Found: C 82.52, H 6.18, N 4.68.

(9) (*S*)-5-(1-Phenylvinyl)-2-(thiophen-2-yl)-4,5-dihydrooxazole ((*S*)-3ia) (Table 3) (lhw-14-182)



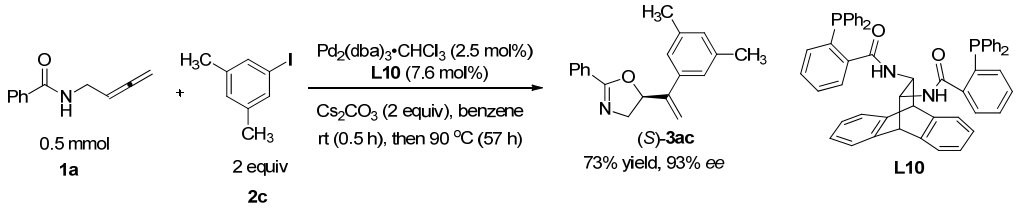
The reaction of $Pd_2(dba)_3$·$CHCl_3$ (12.9 mg, 0.0125 mmol), **L10** (30.6 mg, 0.0376 mmol), Cs_2CO_3 (326.6 mg, 1.0 mmol), **1i** (89.0 mg, 0.5 mmol), and **2a** (204.7 mg, 1.0 mmol) in benzene (6.0 mL) afforded (*S*)-**3ia** (112.0 mg, 88%) (eluent: petroleum ether (b.p. 60-90 °C)/ethyl acetate = 15/1 to 5/1) as a liquid: 81% *ee* (HPLC conditions: OZ-H column, hexane/*i*-PrOH = 90/10, 1.0 mL/min, λ = 214 nm, t_R (minor) = 8.0 min, t_R (major) = 6.0 min); $[\alpha]^{20}_D$ = +207.8 (*c* = 1.00, $CHCl_3$); ^{1}H NMR (400 MHz, $CDCl_3$) δ = 7.70-7.67 (m, 1 H, Ar-H), 7.47 (d, *J* = 4.8 Hz, 1 H, Ar-H), 7.39-7.28 (m, 5 H, Ar-H), 7.10 (t, *J* = 4.0 Hz, 1 H, Ar-H), 5.63-5.56 (m, 1 H, OCH), 5.46 (s, 1 H, one proton in $=CH_2$), 5.43 (s, 1 H, one proton in $=CH_2$), 4.26 (dd, J_1 = 14.2 Hz, J_2 = 10.2 Hz, 1 H, one proton in NCH_2), 3.77 (dd, J_1 = 14.6 Hz, J_2 = 7.4 Hz, 1 H, one proton in NCH_2); ^{13}C NMR (100 MHz, $CDCl_3$) δ = 159.6, 146.5, 137.8, 130.25, 130.22, 129.9, 128.6, 128.1, 127.6, 126.5, 112.6, 80.5, 61.0; IR (neat, cm^{-1}): 1650, 1432, 1249, 1058, 1014; MS (70 eV, EI) *m/z* (%): 256 (M^++1, 6.22), 255 (M^+, 35.80), 123 (100); HRMS Calcd for $C_{15}H_{13}NOS$ (M^+): 255.0718, Found: 255.0717.

(10) (*S*)-5-(1-(3-Methylphenyl)vinyl)-2-phenyl-4,5-dihydrooxazole ((*S*)-3ab) (Table 3) (lhw-13-161)



The reaction of $Pd_2(dba)_3$·$CHCl_3$ (12.8 mg, 0.0124 mmol), **L10** (30.7 mg, 0.0378 mmol), Cs_2CO_3 (326.8 mg, 1.0 mmol), **1a** (86.8 mg, 0.5 mmol), and **2b** (97% purity, 225.5 mg, 1.0 mmol) in benzene (6.0 mL) afforded (*S*)-**3ab** (110.7 mg, 84%) (eluent: petroleum ether (b.p. 30-60 °C)/ethyl acetate = 15/1 to 10/1) as a liquid: 93% *ee* (HPLC conditions: AD-H column, hexane/*i*-PrOH = 100/1, 1.0 mL/min, λ = 214 nm, t_R (minor) = 25.4 min, t_R (major) = 22.9 min); $[\alpha]^{20}_D$ = +193.2 (*c* = 1.04, $CHCl_3$); ^{1}H NMR (400 MHz, $CDCl_3$) δ = 8.05-7.99 (m, 2 H, Ar-H), 7.54-7.47 (m, 1 H, Ar-H), 7.47-7.40 (m, 2 H, Ar-H), 7.27-7.21 (m, 1 H, Ar-H), 7.21-7.11 (m, 3 H, Ar-H), 5.64-5.56 (m, 1 H, OCH), 5.43 (s, 1 H, one proton in $=CH_2$), 5.40 (s, 1 H, one proton in $=CH_2$), 4.28 (dd, J_1 = 14.6 Hz, J_2 = 10.2 Hz, 1 H, one proton in NCH_2), 3.79 (dd, J_1 = 14.6 Hz, J_2 = 7.8 Hz, 1 H, one proton in NCH_2), 2.35 (s, 3 H, CH_3); ^{13}C NMR (100 MHz, $CDCl_3$) δ = 163.8, 146.9, 138.2, 137.9, 131.4, 128.8, 128.5, 128.4, 128.2, 127.7, 127.3, 123.6, 112.0, 80.0, 61.1, 24.5; IR (neat, cm^{-1}): 1651, 1331, 1256, 1061, 1025; MS (70 eV, EI) *m/z* (%): 264 (M^++1, 6.96), 263 (M^+, 34.11), 117 (100); HRMS Calcd for $C_{18}H_{17}NO$ (M^+): 263.1310, Found: 263.1308.

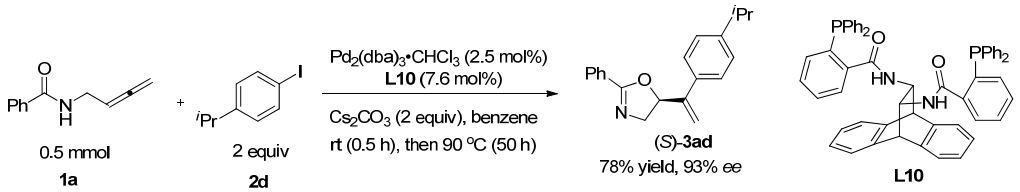
(11) (*S*)-5-(1-(3,5-Dimethylphenyl)vinyl)-2-phenyl-4,5-dihydrooxazole ((*S*)-3ac) (Table 3) (lhw-13-179)



The reaction of $Pd_2(dba)_3$·$CHCl_3$ (12.8 mg, 0.0124 mmol), **L10** (30.7 mg, 0.0378 mmol), Cs_2CO_3 (327.6 mg, 1.0 mmol), **1a** (86.3 mg, 0.5 mmol), and **2c** (239.2 mg, 1.0 mmol) in benzene (6.0 mL) afforded (*S*)-**3ac** (100.7 mg, 73%) (eluent: petroleum ether (b.p. 60-90 °C)/ethyl acetate = 30/1 to 20/1) as a liquid: 93% *ee* (HPLC

conditions: OZ-H column, hexane/*i*-PrOH = 90/10, 1.0 mL/min, λ = 214 nm, t_R (minor) = 10.9 min, t_R (major) = 9.5 min); $[\alpha]^{20}_D$ = +175.2 (*c* = 1.01, $CHCl_3$); ^1H NMR (400 MHz, $CDCl_3$) δ = 8.05-8.00 (m, 2 H, Ar-H), 7.53-7.47 (m, 1 H, Ar-H), 7.47-7.40 (m, 2 H, Ar-H), 7.00-6.94 (m, 3 H, Ar-H), 5.63-5.56 (m, 1 H, OCH), 5.40 (s, 1 H, one proton in $=CH_2$), 5.37 (s, 1 H, one proton in $=CH_2$), 4.27 (dd, J_1 = 14.6 Hz, J_2 = 10.2 Hz, 1 H, one proton in NCH_2), 3.78 (dd, J_1 = 15.0 Hz, J_2 = 7.4 Hz, 1 H, one proton in NCH_2), 2.31 (s, 6 H, $CH_3\times2$); ^{13}C NMR (100 MHz, $CDCl_3$) δ = 163.8, 147.1, 138.1, 137.9, 131.4, 129.7, 128.4, 128.1, 127.7, 124.4, 111.7, 79.9, 61.1, 21.3; IR (neat, cm^{-1}): 1651, 1331, 1256, 1061, 1025; MS (70 eV, EI) *m/z* (%): 278 (M^++1, 6.81), 277 (M^+, 30.61), 117 (100); HRMS Calcd for $C_{19}H_{19}NO$ (M^+): 277.1467, Found: 277.1468.

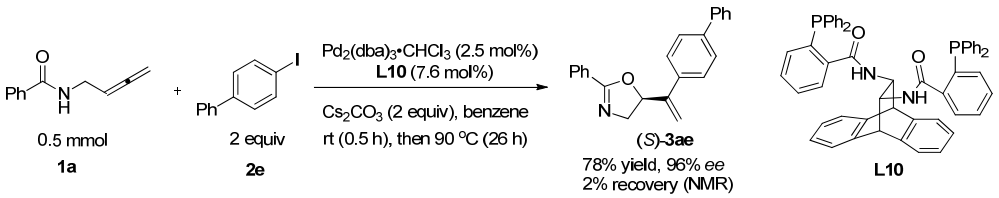
(12) (*S*)-5-(1-(4-Isopropylphenyl)vinyl)-2-phenyl-4,5-dihydrooxazole ((*S*)-3ad) (Table 3) (lhw-13-162)



The reaction of $Pd_2(dba)_3$·$CHCl_3$ (12.8 mg, 0.0124 mmol), **L10** (30.7 mg, 0.0378 mmol), Cs_2CO_3 (328.3 mg, 1.0 mmol), **1a** (86.2 mg, 0.5 mmol), and **2d** (97% purity, 256.5 mg, 1.0 mmol) in benzene (6.0 mL) afforded (*S*)-**3ad** (113.8 mg, 78%) (eluent: petroleum ether (b.p. 30-60 °C)/ethyl acetate = 15/1 to 10/1) as a liquid: 93% *ee* (HPLC conditions: OZ-H column, hexane/*i*-PrOH = 95/5, 1.0 mL/min, λ = 214 nm, t_R (minor) = 10.6 min, t_R (major) = 9.5 min); $[\alpha]^{20}_D$ = +182.3 (*c* = 0.99, $CHCl_3$); ^1H NMR (400 MHz, $CDCl_3$) δ = 8.05-8.00 (m, 2 H, Ar-H), 7.54-7.47 (m, 1 H, Ar-H), 7.47-7.41 (m, 2 H, Ar-H), 7.31 (d, *J* = 8.0 Hz, 2 H, Ar-H), 7.21 (d, *J* = 8.4 Hz, 2 H, Ar-H), 5.60 (t, *J* = 9.0 Hz, 1 H, OCH), 5.44 (s, 1 H, one proton in $=CH_2$), 5.38 (s, 1 H, one proton in $=CH_2$), 4.30 (dd, J_1 = 14.8 Hz, J_2 = 10.0 Hz, 1 H, one proton in NCH_2), 3.80 (dd, J_1 = 15.0 Hz, J_2 = 7.8 Hz, 1 H, one proton in NCH_2), 2.91 (hept, *J* = 6.8 Hz, 1 H, CH), 1.25 (d, *J* = 6.4 Hz, 6 H, $CH_3\times2$); ^{13}C NMR (100 MHz, $CDCl_3$) δ = 163.8,

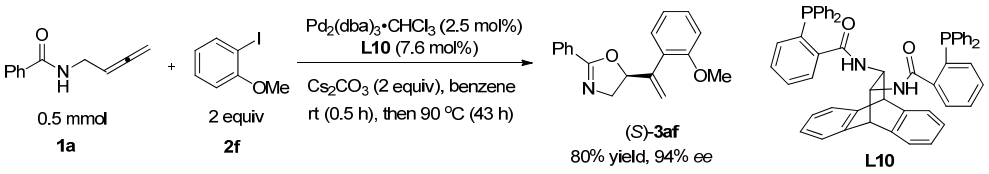
148.9, 146.5, 135.3, 131.4, 128.4, 128.2, 127.7, 126.7, 126.4, 111.5, 80.1, 61.2, 33.8, 23.87, 23.85; IR (neat, cm^{-1}): 2959, 1652, 1330, 1256, 1061, 1025; MS (70 eV, EI) *m/z* (%): 292 (M^++1, 7.15), 291 (M^+, 32.37), 117 (100); HRMS Calcd for $C_{20}H_{21}NO$ (M^+): 291.1623, Found: 291.1624.

(13) (*S*)-5-(1-(Biphenyl-4-yl)vinyl)-2-phenyl-4,5-dihydrooxazole ((*S*)-3ae) (Table 3) (lhw-13-185)



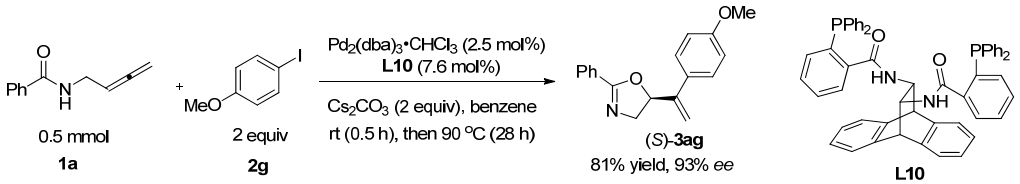
The reaction of $Pd_2(dba)_3$·$CHCl_3$ (12.9 mg, 0.0125 mmol), **L10** (30.7 mg, 0.0378 mmol), Cs_2CO_3 (326.5 mg, 1.0 mmol), **1a** (86.2 mg, 0.5 mmol), and **2e** (97% purity, 288.5 mg, 1.0 mmol) in benzene (6.0 mL) afforded (*S*)-**3ae** (126.3 mg, 78%) (eluent: petroleum ether (b.p. 60-90 °C)/ethyl acetate = 15/1 to 10/1) as a solid: M.P. 134-135 °C (petroleum ether/ethyl acetate); 96% *ee* (HPLC conditions (SFC): AD-H column, CO_2 (l)/*i*-PrOH = 70/30, 1.3 mL/min, λ = 214 nm, t_R (minor) = 12.6 min, t_R (major) = 14.6 min); $[\alpha]^{20}_D$ = +179.5 (*c* = 1.00, $CHCl_3$); ^{1}H NMR (400 MHz, $CDCl_3$) δ = 8.07-8.01 (m, 2 H, Ar-H), 7.62-7.55 (m, 4 H, Ar-H), 7.54-7.40 (m, 7 H, Ar-H), 7.38-7.31 (m, 1 H, Ar-H), 5.68-5.60 (m, 1 H, OCH), 5.52 (s, 1 H, one proton in $=CH_2$), 5.45 (s, 1 H, one proton in $=CH_2$), 4.33 (dd, J_1 = 15.0 Hz, J_2 = 10.2 Hz, 1 H, one proton in NCH_2), 3.84 (dd, J_1 = 14.4 Hz, J_2 = 7.6 Hz, 1 H, one proton in NCH_2); ^{13}C NMR (100 MHz, $CDCl_3$) δ = 163.8, 146.3, 140.9, 140.4, 136.7, 131.4, 128.8, 128.4, 128.2, 127.6, 127.5, 127.3, 127.0, 126.9, 112.4, 80.0, 61.1; IR (neat, cm^{-1}): 1654, 1489, 1448, 1334, 1256, 1085, 1067; MS (70 eV, EI) *m/z* (%): 326 (M^++1, 9.72), 325 (M^+, 38.08), 117 (100); Anal. Calcd for $C_{23}H_{19}NO$: C 84.89, H 5.89, N 4.30; Found: C 84.93, H 5.85, N 4.25.

(14) (*S*)-5-(1-(2-Methoxyphenyl)vinyl)-2-phenyl-4,5-dihydrooxazole ((*S*)-3af) (Table 3) (lhw-13-183)



The reaction of $Pd_2(dba)_3$·$CHCl_3$ (12.9 mg, 0.0125 mmol), **L10** (31.0 mg, 0.0381 mmol), Cs_2CO_3 (327.1 mg, 1.0 mmol), **1a** (86.4 mg, 0.5 mmol), and **2f** (235.7 mg, 1.0 mmol) in benzene (6.0 mL) afforded (*S*)-**3af** (110.8 mg, 80%) (eluent: petroleum ether (b.p. 60-90 °C)/ethyl acetate = 20/1 to 10/1) as a liquid: 94% *ee* (HPLC conditions: AS-H column, hexane/*i*-PrOH = 80/20, 0.5 mL/min, λ = 214 nm, t_R (minor) = 7.9 min, t_R (major) = 7.1 min); $[\alpha]^{20}_D$ = +97.8 (*c* = 1.00, $CHCl_3$); ^{1}H NMR (400 MHz, $CDCl_3$) δ = 8.04-7.99 (m, 2 H, Ar-H), 7.52-7.46 (m, 1 H, Ar-H), 7.46-7.39 (m, 2 H, Ar-H), 7.34-7.27 (m, 1 H, Ar-H), 7.21 (dd, J_1 = 7.4 Hz, J_2 = 1.4 Hz, 1 H, Ar-H), 6.95 (dd, J_1 = 3.6 Hz, J_2 = 0.8 Hz, 1 H, Ar-H), 6.89 (d, *J* = 8.0 Hz, 1 H, Ar-H), 5.73-5.65 (m, 1 H, OCH), 5.49 (t, *J* = 1.4 Hz, 1 H, one proton in $=CH_2$), 5.22 (s, 1 H, one proton in $=CH_2$), 4.11 (dd, J_1 = 14.4 Hz, J_2 = 10.0 Hz, 1 H, one proton in NCH_2), 3.86-3.79 (m, 4 H, one proton in NCH_2 and OCH_3); ^{13}C NMR (100 MHz, $CDCl_3$) δ = 163.8, 156.5, 147.3, 131.2, 130.7, 129.4, 128.3, 128.1, 127.8, 120.8, 113.7, 110.6, 79.7, 60.6, 55.3; IR (neat, cm^{-1}): 1650, 1597, 1578, 1489, 1451, 1249, 1237, 1178, 1061, 1024; MS (70 eV, EI) *m/z* (%): 280 (M^++1, 1.07), 279 (M^+, 5.66), 117 (100); HRMS Calcd for $C_{18}H_{17}NO_2$ (M^+): 279.1259, Found: 279.1260.

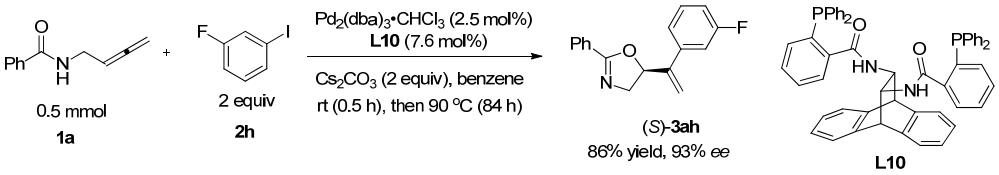
(15) (*S*)-5-(1-(4-Methoxyphenyl)vinyl)-2-phenyl-4,5-dihydrooxazole ((*S*)-3ag) (Table 3) (lhw-13-167)



The reaction of $Pd_2(dba)_3$·$CHCl_3$ (12.9 mg, 0.0125 mmol), **L10** (30.9 mg, 0.0380 mmol), Cs_2CO_3 (325.6 mg, 1.0 mmol), **1a** (87.6 mg, 0.5 mmol), and **2g** (234.5 mg, 1.0 mmol) in benzene (6.0 mL) afforded (*S*)-**3ag** (113.9 mg, 81%) (eluent: petroleum ether (b.p. 30-60 °C)/ethyl acetate = 15/1 to 10/1 to 5/1) as a solid: M.P. 87-88 °C

(petroleum ether/ethyl acetate); 93% *ee* (HPLC conditions: AS-H column, hexane/*i*-PrOH = 80/20, 0.5 mL/min, λ = 214 nm, t_R (minor) = 14.4 min, t_R (major) = 12.0 min); $[\alpha]^{20}_D$ = +185.9 (*c* = 1.01, $CHCl_3$); ^{1}H NMR (400 MHz, $CDCl_3$) δ = 8.05-7.99 (m, 2 H, Ar-H), 7.54-7.48 (m, 1 H, Ar-H), 7.47-7.41 (m, 2 H, Ar-H), 7.32 (dt, J_1 = 9.5 Hz, J_2 = 2.6 Hz, 2 H, Ar-H), 6.89 (dt, J_1 = 9.7 Hz, J_2 = 2.6 Hz, 2 H, Ar-H), 5.62-55 (m, 1 H, OCH), 5.38 (s, 1 H, one proton in $=CH_2$), 5.34 (s, 1 H, one proton in $=CH_2$), 4.29 (dd, J_1 = 14.4 Hz, J_2 = 10.4 Hz, 1 H, one proton in NCH_2), 3.83-3.75 (m, 4 H, one proton in NCH_2 and OCH_3); ^{13}C NMR (100 MHz, $CDCl_3$) δ = 163.8, 159.5, 146.1, 131.4, 130.3, 128.4, 128.2, 127.66, 127.64, 114.0, 111.0, 80.2, 61.0, 55.2; IR (neat, cm^{-1}): 1650, 1603, 1578, 1508, 1450, 1335, 1245, 1177, 1064, 1024; MS (70 eV, EI) *m/z* (%): 280 (M^++1, 8.23), 279 (M^+, 41.69), 117 (100); Anal. Calcd for $C_{18}H_{17}NO_2$: C 77.40, H 6.13, N 5.01; Found: C 77.30, H 6.10, N 4.78.

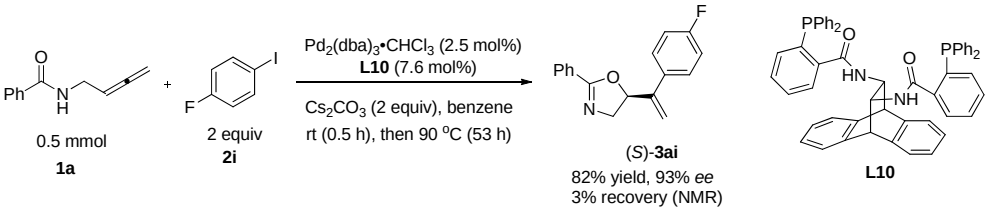
(16) (*S*)-5-(1-(3-Flurophenyl)vinyl)-2-phenyl-4,5-dihydrooxazole ((*S*)-3ah) (Table 3) (lhw-13-166)



The reaction of $Pd_2(dba)_3$·$CHCl_3$ (12.8 mg, 0.0124 mmol), **L10** (30.7 mg, 0.0378 mmol), Cs_2CO_3 (325.7 mg, 1.0 mmol), **1a** (86.9 mg, 0.5 mmol), and **2h** (97% purity, 228.6 mg, 1.0 mmol) in benzene (4.0 mL) afforded (*S*)-**3ah** (114.9 mg, 86%) (eluent: petroleum ether (b.p. 60-90 °C)/ethyl acetate = 10/1 to 5/1) as a liquid: 93% *ee* (HPLC conditions: OZ-H column, hexane/*i*-PrOH = 90/10, 1 mL/min, λ = 214 nm, t_R (minor) = 15.3 min, t_R (major) = 11.3 min); $[\alpha]^{20}_D$ = +186.3 (*c* = 1.06, $CHCl_3$); ^{1}H NMR (400 MHz, $CDCl_3$) δ = 8.04-7.98 (m, 2 H, Ar-H), 7.54-7.48 (m, 1 H, Ar-H), 7.47-7.40 (m, 2 H, Ar-H), 7.35-7.27 (m, 1 H, Ar-H), 7.17-7.12 (m, 1 H, Ar-H), 7.12-7.06 (m, 1 H, Ar-H), 7.05-6.98 (m, 1 H, Ar-H), 5.60-5.52 (m, 1 H, OCH), 5.48 (s, 1 H, one proton in $=CH_2$), 5.46 (s, 1 H, one proton in $=CH_2$), 4.30 (dd, J_1 = 14.8 Hz, J_2 = 10.4 Hz, 1 H, one proton in NCH_2), 3.79 (dd, J_1 = 15.0 Hz, J_2 = 7.8 Hz, 1 H, one proton in NCH_2);

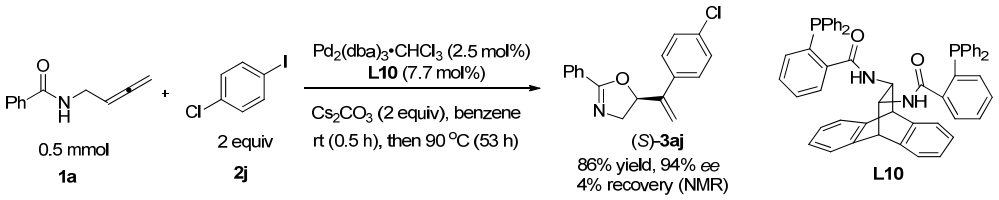
^{13}C NMR (100 MHz, $CDCl_3$) δ = 163.7, 162.8 (d, *J* = 245.0 Hz), 145.7 (d, *J* = 2.1 Hz), 140.1 (d, *J* = 7.7 Hz), 131.5, 130.1 (d, *J* = 8.3 Hz), 128.4, 128.2, 127.5, 122.2 (d, *J* = 3.3 Hz), 115.0 (d, *J* = 20.0 Hz), 113.64 (d, *J* = 22.1 Hz), 113.63, 79.8, 60.9; ^{19}F NMR (376 MHz, $CDCl_3$) -113.12; IR (neat, cm^{-1}): 1652, 1579, 1488, 1448, 1331, 1258, 1199, 1080, 1061, 1025; MS (70 eV, EI) *m/z* (%): 268 (M^++1, 5.56), 267 (M^+, 29.68), 117 (100); HRMS Calcd for $C_{17}H_{14}NOF$ (M^+): 267.1059, Found: 267.1057.

(17) (*S*)-5-(1-(4-Flurophenyl)vinyl)-2-phenyl-4,5-dihydrooxazole ((*S*)-3ai) (Table 3) (lhw-13-159)



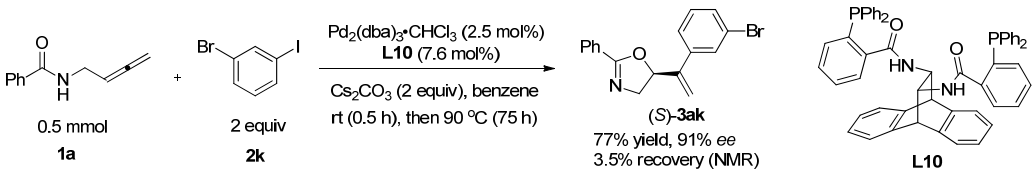
The reaction of $Pd_2(dba)_3$·$CHCl_3$ (12.9 mg, 0.0125 mmol), **L10** (30.7 mg, 0.0378mmol), Cs_2CO_3 (325.4 mg, 1.0 mmol), **1a** (86.0 mg, 0.5 mmol), and **2i** (228.0 mg, 1.0 mmol) in benzene (6.0 mL) afforded (*S*)-**3ai** (109.1 mg, 82%) (eluent: petroleum ether (b.p. 30-60 °C)/ethyl acetate = 10/1 to 5/1) as a liquid: 93% *ee* (HPLC conditions: OZ-H column, hexane/*i*-PrOH = 95/5, 1 mL/min, λ = 214 nm, t_R (minor) = 14.2 min, t_R (major) = 11.3 min); $[\alpha]^{20}_D$ = +180.3 (*c* = 1.01, $CHCl_3$); ^{1}H NMR (400 MHz, $CDCl_3$) δ = 8.03-7.98 (m, 2 H, Ar-H), 7.54-7.48 (m, 1 H, Ar-H), 7.47-7.41 (m, 2 H, Ar-H), 7.38-7.31 (m, 2 H, Ar-H), 7.08-7.00 (m, 2 H, Ar-H), 5.59-5.52 (m, 1 H, OCH), 5.42 (s, 1 H, one proton in $=CH_2$), 5.40 (s, 1 H, one proton in $=CH_2$), 4.28 (dd, J_1 = 15.2 Hz, J_2 = 10.0 Hz, 1 H, one proton in NCH_2), 3.78 (dd, J_1 = 14.8 Hz, J_2 = 8.0 Hz, 1 H, one proton in NCH_2); ^{13}C NMR (100 MHz, $CDCl_3$) δ = 163.8, 162.6 (d, *J* = 246.8 Hz), 145.8, 134.0 (d, *J* = 4.3 Hz), 131.5, 128.43, 128.36 (d, *J* = 7.5 Hz), 128.2, 127.5, 115.5 (d, *J* = 21.3 Hz), 113.0, 80.2, 60.8; ^{19}F NMR (376 MHz, $CDCl_3$) -114.35; IR (neat, cm^{-1}): 1651, 1602, 1508, 1332, 1231, 1061, 1024; MS (70 eV, EI) *m/z* (%): 268 (M^++1, 5.76), 267 (M^+, 29.37), 117 (100); HRMS Calcd for $C_{17}H_{14}NOF$ (M^+): 267.1059, Found: 267.1062.

(18) (*S*)-5-(1-(4-Chlorophenyl)vinyl)-2-phenyl-4,5-dihydrooxazole ((*S*)-3aj) (Table 3) (lhw-13-160)



The reaction of $Pd_2(dba)_3$·$CHCl_3$ (13.1 mg, 0.0127 mmol), **L10** (31.1 mg, 0.0383 mmol), Cs_2CO_3 (327.1 mg, 1.0 mmol), **1a** (86.5 mg, 0.5 mmol), and **2j** (98% purity, 245.4 mg, 1.0 mmol) in benzene (6.0 mL) afforded (*S*)-**3aj** (121.7 mg, 86%) (eluent: petroleum ether (b.p. 30-60 °C)/ethyl acetate = 10/1 to 5/1) as a solid: M.P. 66-67 °C (petroleum ether/ethyl acetate); 94% *ee* (HPLC conditions: OZ-H column, hexane/*i*-PrOH = 90/10, 1 mL/min, λ = 214 nm, t_R (minor) = 14.6 min, t_R (major) = 11.7 min); $[\alpha]^{20}_D$ = +182.7 (*c* = 1.01, $CHCl_3$); ^{1}H NMR (400 MHz, $CDCl_3$) δ = 8.03-7.98 (m, 2 H, Ar-H), 7.54-7.48 (m, 1 H, Ar-H), 7.48-7.41 (m, 2 H, Ar-H), 7.35-7.28 (m, 4 H, Ar-H), 5.59-5.53 (m, 1 H, OCH), 5.44 (s, 2 H, =CH_2), 4.28 (dd, J_1 = 14.6 Hz, J_2 = 10.6 Hz, 1 H, one proton in NCH_2), 3.78 (dd, J_1 = 15.0 Hz, J_2 = 7.8 Hz, 1 H, one proton in NCH_2); ^{13}C NMR (100 MHz, $CDCl_3$) δ = 163.8, 145.7, 136.3, 134.0, 131.5, 128.8, 128.4, 128.2, 127.9, 127.5, 113.4, 80.0, 60.8; IR (neat, cm^{-1}): 1650, 1489, 1449, 1329, 1253, 1061; MS (70 eV, EI) *m/z* (%): 286 (M^+(^{37}Cl)+1, 1.52), 285 (M^+(^{37}Cl), 7.54), 284 (M^+(^{35}Cl)+1, 4.56), 283 (M^+(^{35}Cl), 23.00), 117 (100); Anal. Calcd for $C_{17}H_{14}ClNO$: C 71.96, H 4.97, N 4.94; Found: C 71.82, H 4.93, N 4.78.

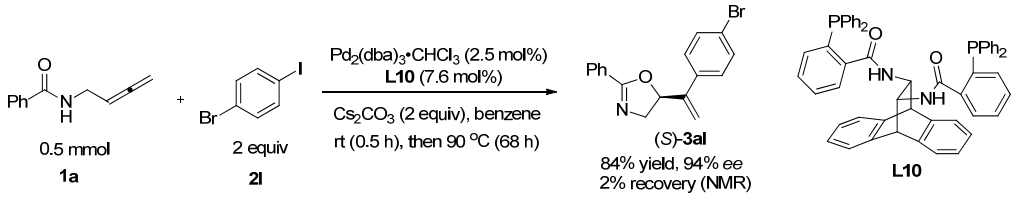
(19) (*S*)-5-(1-(3-Bromophenyl)vinyl)-2-phenyl-4,5-dihydrooxazole ((*S*)-3ak) (Table 3) (lhw-13-182)



The reaction of $Pd_2(dba)_3$·$CHCl_3$ (13.0 mg, 0.0126 mmol), **L10** (30.8 mg, 0.0379 mmol), Cs_2CO_3 (326.4 mg, 1.0 mmol), **1a** (86.7 mg, 0.5 mmol), and **2k** (288.3 mg, 1.0 mmol) in benzene (4.0 mL) afforded (*S*)-**3ak** (125.7 mg, 77%) (eluent: petroleum

ether (b.p. 60-90 °C)/ethyl acetate = 15/1 to 10/1) as a liquid: 91% *ee* (HPLC conditions: OZ-H column, hexane/*i*-PrOH = 90/10, 1 mL/min, λ = 214 nm, t_R (minor) = 15.8 min, t_R (major) = 11.9 min); $[\alpha]^{20}_D$ = +155.9 (*c* = 1.03, $CHCl_3$); ^{1}H NMR (400 MHz, $CDCl_3$) δ = 8.01 (d, *J* = 7.2 Hz, 2 H, Ar-H), 7.55-7.47 (m, 2 H, Ar-H), 7.47-7.40 (m, 3 H, Ar-H), 7.31-7.24 (m, 1 H, Ar-H), 7.24-7.17 (m, 1 H, Ar-H), 5.54 (t, *J* = 9.0 Hz, 1 H, OCH), 5.45 (s, 2 H, =CH_2), 4.29 (dd, J_1 = 14.2 Hz, J_2 = 10.2 Hz, 1 H, one proton in NCH_2), 3.78 (dd, J_1 = 14.6 Hz, J_2 = 7.4 Hz, 1 H, one proton in NCH_2); ^{13}C NMR (100 MHz, $CDCl_3$) δ = 163.7, 145.7, 140.1, 131.5, 131.1, 130.1, 129.8, 128.4, 128.1, 127.4, 125.1, 122.8, 113.9, 79.7, 60.9; IR (neat, cm^{-1}): 1651, 1557, 1331, 1257, 1061, 1024; MS (70 eV, EI) *m/z* (%): 330 (M^+(^{81}Br)+1, 2.50), 329 (M^+(^{81}Br), 14.03), 328 (M^+(^{79}Br)+1, 2.90), 327 (M^+(^{79}Br), 13.92), 117 (100); HRMS Calcd for $C_{17}H_{14}NO^{79}Br$ (M^+): 327.0259, Found: 327.0263.

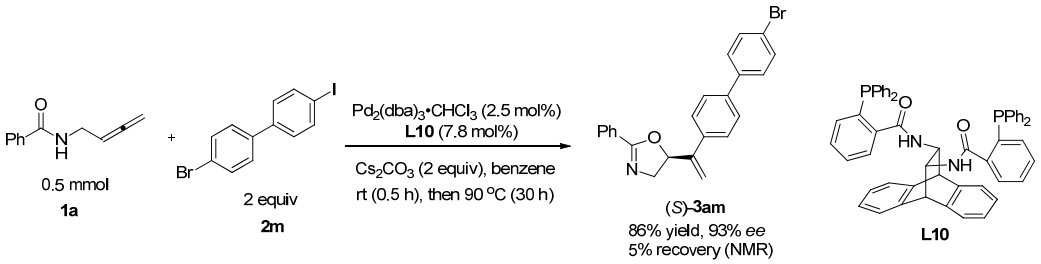
(20) (*S*)-5-(1-(4-Bromophenyl)vinyl)-2-phenyl-4,5-dihydrooxazole ((*S*)-3al) (Table 3) (lhw-13-163)



The reaction of $Pd_2(dba)_3$·$CHCl_3$ (12.9 mg, 0.0125 mmol), **L10** (30.7 mg, 0.0378 mmol), Cs_2CO_3 (325.6 mg, 1.0 mmol), **1a** (86.7 mg, 0.5 mmol), and **2l** (98% purity, 289.1 mg, 1.0 mmol) in benzene (6.0 mL) afforded (*S*)-**3al** (137.7 mg, 84%) (eluent: petroleum ether (b.p. 30-60 °C)/ethyl acetate = 15/1 to 10/1) as a solid: M.P. 88-89 °C (petroleum ether/ethyl acetate); 94% *ee* (HPLC conditions: OZ-H column, hexane/*i*-PrOH = 90/10, 1 mL/min, λ = 214 nm, t_R (minor) = 13.3 min, t_R (major) = 10.8 min); $[\alpha]^{20}_D$ = +159.9 (*c* = 1.03, $CHCl_3$); ^{1}H NMR (400 MHz, $CDCl_3$) δ = 8.03-7.97 (m, 2 H, Ar-H), 7.54-7.41 (m, 5 H, Ar-H), 7.28-7.21 (m, 2 H, Ar-H), 5.55 (t, *J* = 9.0 Hz, 1 H, OCH), 5.45 (s, 2 H, =CH_2), 4.28 (dd, J_1 = 14.8 Hz, J_2 = 10.4 Hz, 1 H, one proton in NCH_2), 3.77 (dd, J_1 = 14.4 Hz, J_2 = 7.6 Hz, 1 H, one proton in NCH_2); ^{13}C NMR (100 MHz, $CDCl_3$) δ = 163.8, 145.8, 136.8, 131.7, 131.5, 128.4, 128.24,

128.15, 127.5, 122.2, 113.5, 79.9, 60.8; IR (neat, cm^{-1}): 1650, 1491, 1447, 1364, 1329, 1264, 1073, 1062, 1023, 1004; MS (70 eV, EI) *m/z* (%): 330 (M^+(^{81}Br)+1, 2.26), 329 (M^+(^{81}Br), 11.30), 327 (M^+(^{79}Br)+1, 2.53), 327 (M^+(^{79}Br), 11.02), 117 (100); Anal. Calcd for $C_{17}H_{14}BrNO$: C 62.21, H 4.30, N 4.27; Found: C 62.23, H 4.36, N 4.16.

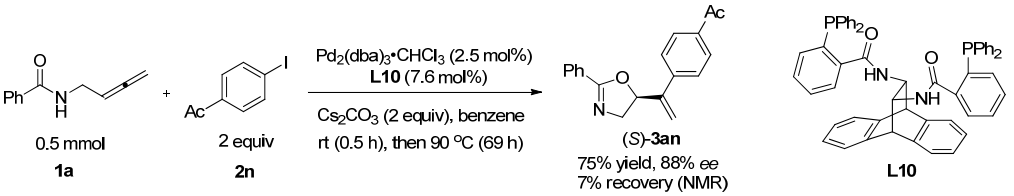
(21) (*S*)-5-(1-(4'-Bromo-[1,1'-biphenyl]-4-yl)vinyl)-2-phenyl-4,5-dihydrooxazole ((*S*)-3am) (Table 3) (lhw-14-198)



The reaction of $Pd_2(dba)_3$·$CHCl_3$ (13.0 mg, 0.0125 mmol), **L10** (31.6 mg, 0.0378 mmol), Cs_2CO_3 (329.9 mg, 1.0 mmol), **1a** (86.9 mg, 0.5 mmol), and **2m** (358.4 mg, 1.0 mmol) in benzene (6.0 mL) afforded (*S*)-**3am** (175.0 mg, 86%) (eluent: petroleum ether (b.p. 60-90 °C)/ethyl acetate = 15/1 to 5/1) as a solid: M.P. 121-122 °C (petroleum ether/ethyl acetate); 93% *ee* (HPLC conditions: OZ-H column, hexane/*i*-PrOH = 90/10, 1 mL/min, λ = 214 nm, t_R (minor) = 6.9 min, t_R (major) = 6.0 min); $[\alpha]^{20}_D$ = +134.6 (*c* = 1.00, $CHCl_3$); ^{1}H NMR (400 MHz, $CDCl_3$) δ = 8.06-8.00 (m, 2 H, Ar-H), 7.59-7.41 (m, 11 H, Ar-H), 5.64 (t, *J* = 9.0 Hz, 1 H, OCH), 5.52 (s, 1 H, one proton in $=CH_2$), 5.46 (s, 1 H, one proton in $=CH_2$), 4.33 (dd, J_1 = 15.0 Hz, J_2 = 10.2 Hz, 1 H, one proton in NCH_2), 3.83 (dd, J_1 = 14.4 Hz, J_2 = 8.0 Hz, 1 H, one proton in NCH_2); ^{13}C NMR (100 MHz, $CDCl_3$) δ = 163.9, 146.2, 139.6, 139.3, 137.2, 131.9, 131.5, 128.5, 128.4, 128.2, 127.6, 127.1, 121.8, 112.8, 80.0, 61.1; IR (neat, cm^{-1}): 1650, 1484, 1331, 1260, 1078, 1063; MS (70 eV, EI) *m/z* (%): 406 (M^+(^{81}Br)+1, 4.47), 405 (M^+(^{81}Br), 17.18), 404 (M^+(^{79}Br)+1, 4.80), 403 (M^+(^{79}Br), 16.82), 117 (100); Anal. Calcd for $C_{23}H_{18}BrNO$: C 68.33, H 4.49, N 3.46; Found: C 68.24, H 4.48, N 3.37.

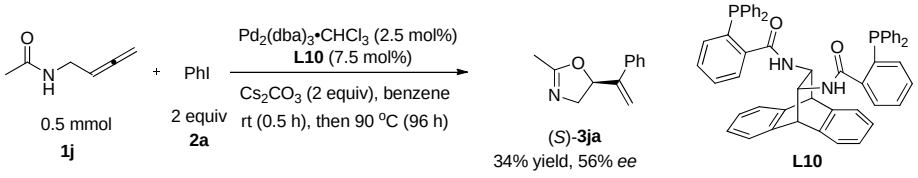
(22) (*S*)-5-(1-(4-Acetylphenyl)vinyl)-2-phenyl-4,5-dihydrooxazole ((*S*)-3an) (Table

3) (lhw-14-20)



The reaction of $Pd_2(dba)_3 \cdot CHCl_3$ (12.9 mg, 0.0125 mmol), **L10** (30.9 mg, 0.0380 mmol), Cs_2CO_3 (327.2 mg, 1.0 mmol), **1a** (86.3 mg, 0.5 mmol), and **2n** (98% purity, 253.2 mg, 1.0 mmol) in benzene (6.0 mL) afforded (*S*)-**3an** (108.3 mg, 75%) (eluent: petroleum ether (b.p. 60-90 ^oC)/ethyl acetate = 10/1 to 5/1 to 3/1) as a solid: M.P. 107-110 ^oC (petroleum ether/ethyl acetate); 88% *ee* (HPLC conditions: OZ-H column, hexane/*i*-PrOH = 70/30, 0.8 mL/min, λ = 214 nm, t_R (minor) = 17.2 min, t_R (major) = 12.9 min); $[\alpha]^{20}_D$ = +159.3 (*c* = 1.00, $CHCl_3$); ^1H NMR (400 MHz, $CDCl_3$) δ = 8.04-7.98 (m, 2 H, Ar-H), 7.95 (d, *J* = 8.4 Hz, 2 H, Ar-H), 7.55-7.41 (m, 5 H, Ar-H), 5.66-5.58 (m, 1 H, OCH), 5.56 (s, 1 H, one proton in $=CH_2$), 5.54 (s, 1 H, one proton in $=CH_2$), 4.32 (dd, J_1 = 14.6 Hz, J_2 = 10.6 Hz, 1 H, one proton in NCH_2), 3.79 (dd, J_1 = 14.6 Hz, J_2 = 7.8 Hz, 1 H, one proton in NCH_2), 2.61 (s, 3 H, CH_3); ^{13}C NMR (100 MHz, $CDCl_3$) δ = 197.5, 163.8, 146.0, 142.6, 136.5, 131.5, 128.7, 128.5, 128.2, 127.4, 126.8, 114.7, 79.8, 60.9, 26.6; IR (neat, cm^{-1}): 1673, 1644, 1602, 1336, 1262, 1062; MS (70 eV, EI) *m/z* (%): 292 (M^++1, 6.60), 291 (M^+, 30.95), 117 (100); Anal. Calcd for $C_{19}H_{17}NO_2$: C 78.33, H 5.88, N 4.81; Found: C 78.16, H 5.76, N 4.66.

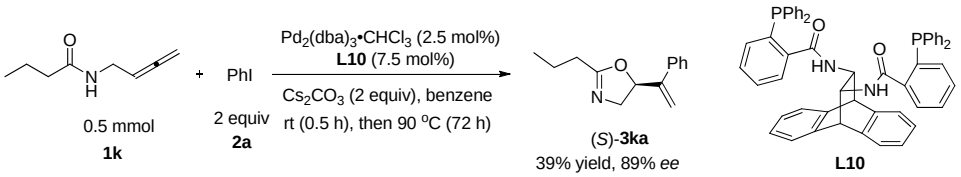
(23) (*S*)-5-(1-Phenylvinyl)-2-methyl-4,5-dihydrooxazole ((*S*)-3ja) (Scheme 5) (lwl-9-28)



The reaction of $Pd_2(dba)_3 \cdot CHCl_3$ (12.8 mg, 0.0125 mmol), **L10** (30.7 mg, 0.0375 mmol), Cs_2CO_3 (325.8 mg, 1.0 mmol), **1j** (55.5 mg, 0.5 mmol), and **2a** (204.3 mg, 1.0 mmol) in benzene (6.0 mL) afforded (*S*)-**3ja** (31.7 mg, 34%) (eluent: petroleum ether (b.p. 60-90 ^oC)/ethyl acetate = 3/1) as a liquid: 56% *ee* (HPLC conditions: OZ-H

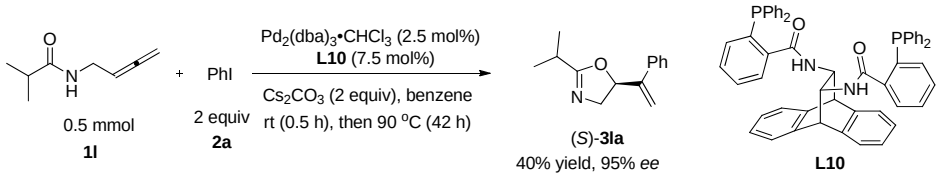
column, hexane/*i*-PrOH = 98/2, 1.0 mL/min, λ = 214 nm, t_R (minor) = 14.7 min, t_R (major) = 12.7 min); $[\alpha]^{28}_D$ = +33.6 (*c* = 1.08, $CHCl_3$); ^{1}H NMR (400 MHz, $CDCl_3$) δ = 7.42-7.28 (m, 5 H, Ar-H), 5.47-5.36 (m, 2 H, OCH and one proton in $=CH_2$), 5.33 (s, 1 H, one proton in $=CH_2$), 4.05 (dd, J_1 = 13.2 Hz, J_2 = 11.2 Hz, 1 H, one proton in NCH_2), 3.56 (dd, J_1 = 13.8 Hz, J_2 = 7.8 Hz, 1 H, one proton in NCH_2), 2.05 (s, 3 H, CH_3); ^{13}C NMR (100 MHz, $CDCl_3$) δ = 164.8, 146.9, 138.0, 128.5, 128.0, 126.5, 112.2, 80.0, 60.7, 14.0; IR (neat, cm^{-1}): 2929, 2874, 2855, 1678, 1632, 1441, 1389, 1307, 1224; MS (70 eV, EI) *m/z* (%): 187 (M^+, 18.96), 55 (100); HRMS Calcd for $C_{12}H_{13}NO$ (M^+): 187.0997, Found: 187.0999.

(24) (*S*)-5-(1-Phenylvinyl)-2-propyl-4,5-dihydrooxazole ((*S*)-3ka) (Scheme 5) (lwl-9-29)



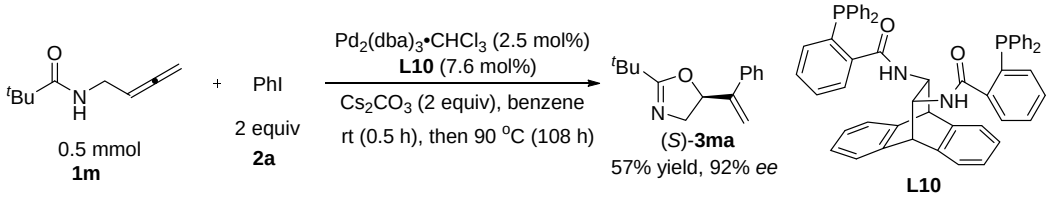
The reaction of $Pd_2(dba)_3$·$CHCl_3$ (12.9 mg, 0.0125 mmol), **L10** (30.8 mg, 0.0375 mmol), Cs_2CO_3 (325.7 mg, 1.0 mmol), **1k** (69.7 mg, 0.5 mmol), and **2a** (204.3 mg, 1.0 mmol) in benzene (6.0 mL) afforded (*S*)-**3ka** (42.0 mg, 39%) (eluent: petroleum ether (b.p. 60-90 °C)/ethyl acetate = 8/1) as a liquid: 89% *ee* (HPLC conditions: OZ-H column, hexane/*i*-PrOH = 70/30, 0.6 mL/min, λ = 214 nm, t_R (minor) = 7.2 min, t_R (major) = 6.7 min); $[\alpha]^{29}_D$ = +65.7 (*c* = 0.93, $CHCl_3$); ^{1}H NMR (400 MHz, $CDCl_3$) δ = 7.40-7.28 (m, 5 H, Ar-H), 5.47-5.35 (m, 2 H, OCH and one proton in $=CH_2$), 5.33 (s, 1 H, one proton in $=CH_2$), 4.06 (dd, J_1 = 14.2 Hz, J_2 = 10.6 Hz, 1 H, one proton in NCH_2), 3.57 (dd, J_1 = 14.0 Hz, J_2 = 8.0 Hz, 1 H, one proton in NCH_2), 2.33 (t, *J* = 7.6 Hz, 2 H, CH_2), 1.78-1.64 (m, 2 H, CH_2), 1.00 (t, *J* = 7.4 Hz, 3 H, CH_3); ^{13}C NMR (100 MHz, $CDCl_3$) δ = 167.8, 147.1, 138.0, 128.5, 128.0, 126.5, 112.1, 79.7, 60.6, 30.1, 19.4, 13.8; IR (neat, cm^{-1}): 2961, 2929, 2873, 1672, 1459, 1380, 1201, 1174; MS (70 eV, EI) *m/z* (%): 215 (M^+, 8.25), 83 (100); HRMS Calcd for $C_{14}H_{17}NO$ (M^+): 215.1310, Found: 215.1305.

(25) (*S*)-5-(1-Phenylvinyl)-2-isopropyl-4,5-dihydrooxazole ((*S*)-3la) (Scheme 5) (lwl-9-33)



The reaction of $Pd_2(dba)_3$·$CHCl_3$ (12.9 mg, 0.0125 mmol), **L10** (30.7 mg, 0.0375 mmol), Cs_2CO_3 (325.7 mg, 1.0 mmol), **1l** (69.7 mg, 0.5 mmol), and **2a** (204.2 mg, 1.0 mmol) in benzene (6.0 mL) afforded (*S*)-**3la** (43.0 mg, 40%) (eluent: petroleum ether (b.p. 60-90 ^{o}C)/ethyl acetate = 9/1) as a liquid: 95% *ee* (HPLC conditions: OZ-H column, hexane/*i*-PrOH = 98/2, 1.4 mL/min, λ = 214 nm, t_R (minor) = 5.6 min, t_R (major) = 4.9 min); $[\alpha]^{29}_D$ = +80.9 (*c* = 1.01, $CHCl_3$); ^{1}H NMR (400 MHz, $CDCl_3$) δ = 7.40-7.28 (m, 5 H, Ar-H), 5.46-5.35 (m, 2 H, OCH and one proton in $=CH_2$), 5.33 (s, 1 H, one proton in $=CH_2$), 4.06 (dd, J_1 = 13.8 Hz, J_2 = 10.6 Hz, 1 H, one proton in NCH_2), 3.56 (dd, J_1 = 14.0 Hz, J_2 = 7.6 Hz, 1 H, one proton in NCH_2), 2.66 (hept, *J* = 6.9 Hz, 1 H, CH), 1.25 (d, *J* = 6.8 Hz, 6 H, CH_3×2); ^{13}C NMR (100 MHz, $CDCl_3$) δ = 171.9, 147.2, 138.0, 128.5, 128.0, 126.5, 112.0, 79.6, 60.5, 28.2, 19.7, 19.6; IR (neat, cm^{-1}): 2970, 2930, 2874, 1668, 1633, 1496, 1469, 1387, 1197, 1143, 1094, 1057; MS (70 eV, EI) *m/z* (%): 215 (M^+, 15.90), 83 (100); HRMS Calcd for $C_{14}H_{17}NO$ (M^+): 215.1310, Found: 215.1303.

(26) (*S*)-5-(1-Phenylvinyl)-2-(*tert*-butyl)-4,5-dihydrooxazole ((*S*)-3ma) (Scheme 5) (yz-5-115)

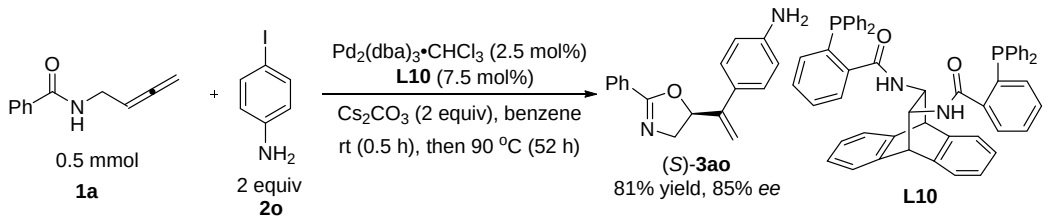


Typical Procedure II: After the Schlenk tube containing Cs_2CO_3 (326.6 mg, 1.0 mmol) was dried for 3 minutes with a heating gun under vacuum and filled with argon, $Pd_2(dba)_3$·$CHCl_3$ (12.9 mg, 0.0125 mmol), (*R*,*R*)-ANDEN-Phenyl Trost ligand (**L10**)

(30.8 mg, 0.0379 mmol), **1m** (75.2 mg, 0.49 mmol), **2a** (205.0 mg, 1.0 mmol), and benzene (6.0 mL) were added sequentially. The resulting mixture was stirred for 0.5 h at rt and then transferred to oil bath preheated at 90 ^{o}C. When the reaction was complete as monitored by TLC, the mixture was filtrated through a short pad of silica gel with Et_2O (25 mL) as eluent. After removal of the solvent under vacuum, the residue was purified by flash chromatography on silica gel to afford (*S*)-**3ma** (64.2 mg, 57%) (eluent: petroleum ether (b.p. 60-90 ^{o}C)/ethyl acetate = 5/1) as a liquid: 92% *ee* (HPLC conditions: AD-H column, hexane/*i*-PrOH = 100/1, 1.0 mL/min, λ = 214 nm, t_R (minor) = 9.8 min, t_R (major) = 11.8 min); $[\alpha]^{22}_D$ = +70.1 (*c* = 1.02, $CHCl_3$); ^{1}H NMR (400 MHz, $CDCl_3$) δ = 7.39-7.28 (m, 5 H, Ar-H), 5.44-5.36 (m, 2 H, OCH + one proton in $=CH_2$), 5.33 (s, 1 H, one proton in $=CH_2$), 4.06 (dd, J_1 = 14.0 Hz, J_2 = 10.4 Hz, 1 H, one proton in NCH_2), 3.57 (dd, J_1 = 14.2 Hz, J_2 = 7.8 Hz, 1 H, one proton in NCH_2), 1.28 (s, 9 H, 3×CH_3); ^{13}C NMR (100 MHz, $CDCl_3$) δ = 174.0, 147.4, 138.0, 128.5, 128.0, 126.5, 111.9, 79.7, 60.6, 33.3, 27.7; IR (neat, cm^{-1}): 2971, 1661, 1480, 1394, 1265, 1131; MS (70 eV, EI) *m/z* (%): 229 (M^+, 38.43), 97 (100); HRMS Calcd for $C_{15}H_{19}NO$ (M^+): 229.1467, Found: 229.1472.

The following compounds (*S*)-**3ao** to (*S*)-**3aq** were prepared according to this **Typical Procedure II**.

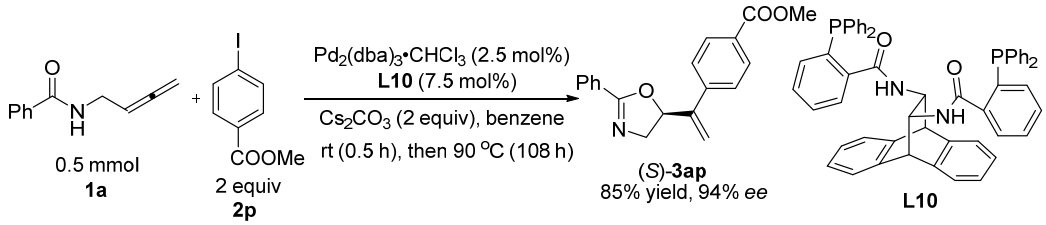
(27) (*S*)-5-(1-(4-Aminophenyl)vinyl)-2-phenyl-4,5-dihydrooxazole ((*S*)-3ao)) (Table 3) (yz-5-103)



The reaction of $Pd_2(dba)_3$·$CHCl_3$ (13.0 mg, 0.0126 mmol), **L10** (30.6 mg, 0.0376 mmol), Cs_2CO_3 (324.8 mg, 1.0 mmol), **1a** (86.8 mg, 0.5 mmol), and **2o** (218.5 mg, 1.0 mmol) in benzene (6.0 mL) afforded (*S*)-**3ao** (107.2 mg, 81%) (eluent: petroleum ether (b.p. 60-90 ^{o}C)/ethyl acetate = 2/1) as a liquid: 85% *ee* (HPLC conditions: AS-H

column, hexane/*i*-PrOH = 90/10, 1.0 mL/min, λ = 214 nm, t_R (minor) = 22.0 min, t_R (major) = 17.0 min); $[\alpha]^{24}_D$ = +173.3 (*c* = 1.03, $CHCl_3$); ^{1}H NMR (400 MHz, $CDCl_3$) δ = 8.02 (d, *J* = 7.2 Hz, 2 H, Ar-H), 7.53-7.47 (m, 1 H, Ar-H), 7.47-7.40 (m, 2 H, Ar-H), 7.19 (d, *J* = 8.8 Hz, 2 H, Ar-H), 6.66 (d, *J* = 8.4 Hz, 2 H, Ar-H), 5.61-5.53 (m, 1 H, OCH), 5.34 (s, 1 H, one proton in $=CH_2$), 5.27 (s, 1 H, one proton in $=CH_2$), 4.29 (dd, J_1 = 14.6 Hz, J_2 = 10.2 Hz, 1 H, one proton in NCH_2), 3.84-3.66 (m, 3 H, NH_2 + one proton in NCH_2); ^{13}C NMR (100 MHz, $CDCl_3$) δ = 163.8, 146.4, 146.2, 131.3, 128.4, 128.2, 127.9, 127.7, 127.4, 114.9, 109.4, 80.1, 61.2; IR (neat, cm^{-1}): 3332, 3204, 1644, 1606, 1516, 1370, 1334, 1259, 1177, 1083, 1064, 1024; MS (70 eV, EI) *m/z* (%): 264 (M^+, 28.02), 117 (100); HRMS Calcd for $C_{17}H_{16}N_2O$ (M^+): 264.1263, Found: 264.1265.

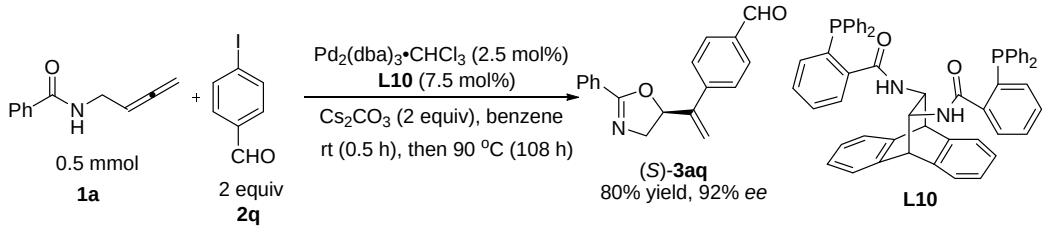
(28) (*S*)-5-(1-(4-(Methoxycarbonyl)phenyl)vinyl)-2-phenyl-4,5-dihydrooxazole (Table 3) ((*S*)-3ap)) (yz-5-108)



The reaction of $Pd_2(dba)_3$·$CHCl_3$ (13.1 mg, 0.0127 mmol), **L10** (30.6 mg, 0.0376 mmol), Cs_2CO_3 (326.5 mg, 1.0 mmol), **1a** (86.9 mg, 0.5 mmol), and **2p** (261.3 mg, 1.0 mmol) in benzene (6.0 mL) afforded (*S*)-**3ap** (130.3 mg, 85%) (eluent: petroleum ether (b.p. 60-90 °C)/ethyl acetate = 3/1) as a solid: M.P. 81.7-82.6 °C (petroleum ether/ethyl acetate); 94% *ee* (HPLC conditions: OJ-H column, hexane/*i*-PrOH = 95/5, 1.0 mL/min, λ = 214 nm, t_R (minor) = 49.0 min, t_R (major) = 53.9 min); $[\alpha]^{21}_D$ = +164.4 (*c* = 1.00, $CHCl_3$); ^{1}H NMR (400 MHz, $CDCl_3$) δ = 8.05-7.98 (m, 4 H, Ar-H), 7.55-7.49 (m, 1 H, Ar-H), 7.48-7.41 (m, 4 H, Ar-H), 5.66-5.59 (m, 1 H, OCH), 5.56 (s, 1 H, one proton in $=CH_2$), 5.53 (s, 1 H, one proton in $=CH_2$), 4.31 (dd, J_1 = 14.6 Hz, J_2 = 10.2 Hz, 1 H, one proton in NCH_2), 3.92 (s, 3 H, OCH_3), 3.79 (dd, J_1 = 14.8 Hz, J_2 = 7.6 Hz, 1 H, one proton in NCH_2); ^{13}C NMR (100 MHz, $CDCl_3$) δ = 166.6, 163.7, 146.0, 142.3, 131.5, 129.8, 129.6, 128.4, 128.1, 127.4, 126.5, 114.4, 79.7, 60.8, 52.1;

IR (neat, cm^{-1}): 1712, 1642, 1606, 1434, 1334, 1262, 1189, 1114, 1061; MS (70 eV, EI) *m/z* (%): 307 (M^+, 21.13), 117 (100); Anal. Calcd for $C_{19}H_{17}NO_3$: C 74.25, H 5.58, N 4.56; Found: C 74.26, H 5.50, N 4.43.

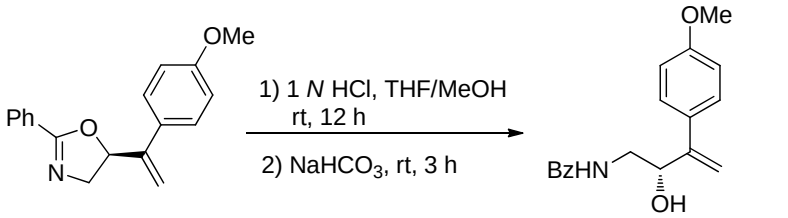
(29) (*S*)-5-(1-(4-(Formyl)phenyl)vinyl)-2-phenyl-4,5-dihydrooxazole ((*S*)-3aq) (Table 3) (yz-5-111)



The reaction of $Pd_2(dba)_3$·$CHCl_3$ (13.0 mg, 0.0126 mmol), **L10** (30.6 mg, 0.0376 mmol), Cs_2CO_3 (325.9 mg, 1.0 mmol), **1a** (86.7 mg, 0.5 mmol), and **2q** (232.2 mg, 1.0 mmol) in benzene (6.0 mL) afforded (*S*)-**3aq** (110.5 mg, 80%) (eluent: petroleum ether (b.p. 60-90 °C)/ethyl acetate = 3/1) as a solid: M.P. 86.0-87.5 °C (petroleum ether/ethyl acetate); 92% *ee* (HPLC conditions: AS-H column, hexane/*i*-PrOH = 95/5, 1.0 mL/min, λ = 214 nm, t_R (minor) = 38.8 min, t_R (major) = 27.6 min); $[\alpha]^{23}_D$ = +153.3 (*c* = 1.01, $CHCl_3$); ^{1}H NMR (400 MHz, $CDCl_3$) δ = 10.02 (s, 1 H, CHO), 8.00 (d, *J* = 8.0 Hz, 2 H, Ar-H), 7.88 (d, *J* = 7.6 Hz, 2 H, Ar-H), 7.59-7.49 (m, 3 H, Ar-H), 7.48-7.41 (m, 2 H, Ar-H), 5.67-5.55 (m, 3 H, $=CH_2$ + OCH), 4.33 (dd, J_1 = 14.8 Hz, J_2 = 10.0 Hz, 1 H, one proton in NCH_2), 3.81 (dd, J_1 = 14.8 Hz, J_2 = 8.0 Hz, 1 H, one proton in NCH_2); ^{13}C NMR (100 MHz, $CDCl_3$) δ = 191.6, 163.7, 145.9, 143.9, 135.7, 131.5, 129.9, 128.4, 128.1, 127.3, 127.1, 115.3, 79.7, 60.8; IR (neat, cm^{-1}): 1699, 1649, 1601, 1332, 1262, 1174, 1080,1062; MS (70 eV, EI) *m/z* (%): 277 (M^+, 19.81), 117 (100); Anal. Calcd for $C_{18}H_{15}NO_2$: C 77.96, H 5.45, N 5.05; Found: C 77.69, H 5.30, N 4.89.

Synthetic Applications:

(1) (*S*)-*N*-(2-Hydroxy-3-(4-methoxyphenyl)but-3-en-1-yl)benzamide ((*S*)-4a) (Scheme 6) (lhw-15-26)[3]

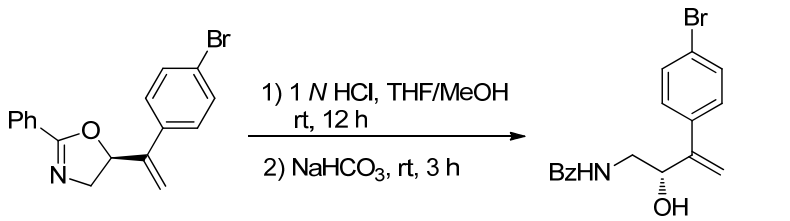


(*S*)-**3ag**, 92% *ee*

(*S*)-**4a**
94% yield, 91% *ee*

An aqueous solution of 1 N HCl (6 mL, 6.0 mmol) was added to a solution of oxazoline (*S*)-**3ag** (84.3 mg, 0.30 mmol) in THF (10 mL) and MeOH (10 mL) with stirring at room temperature and the resulting mixture was stirred for 12 h. A sat. aqueous solution of $NaHCO_3$ (25 mL) was added, and stirring was allowed to continue at room temperature for 3 h. Water (30 mL) was added and the resulting mixture was extracted with EtOAc (40 mL×3), washed with brine (40 mL), dried with $MgSO_4$, and evaporated in vacuo. Purification via silica gel chromatography afforded amino alcohol (*S*)-**4a** (84.3 mg, 94%) (eluent: petroleum ether (b.p. 60-90 ^oC)/ethyl acetate = 2/1 to 1/1) as a solid: M.P. 127.8-128.2 ^oC (petroleum ether/ethyl acetate); 91% *ee* (HPLC conditions: OD-H column, hexane/*i*-PrOH = 80/20, 1.0 mL/min, λ = 214 nm, t_R (minor) = 11.2 min, t_R (major) = 16.0 min); $[\alpha]^{20}_D$ = +9.5 (*c* = 0.99, $CHCl_3$); ^1H NMR (400 MHz, $CDCl_3$) δ = 7.75-7.69 (m, 2 H, Ar-H), 7.52-7.46 (m, 1 H, Ar-H), 7.44-7.37 (m, 2 H, Ar-H), 7.34 (d, *J* = 8.4 Hz, 2 H, Ar-H), 6.87 (d, *J* = 8.8 Hz, 2 H, Ar-H), 6.69-6.59 (m, 1 H, NH), 5.43 (s, 1 H, one proton in $=CH_2$), 5.35 (s, 1 H, one proton in $=CH_2$), 4.91-4.84 (m, 1 H, OCH), 3.84-3.75 (m, 4 H, one proton in NCH_2 and OCH_3), 3.73 (brs, 1 H, OH), 3.35-3.26 (m, 1 H, one proton in NCH_2); ^{13}C NMR (100 MHz, $CDCl_3$) δ = 168.8, 159.4, 148.2, 134.0, 131.7, 131.6, 128.6, 127.7, 126.9, 114.0, 112.4, 72.9, 55.3, 45.6; IR (neat, cm^{-1}): 3308, 1630, 1604, 1537, 1511, 1322, 1244, 1185, 1110, 1061, 1027; MS (70 eV, EI) *m/z* (%): 298 (M^++1, 0.83), 297 (M^+, 4.03), 105 (100); Anal. Calcd for $C_{18}H_{19}NO_3$: C 72.71, H 6.44, N 4.71; Found: C 72.55, H 6.40, N 4.79.

(2) (*S*)-*N*-(3-(4-Bromophenyl)-2-hydroxybut-3-en-1-yl)benzamide ((*S*)-4b) (Scheme 6) (lhw-15-40)[3]

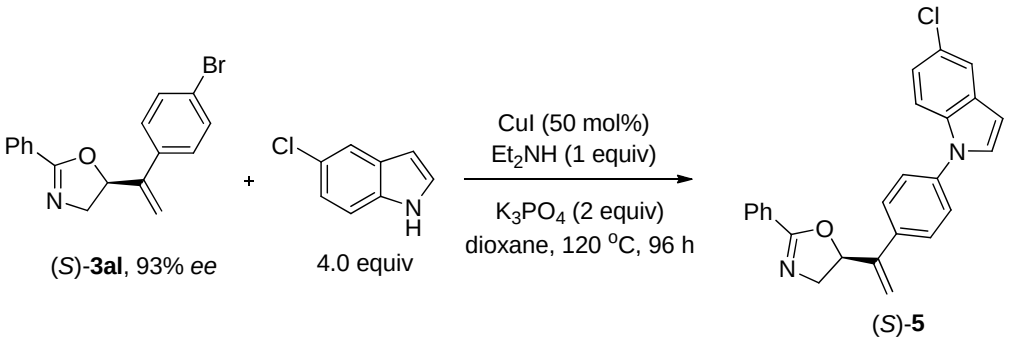


(*S*)-**3al**, 92% *ee*

(*S*)-**4b**
94% yield, 94% *ee*

An aqueous solution of 1 N HCl (6 mL, 6.0 mmol) was added to a solution of oxazoline (*S*)-**3al** (97.7 mg, 0.30 mmol) in THF (10 mL) and MeOH (10 mL) with stirring at room temperature and the resulting mixture was stirred for 12 h. A sat. aqueous solution of $NaHCO_3$ (25 mL) was added, and stirring was allowed to continue at room temperature for 3 h. Water (30 mL) was added in the reaction mixture and the resulting mixture was extracted with EtOAc (40 mL×3), washed with brine (40 mL), dried with $MgSO_4$, and evaporated in vacuo. Purification via silica gel chromatography afforded amino alcohol (*S*)-**4b** (96.4 mg, 94%) (eluent: petroleum ether (b.p. 60-90 ^oC)/ethyl acetate = 2/1 to 3/2) as a solid: M.P. 124.3-124.9 ^oC (petroleum ether/ethyl acetate); 94% *ee* (HPLC conditions: OD-H column, hexane/*i*-PrOH = 80/20, 1.0 mL/min, λ = 214 nm, t_R (minor) = 12.0 min, t_R (major) = 14.7 min); $[\alpha]^{20}_D$ = +15.3 (*c* = 1.01, $CHCl_3$); ^1H NMR (400 MHz, $CDCl_3$) δ = 7.70 (d, *J* = 7.6 Hz, 2 H, Ar-H), 7.54-7.35 (m, 5 H, Ar-H), 7.25 (d, *J* = 8.4 Hz, 2 H, Ar-H), 6.74-6.65 (m, 1 H, NH), 5.52 (s, 1 H, one proton in $=CH_2$), 5.40 (s, 1 H, one proton in $=CH_2$), 4.87-4.79 (m, 1 H, OCH), 3.99 (d, *J* = 4.0 Hz, 1 H, OH), 3.77-3.67 (m, 1 H, one proton in NCH_2), 3.35-3.23 (m, 1 H, one proton in NCH_2); ^{13}C NMR (100 MHz, $CDCl_3$) δ = 168.9, 147.9, 138.1, 133.7, 131.8, 131.7, 128.6, 128.3, 126.9, 122.0, 114.5, 72.8, 45.6; IR (neat, cm^{-1}): 3355, 1614, 1533, 1487, 1319, 1080, 1006; MS (70 eV, EI) *m/z* (%): 348 ($M^+(^{81}Br)$+1, 0.35), 347 ($M^+(^{81}Br)$, 1.32), 346 ($M^+(^{79}Br)$+1, 0.28), 345 ($M^+(^{79}Br)$, 1.32), 105 (100); Anal. Calcd for $C_{17}H_{16}BrNO_2$: C 58.98, H 4.66, N 4.05; Found: C 59.06, H 4.73, N 3.90.

(3) (*S*)-5-(1-(4-(5-Chloro-1*H*-indol-1-yl)phenyl)vinyl)-2-phenyl-4,5-dihydro-oxazole ((*S*)-5) (Scheme 6) (lwl-9-61)[4]



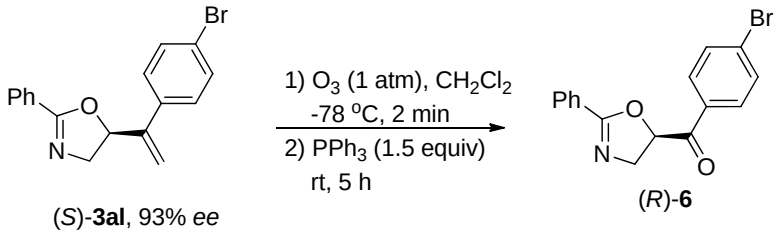
(*S*)-**3al**, 93% *ee* 4.0 equiv (*S*)-**5**

76% yield, 91% *ee*

After the screw-capped reaction tube containing K_3PO_4 (170.0 mg, 0.80 mmol) was dried for 3 minutes with a heating gun under vacuum and filled with argon, CuI (38.1 mg, 0.20 mmol), (*S*)-**3al** (130.9 mg, 0.40 mmol), and 5-chloro-1*H*-indole (242.7 mg, 1.6 mmol) were added sequentially. After replacing air with argon for three times under vacuum, diethylamine (42.0 μL, d = 0.70 g/mL, 29.4 mg, 0.40 mmol) and dioxane (1.0 mL) were then added. The resulting mixture was stirred for 96 h in the oil bath of 120 °C. When the reaction was complete as monitored by TLC, the mixture was passed through a short pad of silica gel with a mixed solvent (EtOAc/CH_2Cl_2 = 1/1, 50 mL) as eluent. After removal of the solvent under vacuum, the residue was purified by flash chromatography on silica gel to afford (*S*)-**5** (121.8 mg, 76%) (eluent: petroleum ether (b.p. 60-90 °C)/ethyl acetate = 10/1 to CH_2Cl_2/ethyl acetate = 1000/1) as a solid: M.P. 192-193 °C (ethyl acetate); 91% *ee* (HPLC conditions: IE-3 column, hexane/*i*-PrOH/DEA = 90/10/0.1%, 0.7 mL/min, λ = 254 nm, t_R (minor) = 21.9 min, t_R (major) = 19.5 min); $[\alpha]^{30}_D$ = +135.3 (*c* = 1.10, $CHCl_3$); ^{1}H NMR (400 MHz, $CDCl_3$) δ = 8.03 (d, *J* = 7.6 Hz, 2 H, Ar-H), 7.64 (d, *J* = 1.6 Hz, 1 H, Ar-H), 7.58-7.40 (m, 8 H, Ar-H), 7.34 (d, *J* = 3.2 Hz, 1 H, Ar-H), 7.17 (dd, J_1 = 9.2 Hz, J_2 = 1.2 Hz, 1 H, Ar-H), 6.62 (d, *J* = 3.2 Hz, 1 H, Ar-H), 5.64 (t, *J* = 9.0 Hz, 1 H, OCH), 5.53 (s, 1 H, one proton in =CH_2), 5.50 (s, 1 H, one proton in =CH_2), 4.35 (dd, J_1 = 14.6 Hz, J_2 = 10.2 Hz, 1 H, one proton in NCH_2), 3.87 (dd, J_1 = 14.8 Hz, J_2 = 8.0 Hz, 1 H, one proton in NCH_2); ^{13}C NMR (100 MHz, $CDCl_3$) δ = 163.9, 145.9, 139.1, 136.4, 134.1, 131.5, 130.4, 129.0, 128.5, 128.2, 128.0, 127.5, 126.1, 124.2, 122.7, 120.5, 113.6, 111.5, 103.4, 80.1, 61.0; IR (neat, cm^{-1}): 2932, 2865, 1652, 1607, 1523, 1459, 1366, 1333, 1262, 1084, 1064, 1025; MS (70 eV, EI) *m/z* (%): 401 (M^+(^{37}Cl)+1, 4.55), 400

(M^+(^{37}Cl), 18.59), 399 (M^+(^{35}Cl)+1, 16.23), 398 (M^+(^{35}Cl), 49.48), 117 (100); Anal. Calcd for $C_{25}H_{19}ClN_2O$: C 75.28, H 4.80, N 7.02; Found: C 75.22, H 4.92, N 6.83.

(4) (*R*)-(4-Bromophenyl)(4,5-dihydro-2-phenyl-5-oxazolyl)methanone, ((*R*)-6) (Scheme 6) (lwl-9-40)[5]



(*S*)-**3al**, 93% *ee*

(*R*)-**6**

81% yield, 92% *ee*

To a dried Schlenk tube were added (*S*)-**3al** (98.5 mg, 0.3 mmol) and CH_2Cl_2 (6.0 mL). The resulting solution was cooled with a dry ice/acetone bath (-78 ^{o}C). A stream of ozone was passed through the solution until the resulting solution became blue (2 min). The resulting mixture was quenched with the addition of PPh_3 (118.1 mg, 0.45 mmol). After warming to room temperature with stirring for 5 h, the resulting mixture was trasferred to a round bottom flask with CH_2Cl_2 (10 mL) and evaporated. The residue was purified by flash chromatography on silica gel to afford (*R*)-**6** (80.0 mg, 81%) (eluent: petroleum ether (b.p. 60-90 ^{o}C)/ethyl acetate = 10/1) as a solid: M.P. 125-127 ^{o}C (ethyl acetate); 92% *ee* (HPLC conditions: OJ column, hexane/*i*-PrOH = 70/30, 1.0 mL/min, λ = 214 nm, t_R (minor) = 18.1 min, t_R (major) = 26.8 min); $[\alpha]^{28}_D$ = +59.6 (*c* = 1.05, $CHCl_3$); ^{1}H NMR (400 MHz, $CDCl_3$) δ = 8.01-7.92 (m, 2 H, Ar-H), 7.88 (d, *J* = 8.4 Hz, 2 H, Ar-H), 7.67 (d, *J* = 8.8 Hz, 2 H, Ar-H), 7.50 (t, *J* = 7.4 Hz, 1 H, Ar-H), 7.42 (d, *J* = 7.4 Hz, 2 H, Ar-H), 5.77 (dd, J_1 = 11.2 Hz, J_2 = 7.6 Hz, 1 H, OCH), 4.43 (dd, J_1 = 15.0 Hz, J_2 = 11.0 Hz, 1 H, one proton in NCH_2), 4.32 (dd, J_1 = 15.2 Hz, J_2 = 7.6 Hz, 1 H, one proton in NCH_2); ^{13}C NMR (100 MHz, $CDCl_3$) δ = 194.2, 163.8, 132.9, 132.2, 131.7, 130.3, 129.3, 128.4, 128.3, 126.9, 79.6, 58.2; IR (neat, cm^{-1}): 2962, 2924, 1694, 1651, 1586, 1261, 1084, 1021; MS (70 eV, EI) *m/z* (%): 329 (M^+(^{81}Br)-2, 40.23), 327 (M^+(^{79}Br)-2, 40.03), 144 (100); Anal. Calcd for $C_{16}H_{12}BrNO_2$: C 58.20, H 3.66, N 4.24; Found: C 58.33, H 3.90, N 4.30.

References:

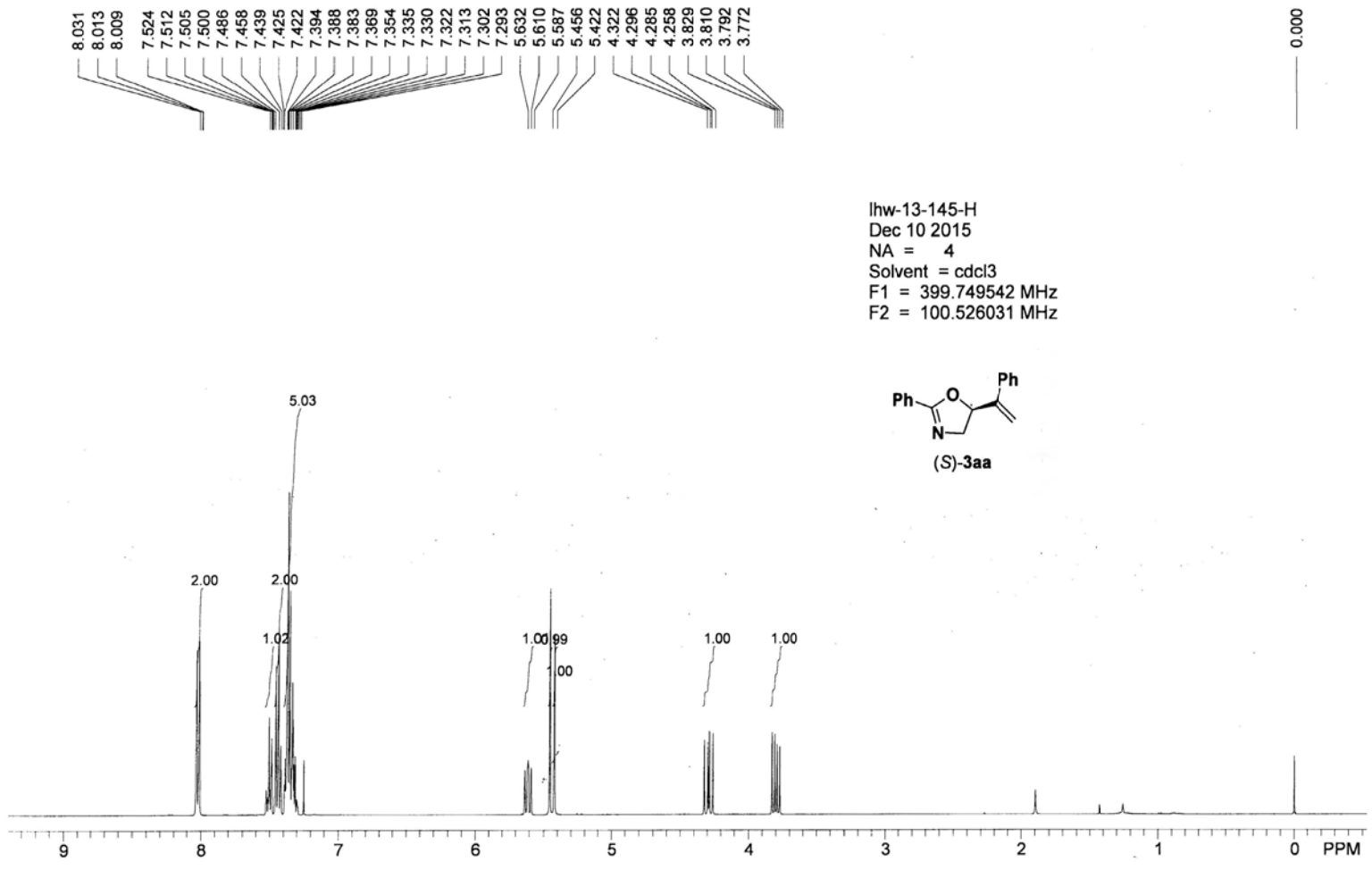
[1] Fox, M. E.; Gerlach, A.; Lennon, I. C.; Meek, G.; Praquin, C. *Synthesis* **2005**, 3196.

[2] (a) Luo H.; Ma, S. *Eur. J. Org. Chem.* **2013**, 3041; (b) Chen, B.; Wang, N.; Fan, W.; Ma, S. *Org. Biomol. Chem.* **2012**, *10*, 8465.

[3] Joo, J.-E.; Lee, K.-Y.; Pham, V.-T.; Tian, Y.-S.; Ham, W.-H. *Org. Lett.* **2007**, *9*, 3627.

[4] Wang, N.; Chen, B., Ma, S. *Adv. Synth. Catal.* **2014**, *356*, 485.

[5] Komanduri, V.; Krische, M. J. *J. Am. Chem. Soc.* **2006**, *128*, 16448.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7.369
7.354
7.335
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7.293
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5.587
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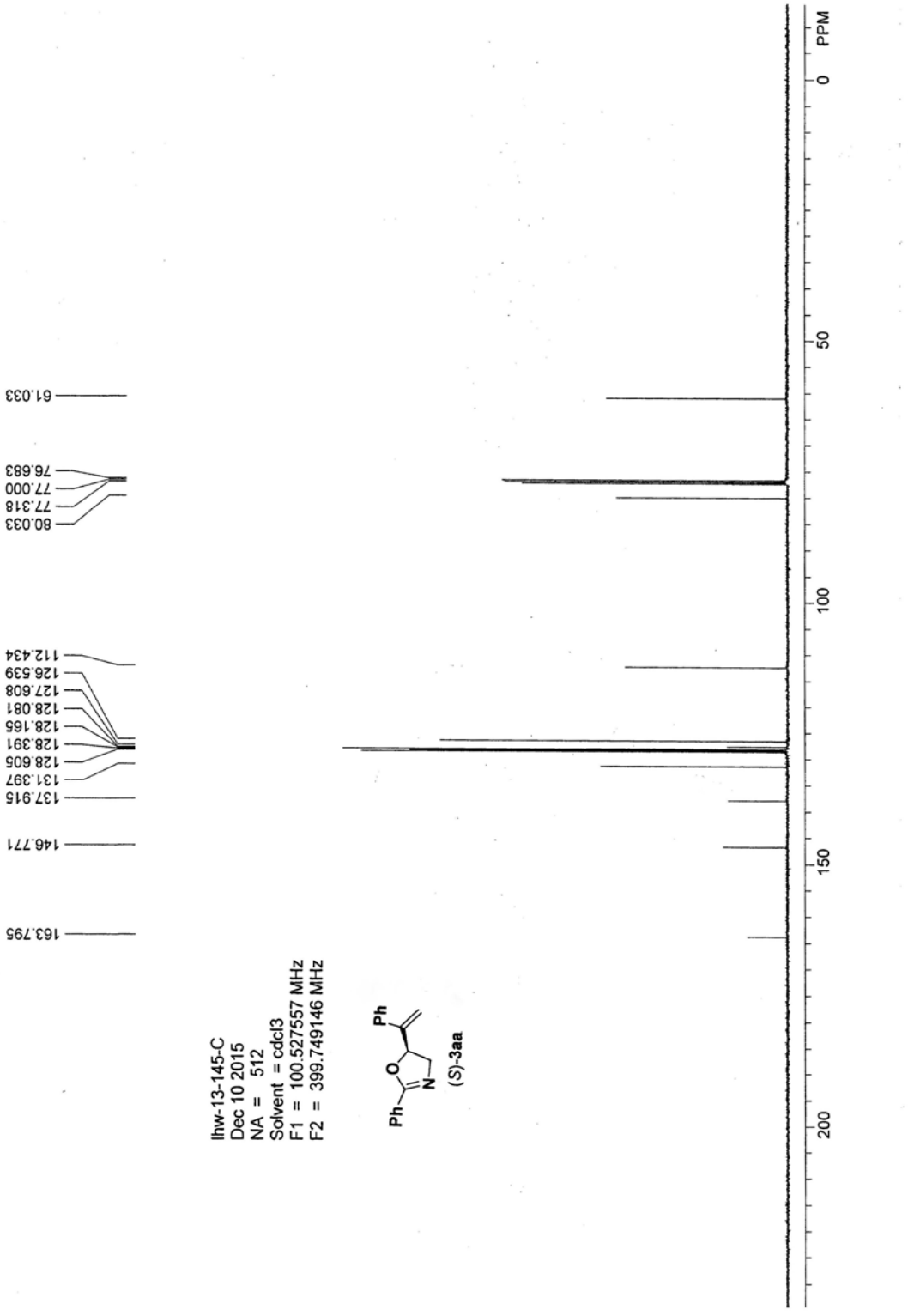
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Project Name: defaults for copy

Reported by User: Breeze user (Breeze)

Breeze 2 HPLC System

SAMPLE INFORMATION

Sample Name:	lhw-13-145-pc-2-90-10-1-214	Acquired By:	Breeze
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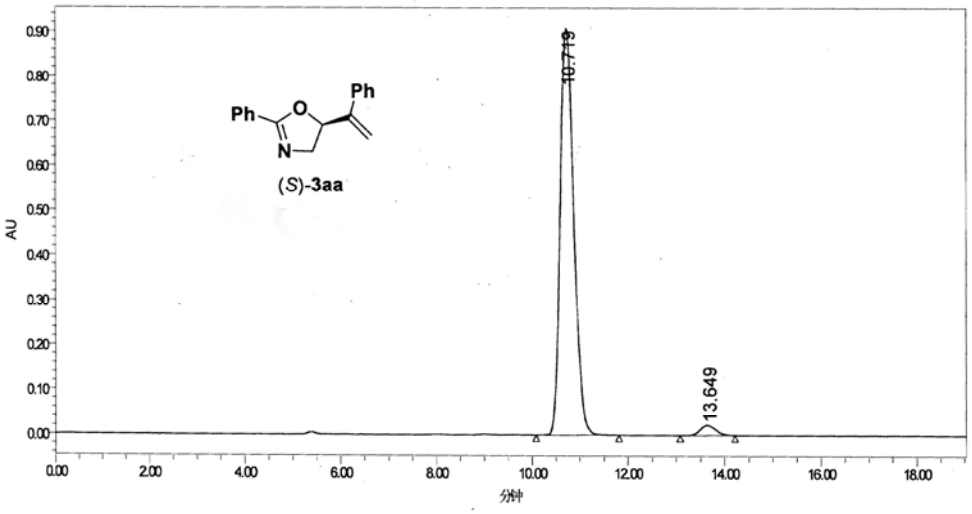

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Report Method: Individual Report ASC

Page: 1 (共计 1)

Printed: 2016/1/6 17:43:44 PRC

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Breeze 2 HPLC System

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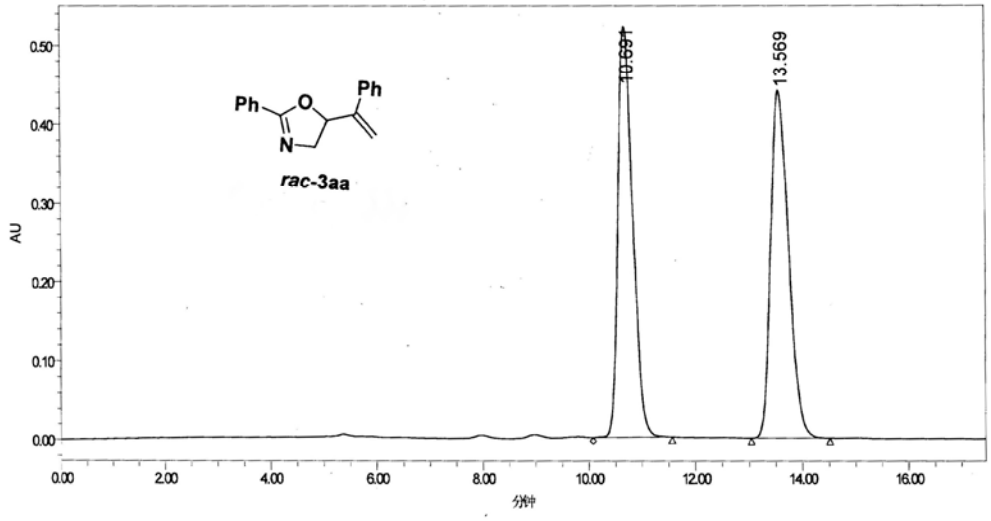

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Report Method: Individual Report ASC

Page: 1 (共计 1)

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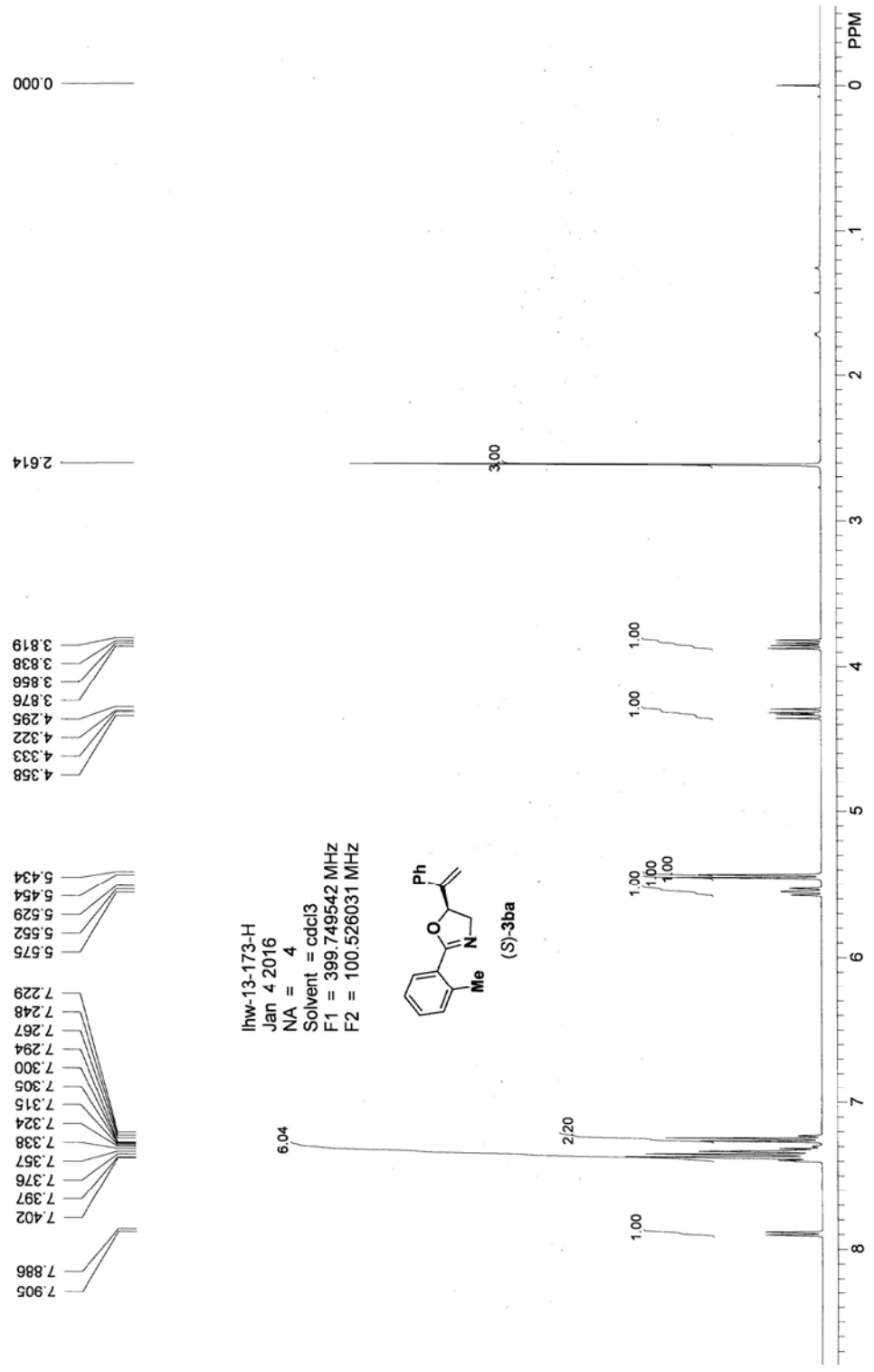
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PPM
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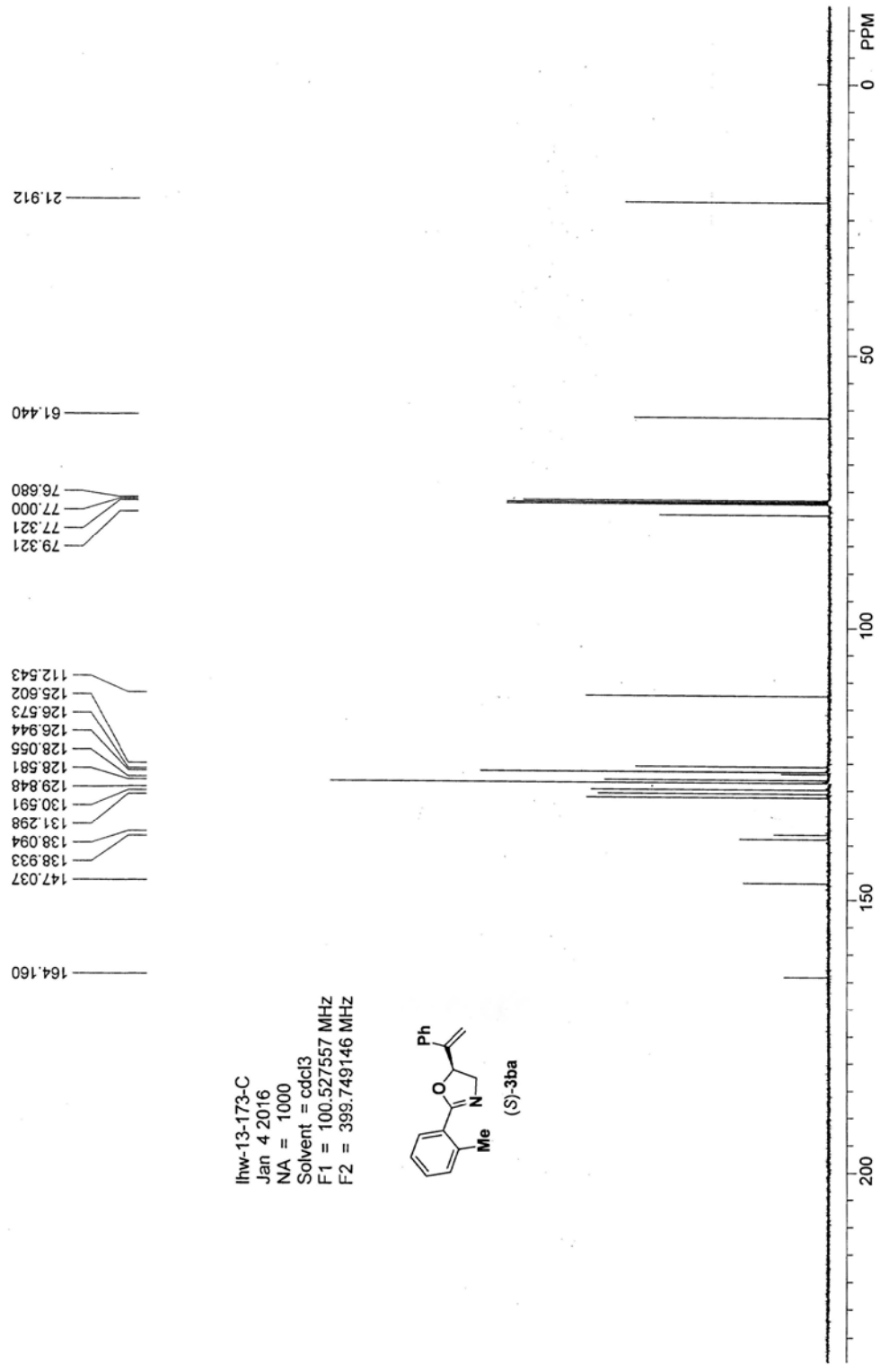
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Breeze 2 HPLC System

SAMPLE INFORMATION

Sample Name:	lhw-13-173-cj-h-95-5-1-214	Acquired By:	Breeze
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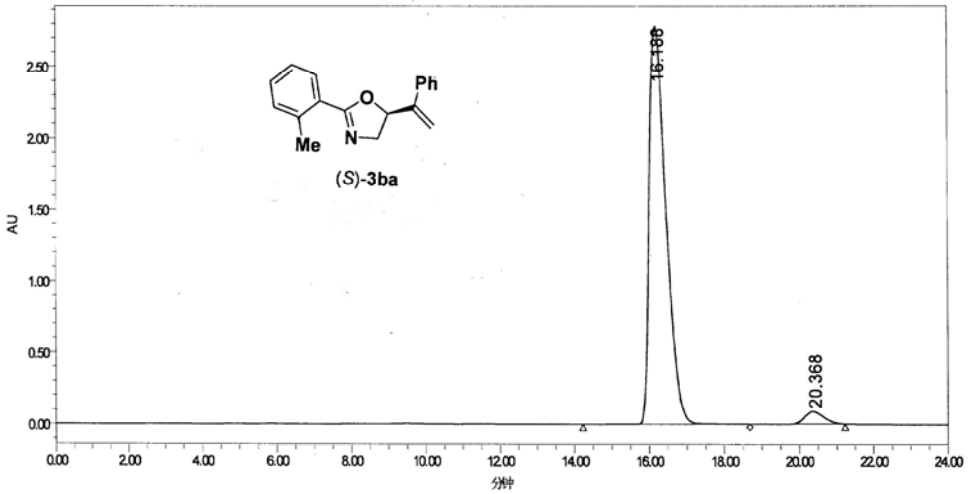

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Report Method: Individual Report ASC

Page: 1 (共计 1)

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Breeze 2 HPLC System

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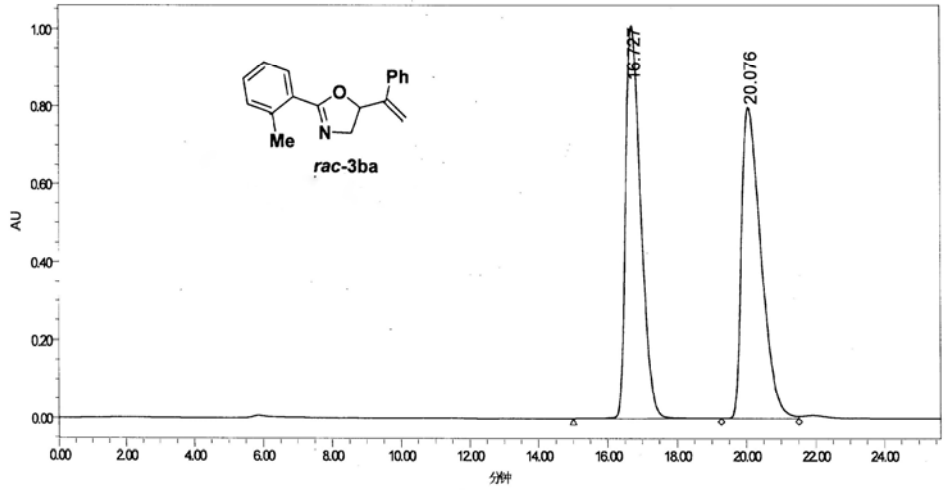

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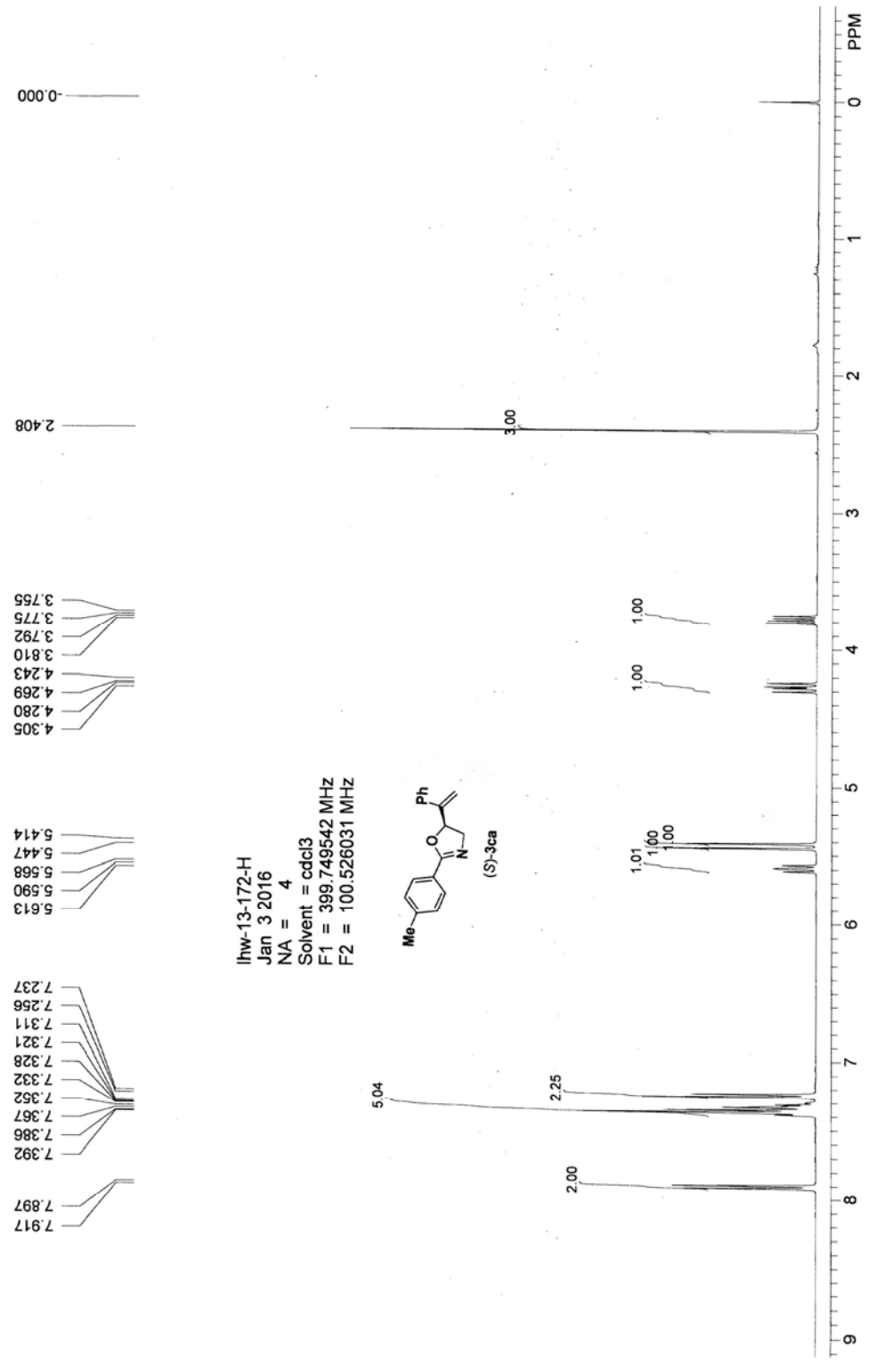
Report Method: Individual Report ASC

Page: 1 (共计 1)

Printed: 2016/1/5 16:52:45 PRC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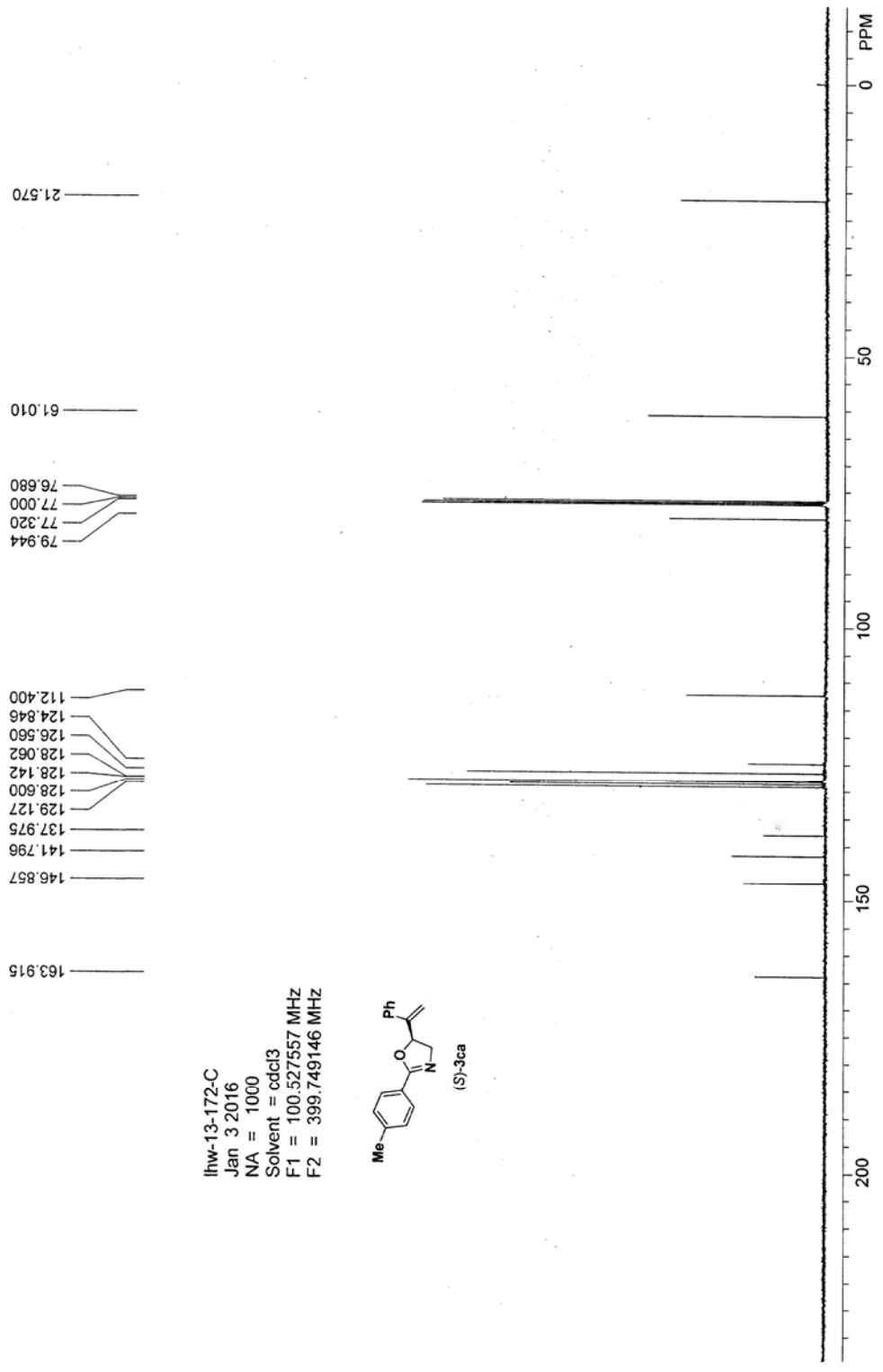
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Breeze 2 HPLC System

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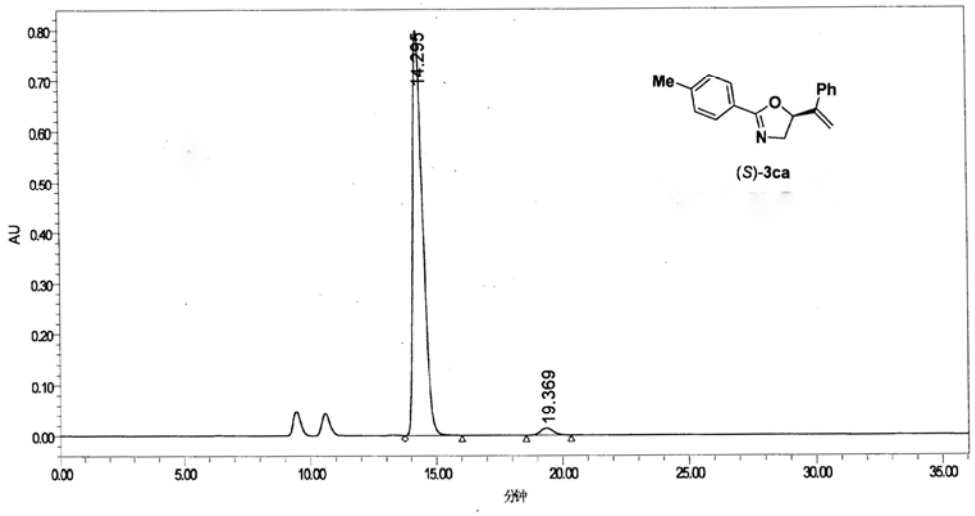

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Breeze 2 HPLC System

SAMPLE INFORMATION

Sample Name:	zy-1-65-oz-h-95-5-1-214	Acquired By:	Breeze
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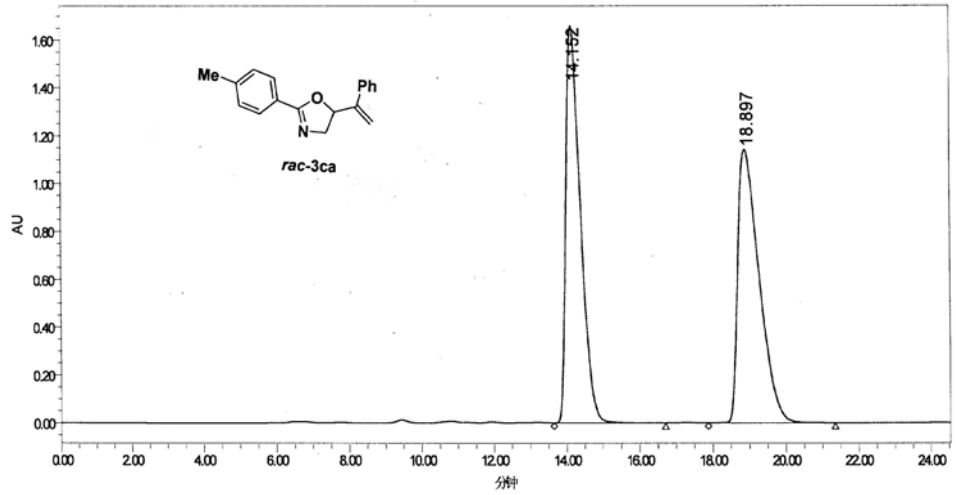

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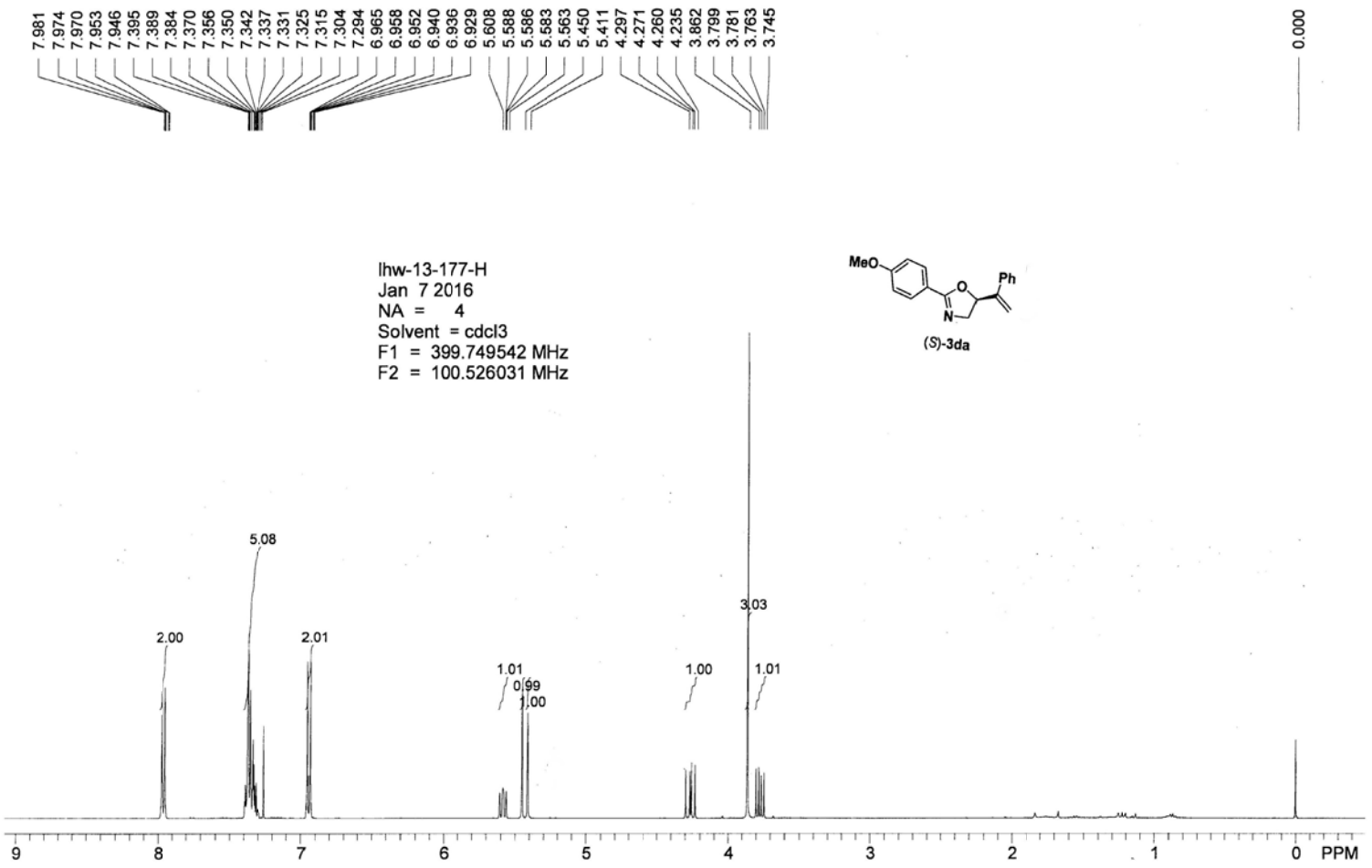
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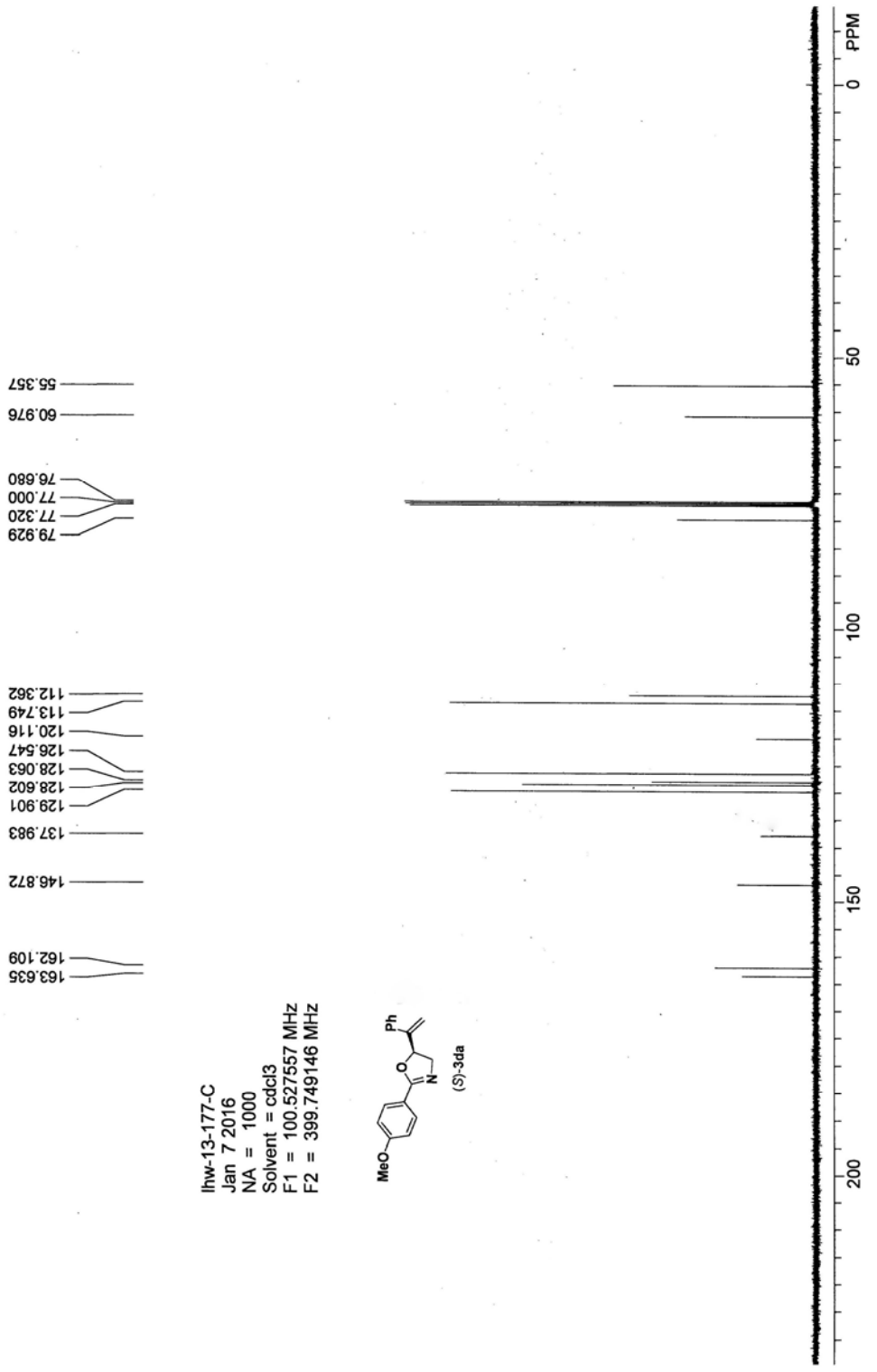
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lhw-13-177-pc-2-80-20-1-214

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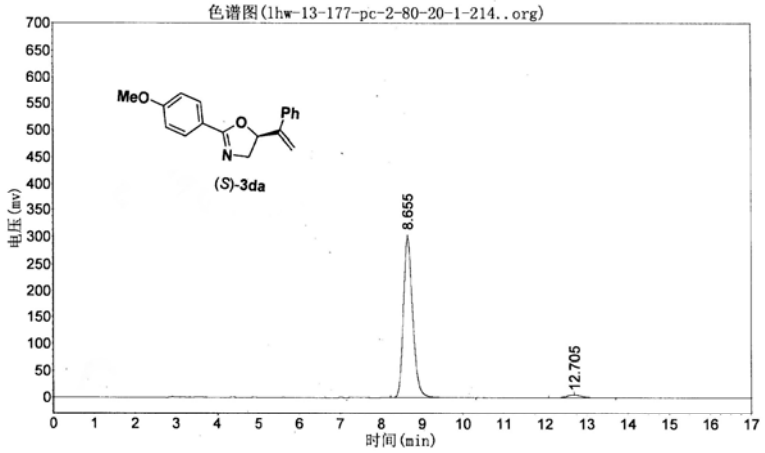

分析结果表

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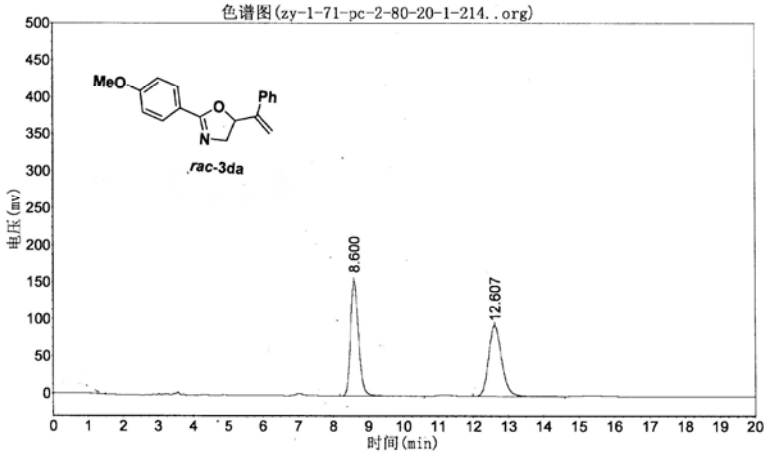
2		12.705	5774.260	151940.859	3.0460
总计			303089.104	4988266.859	100.0000

zy-1-71-pc-2-80-20-1-214

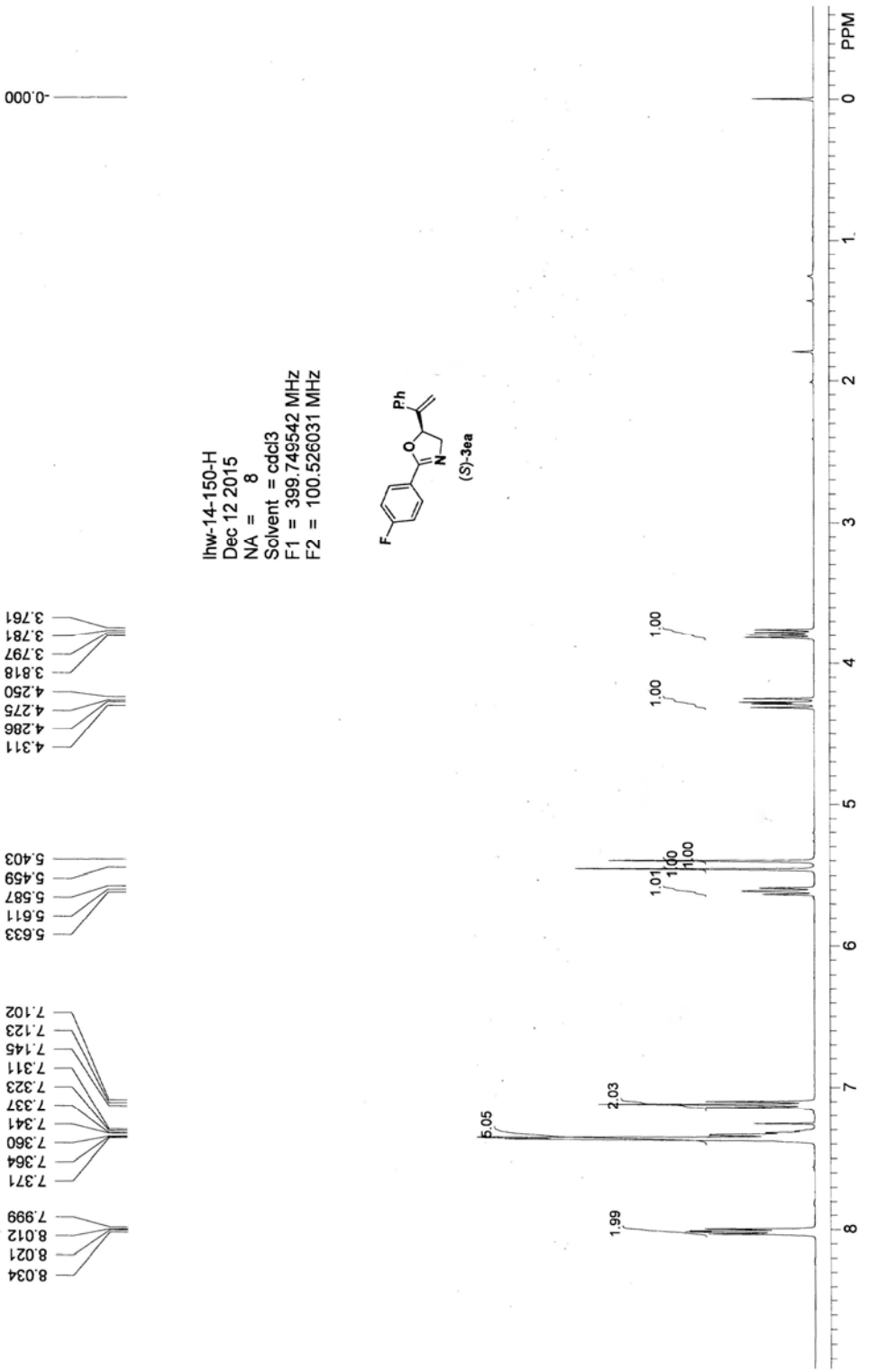
实验时间：2016-01-15,14:22:16　　报告时间：2016-01-15,17:18:42
谱图文件:d:\zhuguangjiong\lhw\20160115\zy-1-71-pc-2-80-20-1-214..org

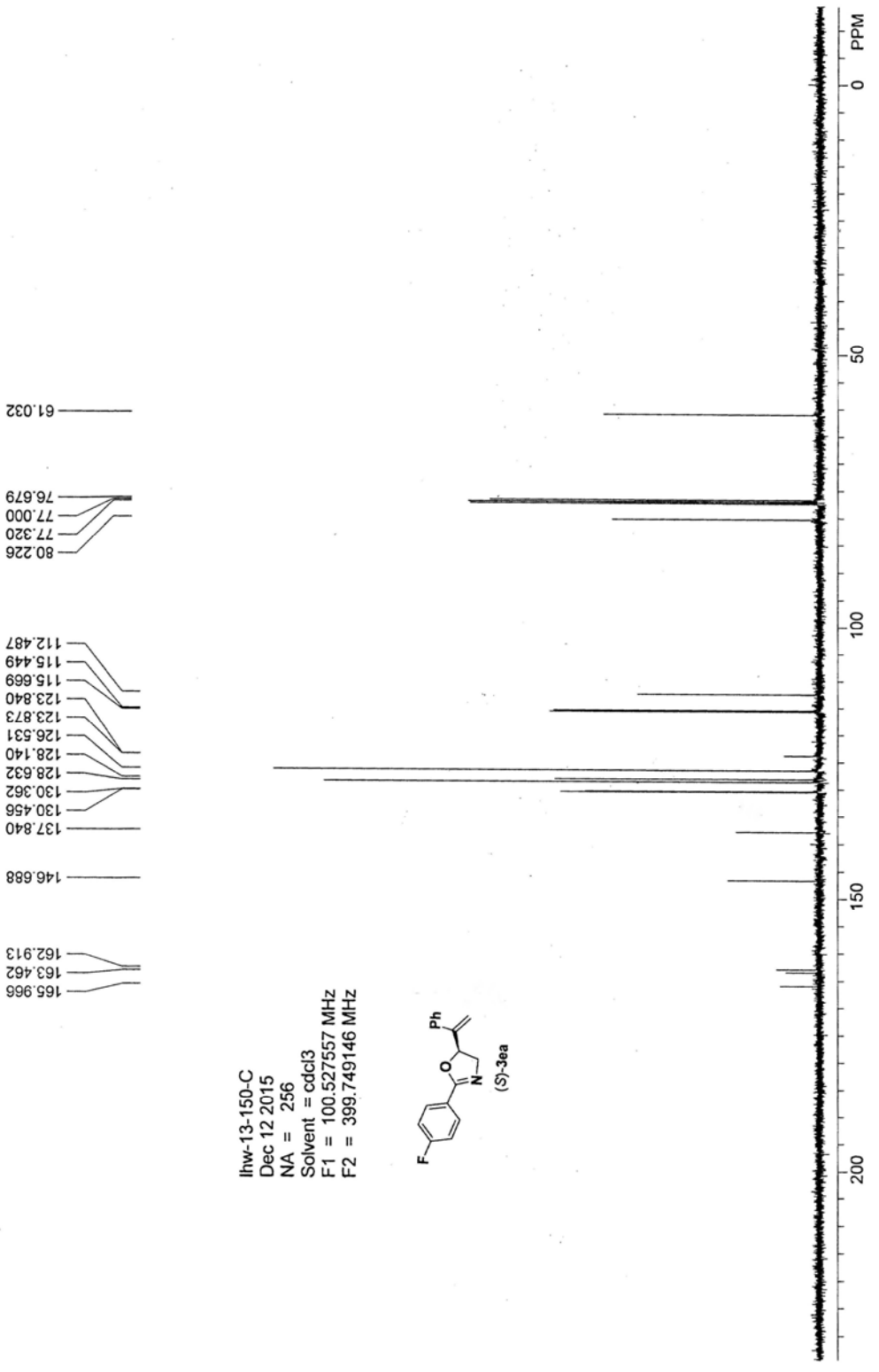
实验内容简介：

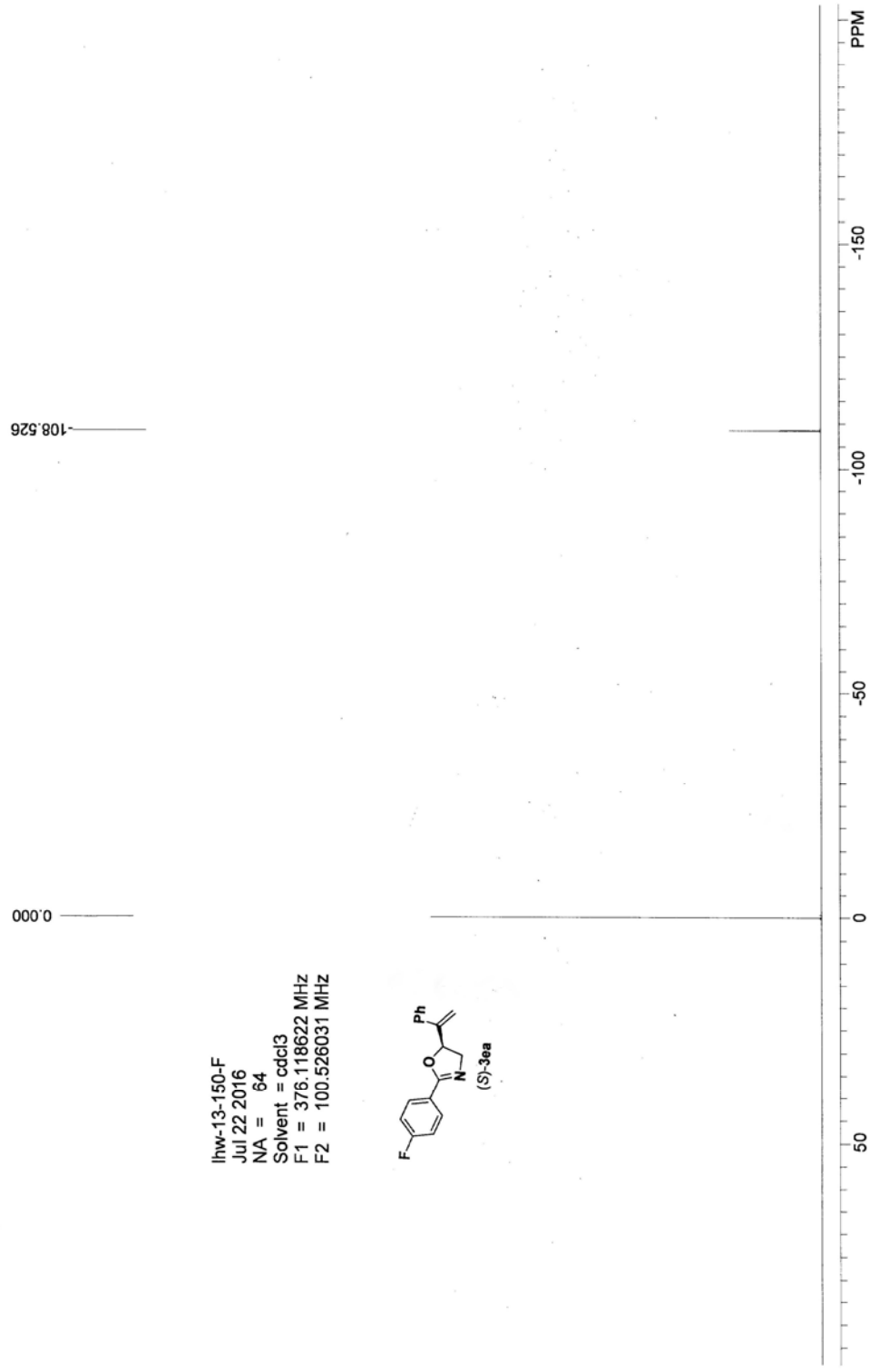


分析结果表

峰号	峰名	保留时间	峰高	峰面积	含量
1		8.600	154558.594	2484280.250	50.1006
2		12.607	94957.328	2474304.750	49.8994
总计			249515.922	4958585.000	100.0000


lhw-14-150-H
Dec 12 2015
NA = 8
Solvent = cdcl3
F1 = 399.749542 MHz
F2 = 100.526031 MHz
(S)-3ea
Ph
O
N
F
PPM
0.000
3.761
3.781
3.797
3.818
4.250
4.275
4.286
4.311
5.403
5.459
5.587
5.611
5.633
7.102
7.123
7.145
7.311
7.323
7.337
7.341
7.360
7.364
7.371
7.999
8.012
8.021
8.034
1.00
1.00
1.01
1.00
1.00
5.05
2.03
1.99


lhw-13-150-C
Dec 12 2015
NA = 256
Solvent = cdcl3
F1 = 100.527557 MHz
F2 = 399.749146 MHz
Ph
O
N
F
(S)-3ea
61.032
76.679
77.000
77.320
80.226
112.487
115.449
115.669
123.840
123.873
126.531
128.140
128.632
130.362
130.456
137.840
146.688
162.913
163.462
165.966
0
50
100
150
200
PPM


lhw-13-150-F
Jul 22 2016
NA = 64
Solvent = cdcl3
F1 = 376.118622 MHz
F2 = 100.526031 MHz
Ph
O
N
F
(S)-3ea
108.526
0.000
PPM
50
0
-50
-100
-150

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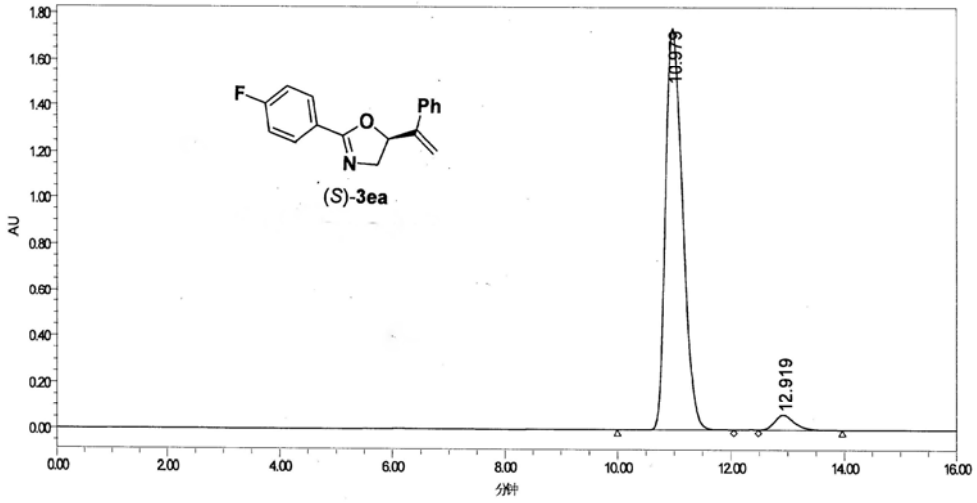
Project Name: defaults for copy

Reported by User: Breeze user (Breeze)

Breeze 2 HPLC System

SAMPLE INFORMATION

Sample Name:	lhw-13-150-oz-h-95-5-1-214	Acquired By:	Breeze
Sample Type:	未知	Date Acquired:	2015/12/24 15:39:21 CST
Vial:	1	Acq. Method:	zgj95
Injection #:	50	Date Processed:	2015/12/24 17:08:20 CST
Injection Volume:	25.00 ul	Channel Name:	W2489 ChA
Run Time:	20.00 Minutes	Channel Desc.:	W2489 ChA 230nm
Column Type:		Sample Set Name:	



	RT (min)	Area (碘sec)	% Area	Height (碘)	% Height
1	10.979	36400532	95.80	1738964	96.42
2	12.919	1594668	4.20	64625	3.58

Report Method: Individual Report ASC

Page: 1 (共计 1)

Printed: 2015/12/24 17:23:17 PRC

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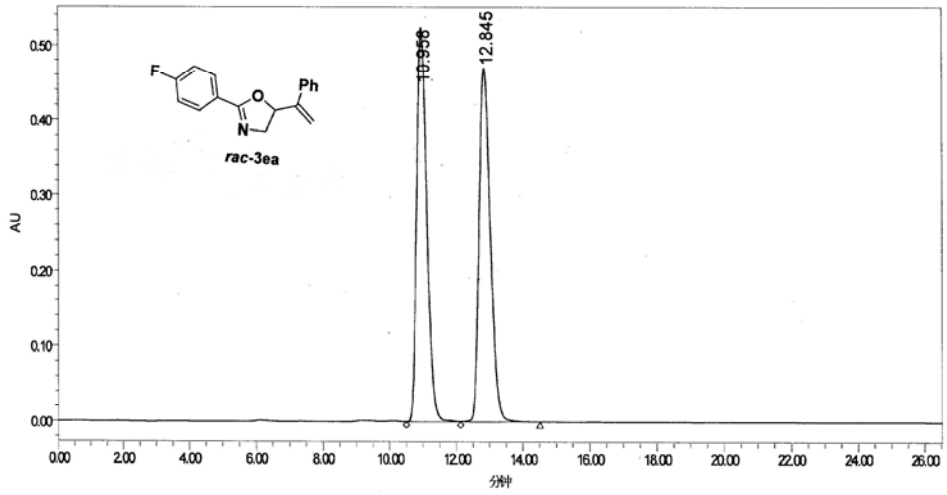
Project Name: defaults for copy

Reported by User: Breeze user (Breeze)

Breeze 2 HPLC System

SAMPLE INFORMATION

Sample Name:	zy-1-93-cz-h-95-5-1-214	Acquired By:	Breeze
Sample Type:	未知	Date Acquired:	2015/12/24 14:49:08 CST
Vial:	1	Acq. Method:	zgj95
Injection #:	48	Date Processed:	2015/12/24 17:07:59 CST
Injection Volume:	25.00 ul	Channel Name:	W2489 ChA
Run Time:	60.00 Minutes	Channel Desc.:	W2489 ChA 230nm
Column Type:		Sample Set Name:	

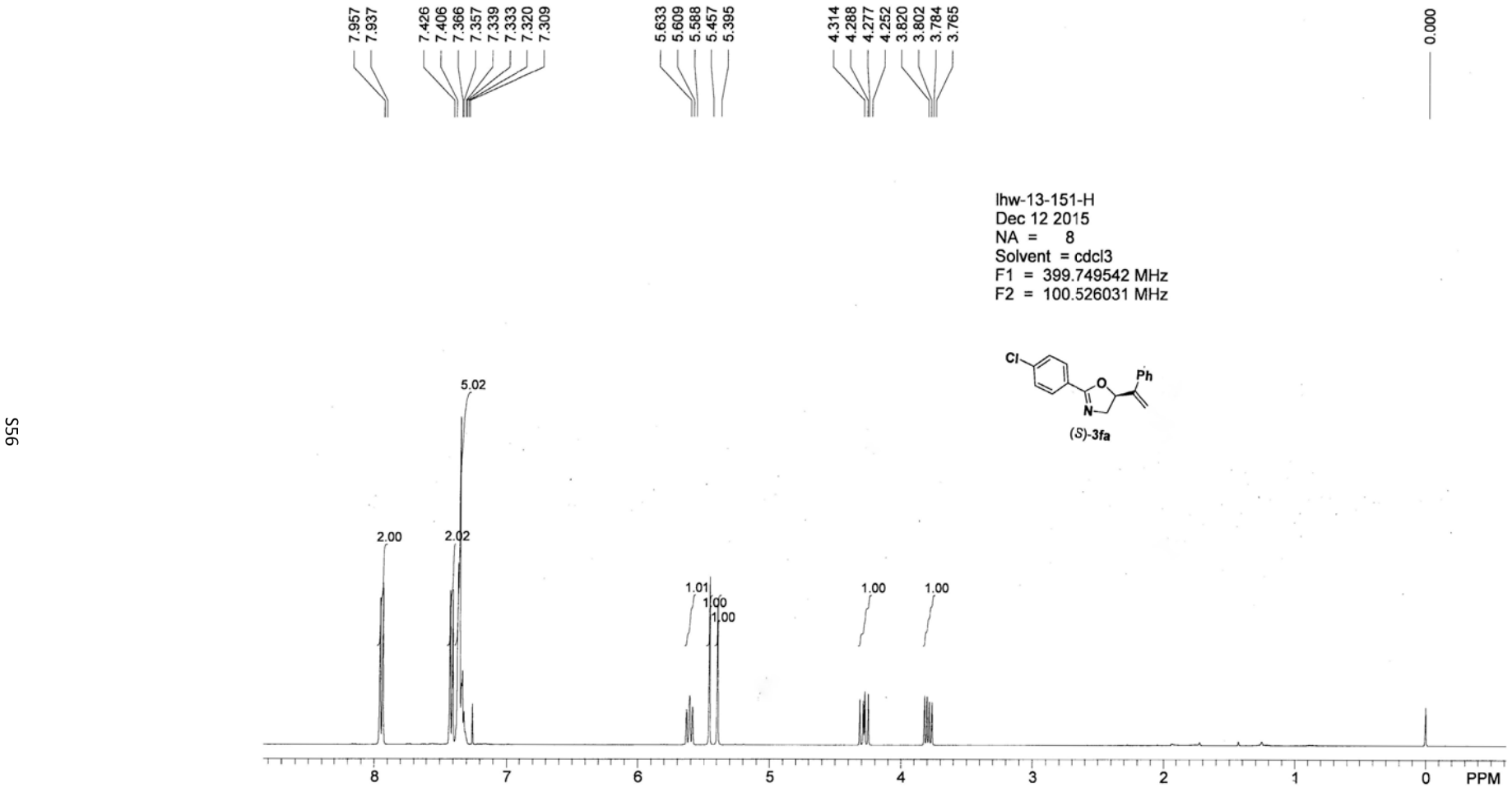


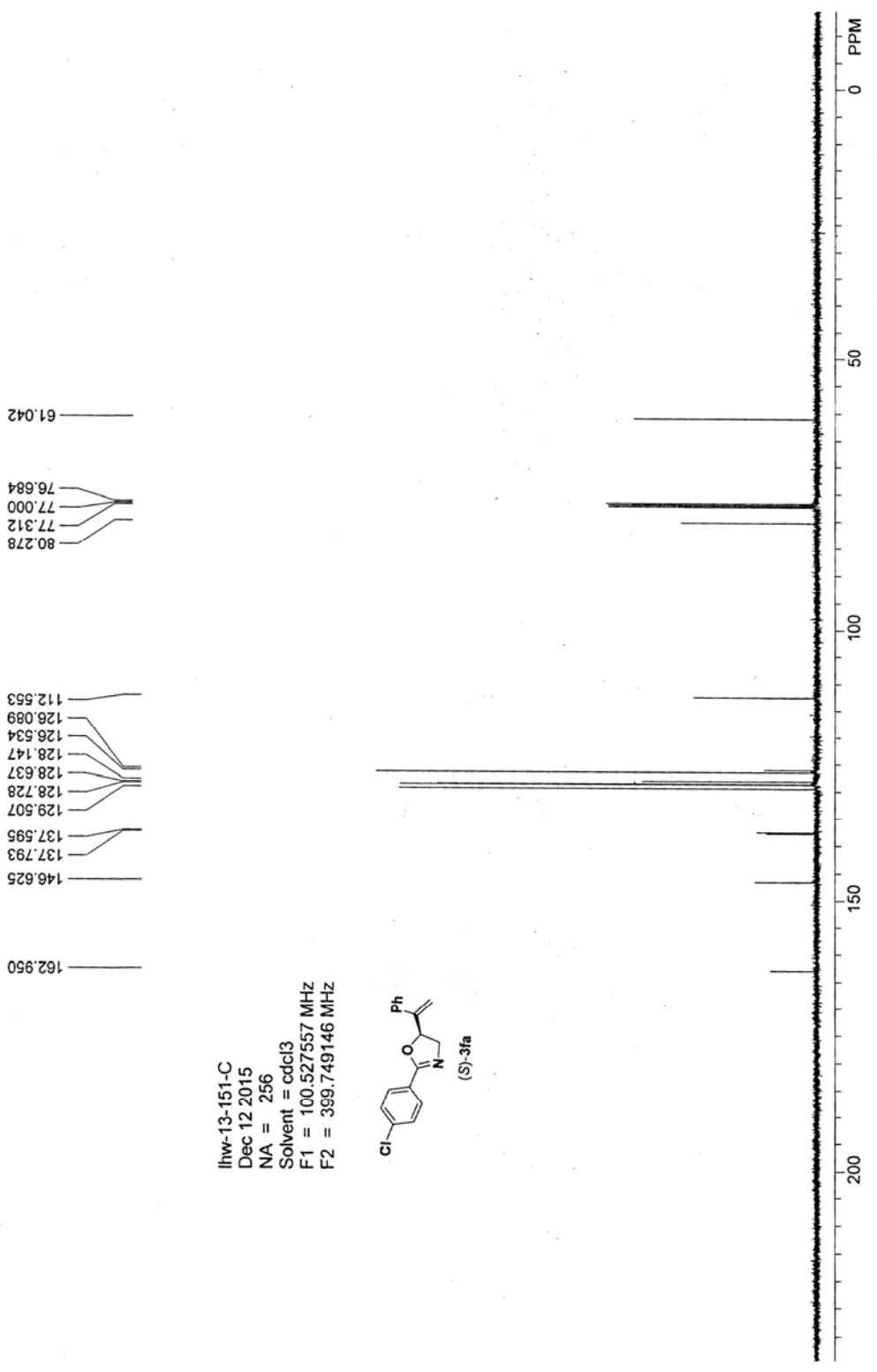
	RT (min)	Area (微sec)	%Area	Height (微)	% Height
1	10.958	10997170	50.01	525027	52.75
2	12.845	10993716	49.99	470228	47.25

Report Method: Individual Report.ASC

Page: 1 (共计 1)

Printed: 2015/12/24 17:22:48 PRC


7.957
7.937
7.426
7.406
7.366
7.357
7.339
7.333
7.320
7.309
5.633
5.609
5.588
5.457
5.395
4.314
4.288
4.277
4.252
3.820
3.802
3.784
3.765
0.000
lhw-13-151-H
Dec 12 2015
NA = 8
Solvent = cdcl3
F1 = 399.749542 MHz
F2 = 100.526031 MHz
Cl
O
N
Ph
(S)-3fa
5.02
2.00
2.02
1.01
1.00
1.00
1.00
1.00
8
7
6
5
4
3
2
1
0
PPM


lhw-13-151-C
Dec 12 2015
NA = 256
Solvent = cdcl3
F1 = 100.527557 MHz
F2 = 399.749146 MHz
Ph
O
N
Cl
(S)-3fa
162.950
146.625
137.793
137.595
129.507
128.728
128.637
128.147
126.534
126.089
112.553
80.278
77.312
77.000
76.684
61.042
200
150
100
50
0
PPM

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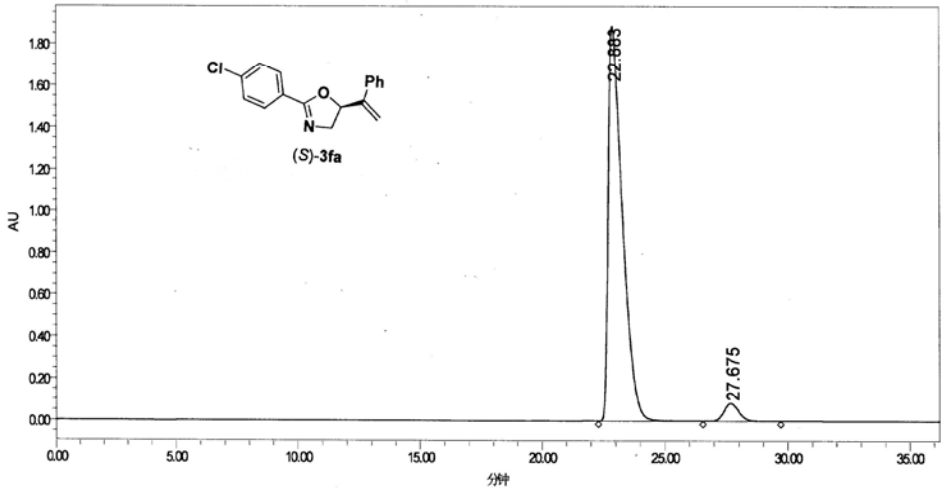
Reported by User: Breeze user (Breeze)

Breeze 2 HPLC System

SAMPLE INFORMATION

Sample Name:	lhw-13-151-cj-h-100-1-1-214	Acquired By:	Breeze
Sample Type:	未知	Date Acquired:	2015/12/22 18:54:08 CST
Vial:	1	Acq. Method:	zgj1001
Injection #:	24	Date Processed:	2015/12/23 16:46:01 CST
Injection Volume:	25.00 ul	Channel Name:	W2489 ChA
Run Time:	60.00 Minutes	Channel Desc.:	W2489 ChA 230nm
Column Type:		Sample Set Name:	



	RT (min)	Area (微sec)	%Area	Height (微)	% Height
1	22.883	75591829	95.50	1885580	95.73
2	27.675	3565416	4.50	84090	4.27

Report Method: Individual Report ASC

Page: 1 (共计 1)

Printed: 2015/12/23 16:50:24 PRC

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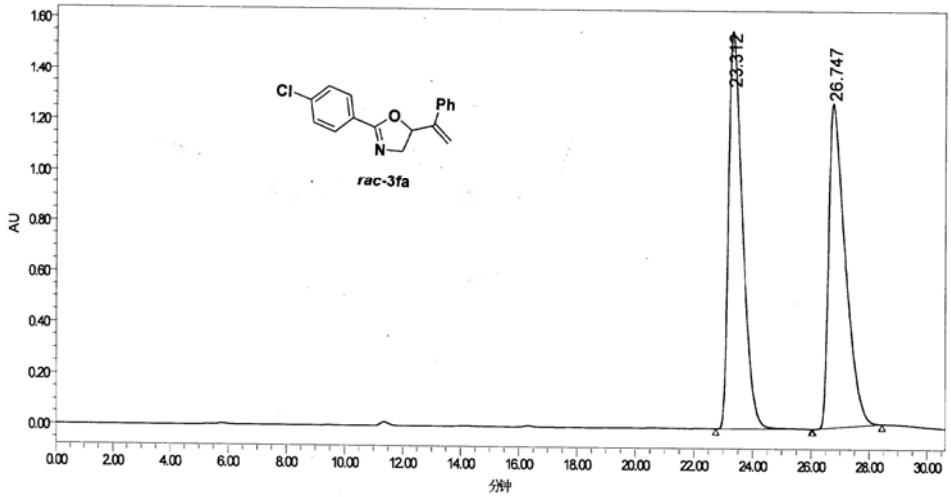
Reported by User: Breeze user (Breeze)

Breeze 2 HPLC System

SAMPLE INFORMATION

Sample Name:	zy-1-68-cj-h-100-1-1-214	Acquired By:	Breeze
Sample Type:	未知	Date Acquired:	2015/12/22 17:46:54 CST
Vial:	1	Acq. Method:	zgj1001
Injection #:	22	Date Processed:	2015/12/23 16:45:45 CST
Injection Volume:	25.00 ul	Channel Name:	W2489 ChA
Run Time:	60.00 Minutes	Channel Desc.:	W2489 ChA 230nm
Column Type:		Sample Set Name:	

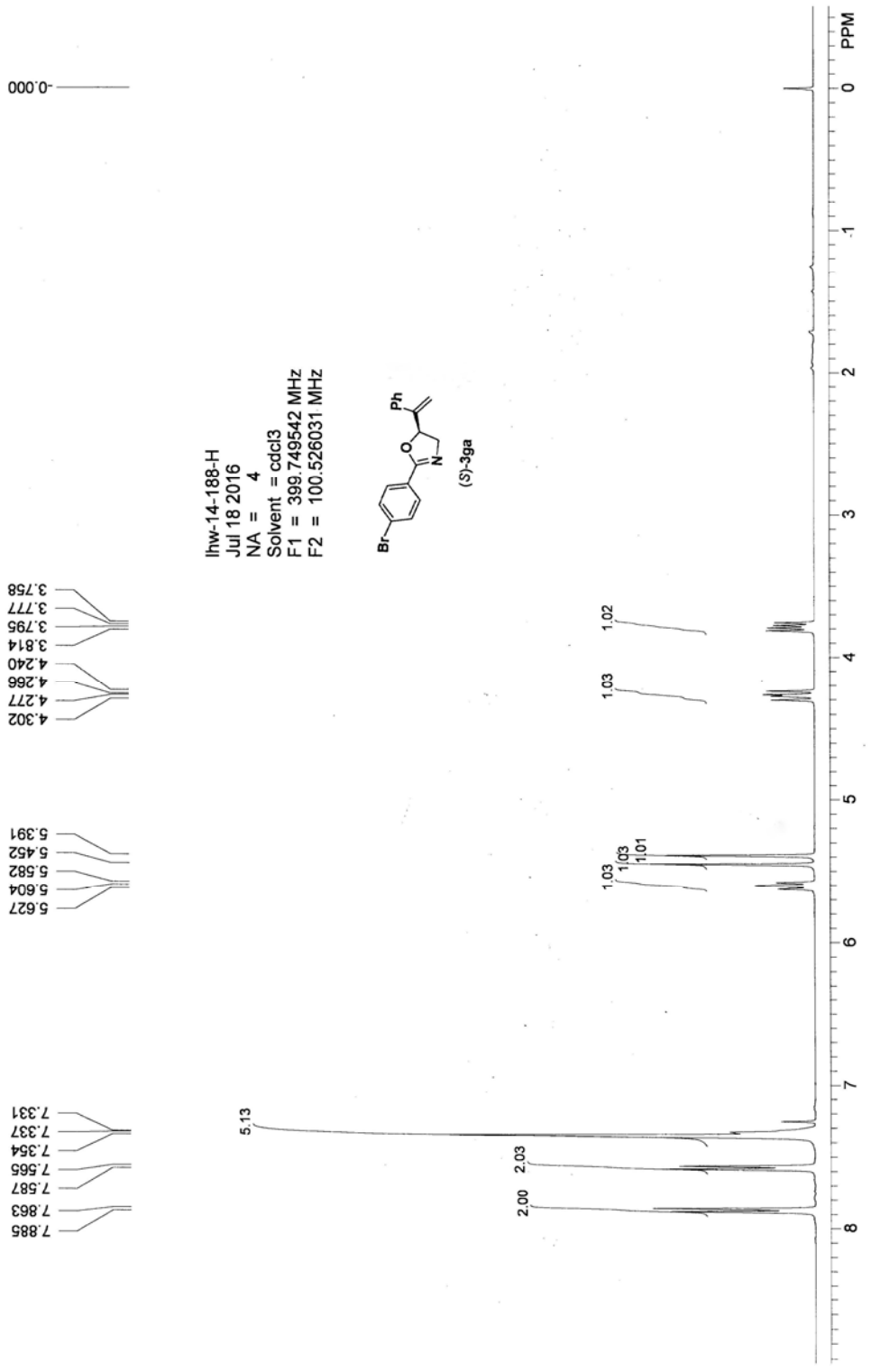


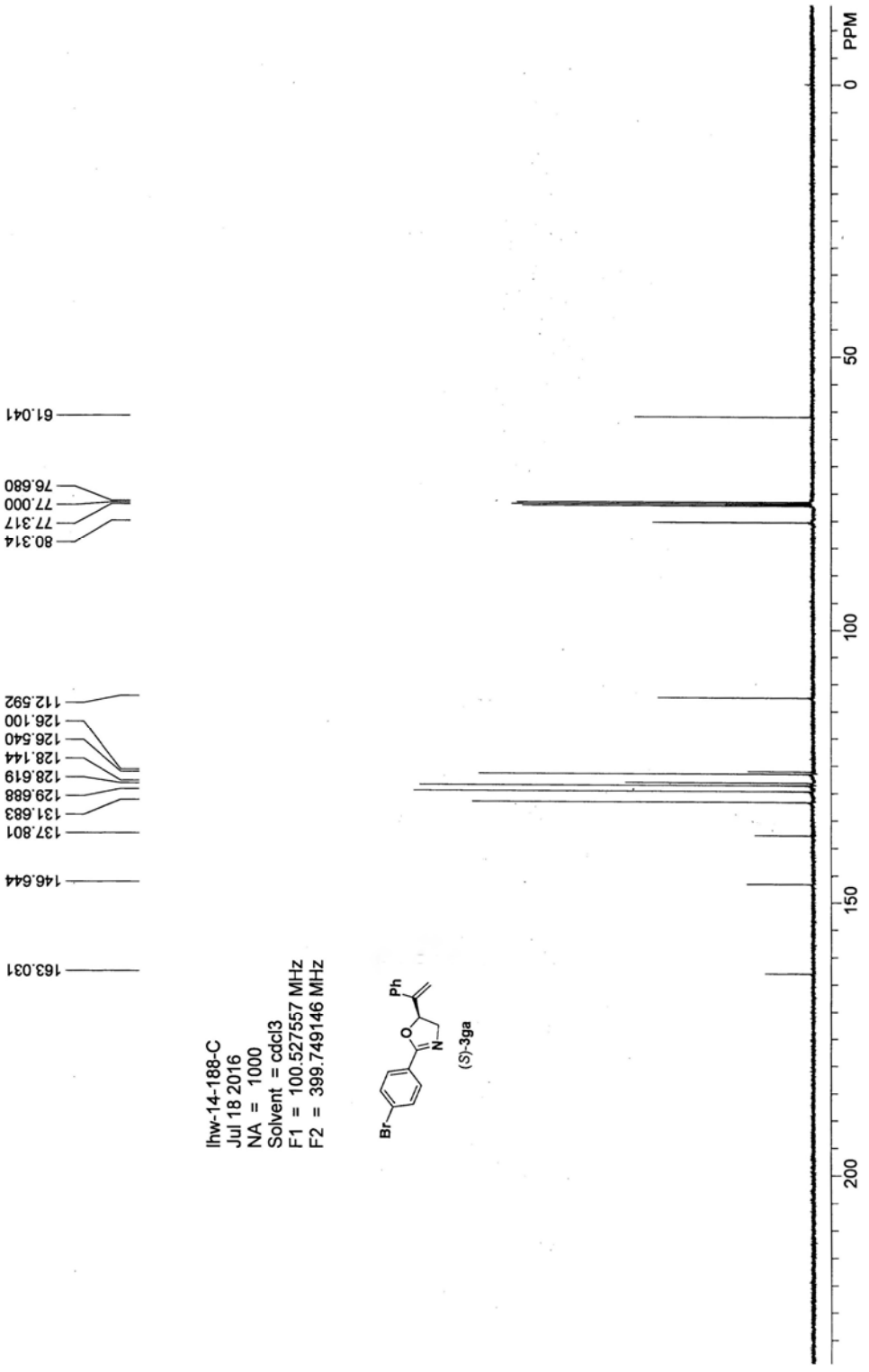
	RT (min)	Area (微伏sec)	% Area	Height (微伏)	% Height
1	23.312	51322481	50.37	1559857	55.12
2	26.747	50558400	49.63	1270084	44.88

Report Method: Individual Report ASC

Page: 1 (共计 1)

Printed: 2015/12/23 16:49:51 PRC


lhw-14-188-H
Jul 18 2016
NA = 4
Solvent = cdcl3
F1 = 399.749542 MHz
F2 = 100.526031 MHz
(S)-3ga
Ph
O
N
Br
PPM
0
1
2
3
4
5
6
7
8
5.13
2.03
2.00
1.03
1.03
1.01
1.03
1.02
7.885
7.863
7.587
7.565
7.354
7.337
7.331
5.627
5.604
5.582
5.452
5.391
4.302
4.277
4.266
4.240
3.814
3.795
3.777
3.758
-0.000

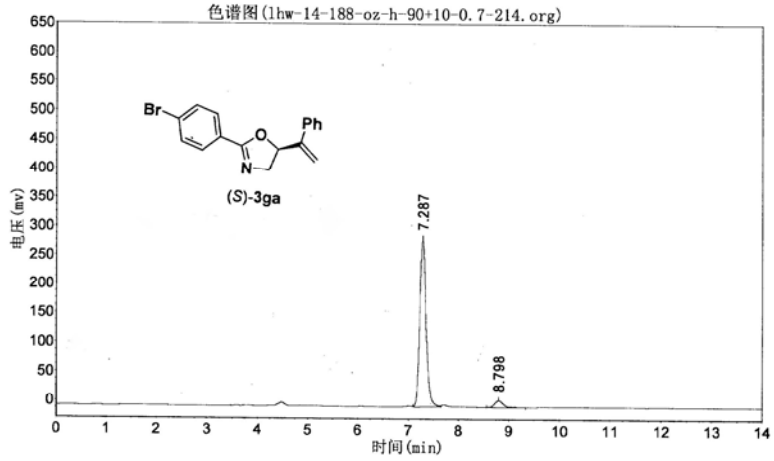

lhw-14-188-C
Jul 18 2016
NA = 1000
Solvent = cdcl3
F1 = 100.527557 MHz
F2 = 399.749146 MHz
(S)-3ga
Ph
O
N
Br
61.041
76.680
77.000
77.317
80.314
112.592
126.100
126.540
128.144
128.619
129.688
131.683
137.801
146.644
163.031
PPM
0
50
100
150
200

lhw-14-188

实验时间：2016-07-12,9:11:19
谱图文件:F:\slf\luohongwen\2016-07-12\lhw-14-188\新建文件夹\lhw-14-188-oz-h-90+10-0.7-214.org

报告时间：2016-07-12,9:12:10

实验内容简介：
OZ-H 95:5
214nm 0.7ml/min



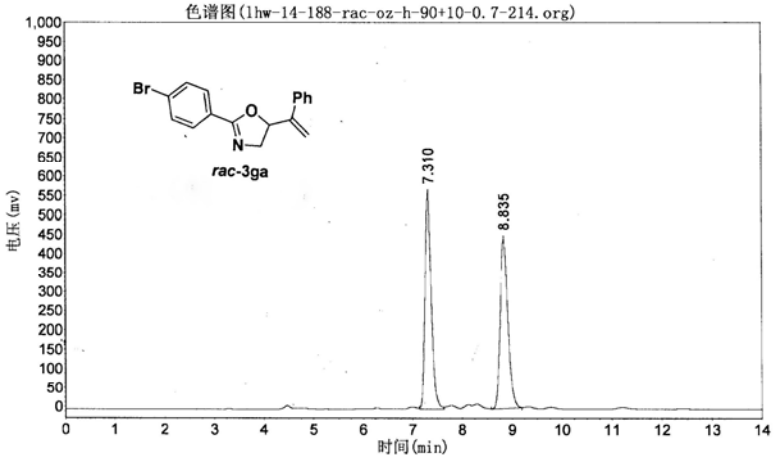
分析结果表

峰号	峰名	保留时间	峰高	峰面积	含量
1		7.287	287831.219	2504232.500	95.2328
2		8.798	11601.377	125358.133	4.7672
总计			299432.596	2629590.633	100.0000

lhw-14-188-rac

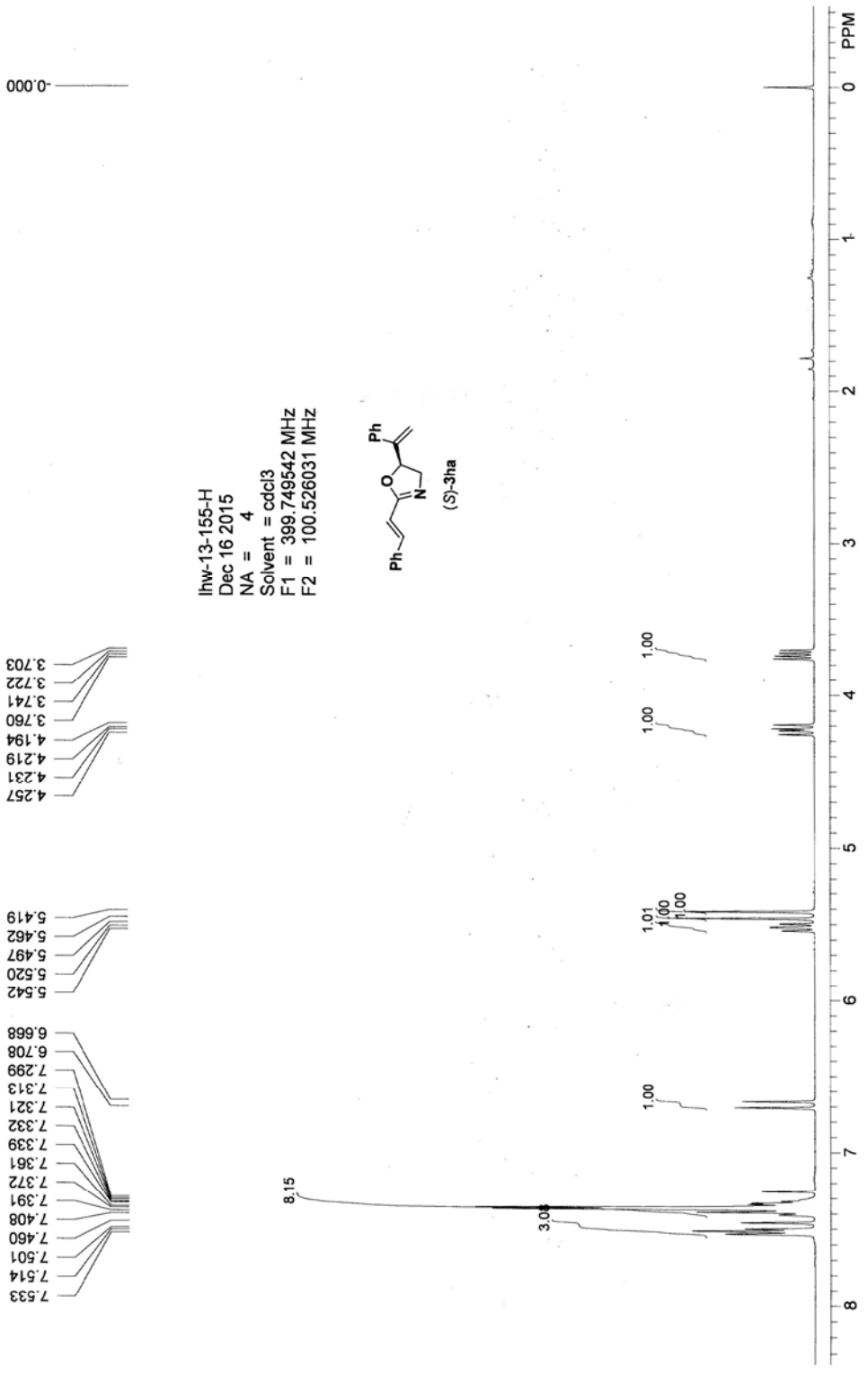
实验时间：2016-07-12,8:45:05　　报告时间：2016-07-12,8:47:53
谱图文件:F:\slf\luohongwen\2016-07-12\lhw-14-188-rac\lhw-14-188-rac-oz-h-90+10-0.7-214.org

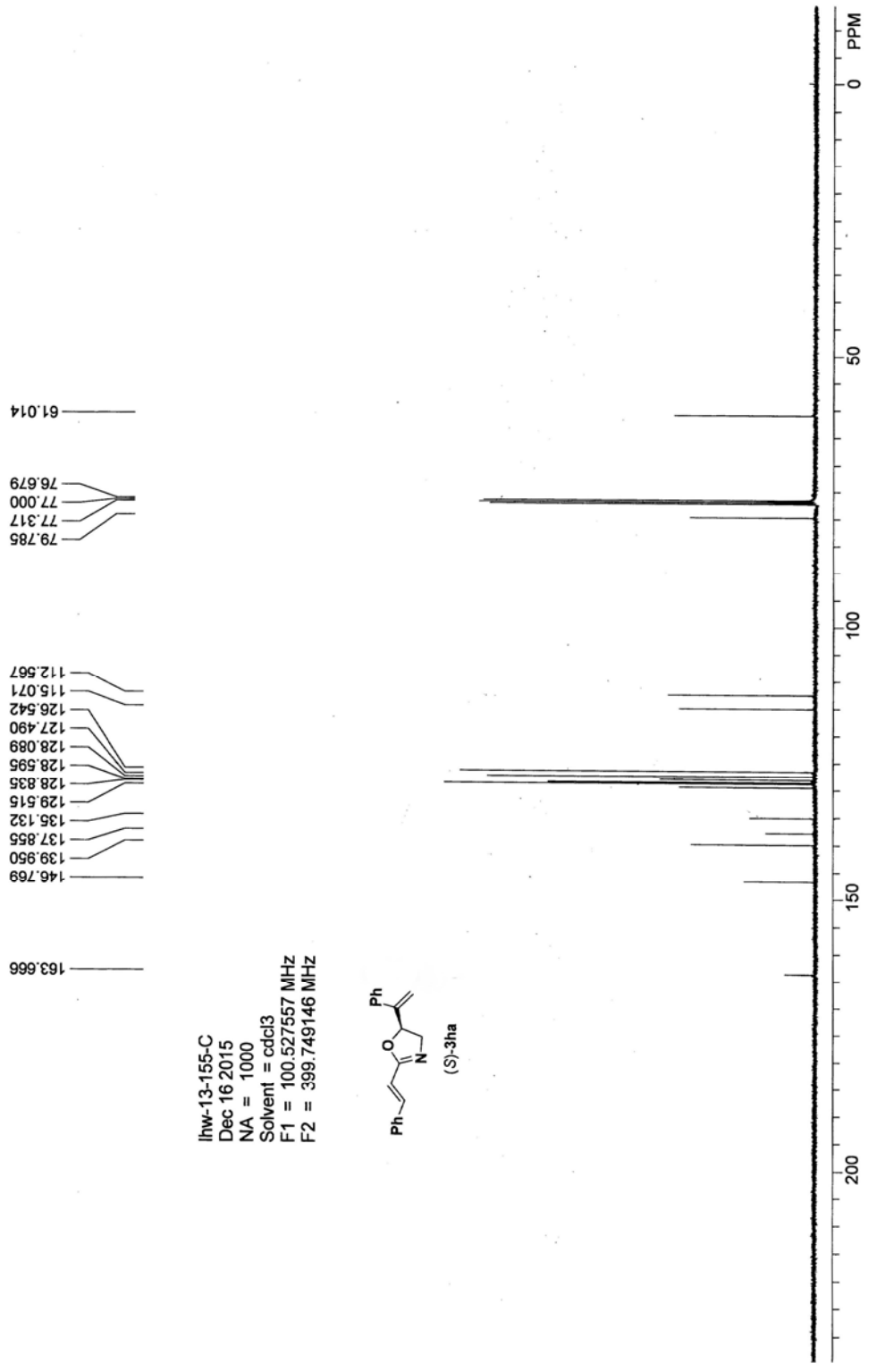
实验内容简介：
OZ-H　95:5
214nm　0.7ml/min



分析结果表

峰号	峰名	保留时间	峰高	峰面积	含量
1		7.310	564145.375	4919305.000	50.2941
2		8.835	441946.781	4861768.000	49.7059
总计			1006092.156	9781073.000	100.0000


lhw-13-155-H
Dec 16 2015
NA = 4
Solvent = cdcl3
F1 = 399.749542 MHz
F2 = 100.526031 MHz
Ph
O
N
Ph
(S)-3ha
PPM
0
1
2
3
4
5
6
7
8
8.15
3.08
1.00
1.01
1.00
1.00
1.00
1.00
7.533
7.514
7.501
7.460
7.408
7.391
7.372
7.361
7.339
7.332
7.321
7.313
7.299
6.708
6.668
5.542
5.520
5.497
5.462
5.419
4.257
4.231
4.219
4.194
3.760
3.741
3.722
3.703
-0.000


lhw-13-155-C
Dec 16 2015
NA = 1000
Solvent = cdcl3
F1 = 100.527557 MHz
F2 = 399.749146 MHz
(S)-3ha
Ph
Ph
O
N
163.666
146.769
139.960
137.855
135.132
129.515
128.835
128.595
128.089
127.490
126.542
115.071
112.567
79.785
77.317
77.000
76.679
61.014
PPM
0
50
100
150
200

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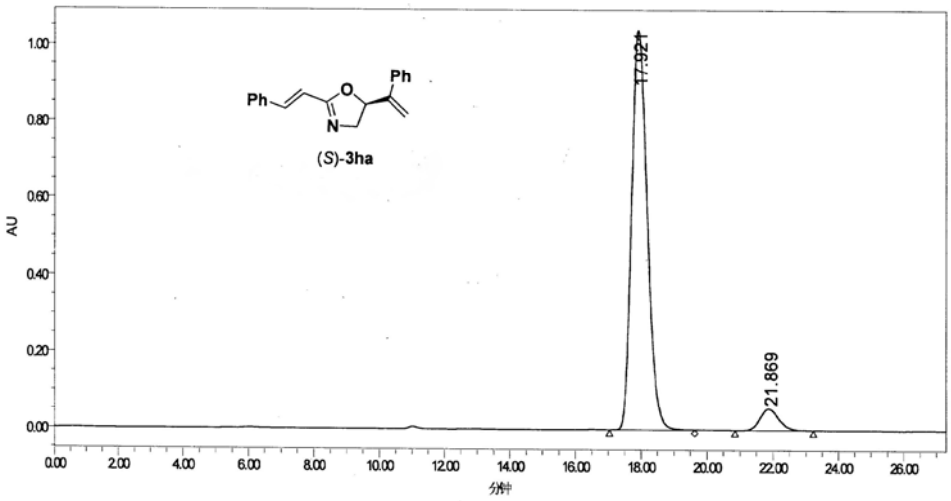
Project Name: defaults for copy

Reported by User: Breeze user (Breeze)

Breeze 2 HPLC System

SAMPLE INFORMATION

Sample Name:	lhw-13-155-cz-h-95-5-1-214	Acquired By:	Breeze
Sample Type:	未知	Date Acquired:	2015/12/24 16:28:23 CST
Vial:	1	Acq. Method:	zgj95
Injection #:	52	Date Processed:	2015/12/24 17:09:16 CST
Injection Volume:	25.00 ul	Channel Name:	W2489 ChA
Run Time:	30.00 Minutes	Channel Desc.:	W2489 ChA 230nm
Column Type:		Sample Set Name:	



	RT (min)	Area (微伏*sec)	% Area	Height (微伏)	% Height
1	17.921	34097210	93.84	1040529	94.86
2	21.869	2239799	6.16	56333	5.14

Report Method: Individual Report ASC

Page: 1 (共计 1)

Printed: 2015/12/24 17:24:50 PRC

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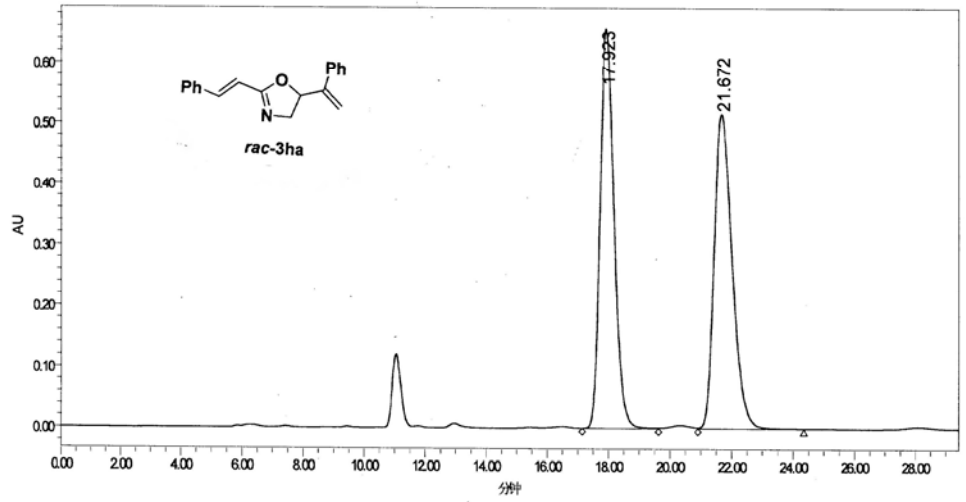
Project Name: defaults for copy

Reported by User: Breeze user (Breeze)

Breeze 2 HPLC System

SAMPLE INFORMATION

Sample Name:	zy-1-97-oz-h-95-5-1-214	Acquired By:	Breeze
Sample Type:	未知	Date Acquired:	2015/12/24 15:56:41 CST
Vial:	1	Acq. Method:	zgj95
Injection #:	51	Date Processed:	2015/12/24 17:08:44 CST
Injection Volume:	25.00 ul	Channel Name:	W2489 ChA
Run Time:	60.00 Minutes	Channel Desc.:	W2489 ChA 230nm
Column Type:		Sample Set Name:	

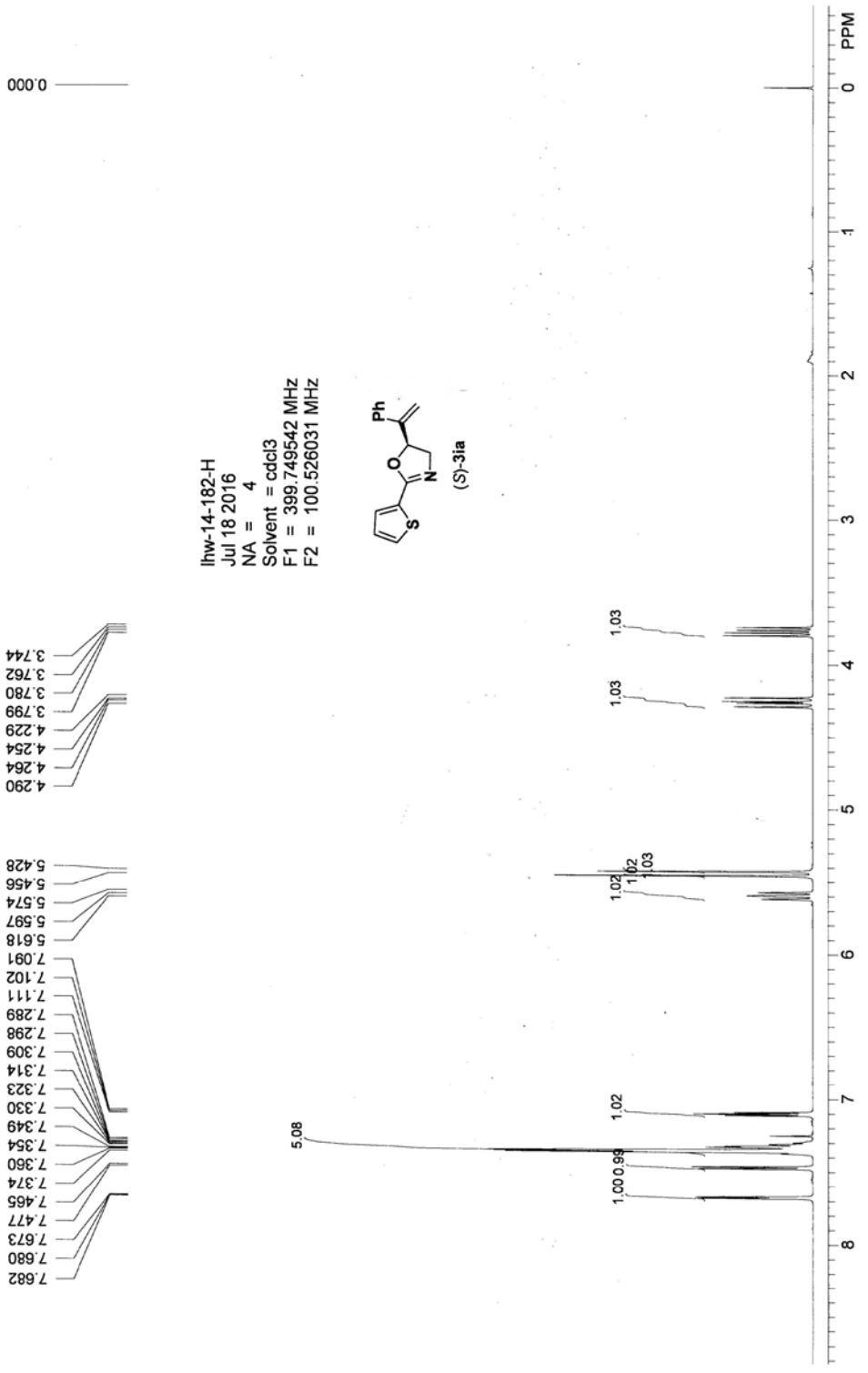


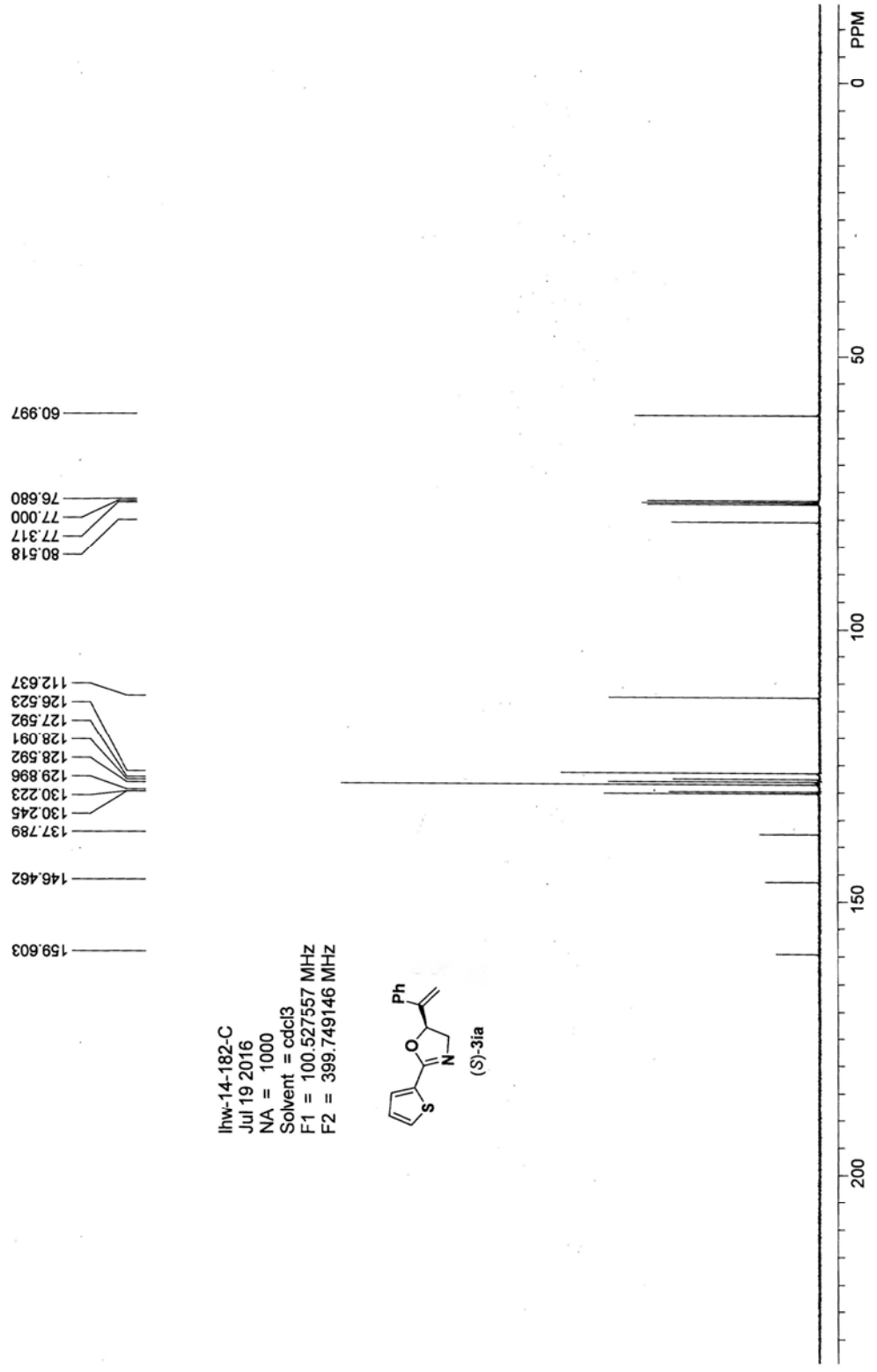
	RT (min)	Area (微sec)	% Area	Height (微)	% Height
1	17.923	20870784	49.88	657395	56.02
2	21.672	20968029	50.12	516141	43.98

Report Method: Individual Report ASC

Page: 1 (共计 1)

Printed: 2015/12/24 17:24:21 PRC

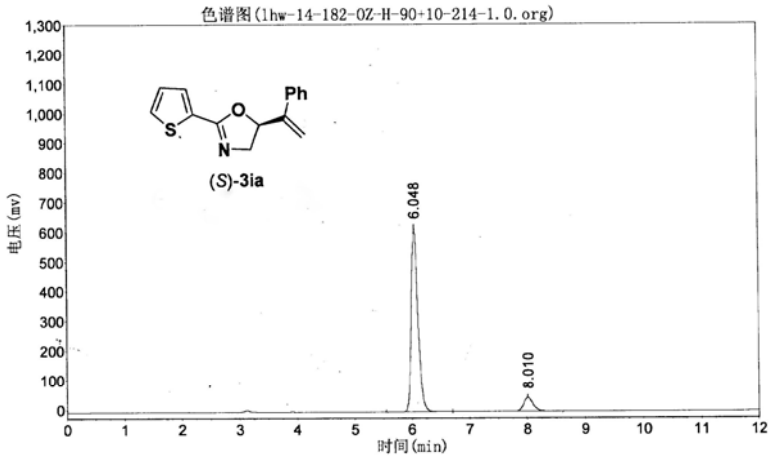

lhw-14-182-H
Jul 18 2016
NA = 4
Solvent = cdcl3
F1 = 399.749542 MHz
F2 = 100.526031 MHz
(S)-3ia
Ph
O
N
S
PPM
0.000
3.744
3.762
3.780
3.799
4.229
4.254
4.264
4.290
5.428
5.456
5.574
5.597
5.618
7.091
7.102
7.111
7.289
7.298
7.309
7.314
7.323
7.330
7.349
7.354
7.360
7.374
7.465
7.477
7.673
7.680
7.682
5.08
1.02
1.00
0.99
1.02
1.02
1.03
1.03
1.03


lhw-14-182-C
Jul 19 2016
NA = 1000
Solvent = cdcl3
F1 = 100.527557 MHz
F2 = 399.749146 MHz
(S)-3ia
Ph
O
N
S
60.997
76.680
77.000
77.317
80.518
112.637
126.523
127.592
128.091
128.592
129.896
130.223
130.245
137.789
146.462
159.603
PPM
0
50
100
150
200

lhw-14-182

实验时间：2016-07-15,15:36:01　　报告时间：2016-07-15,15:49:30
谱图文件:F:\slf\luohongwen\2016-07-15\lhw-14-182\lhw-14-182-OZ-H-90+10-214-1.0.org

实验内容简介：
OZ-H　　90:10
214nm　　1.0ml/min



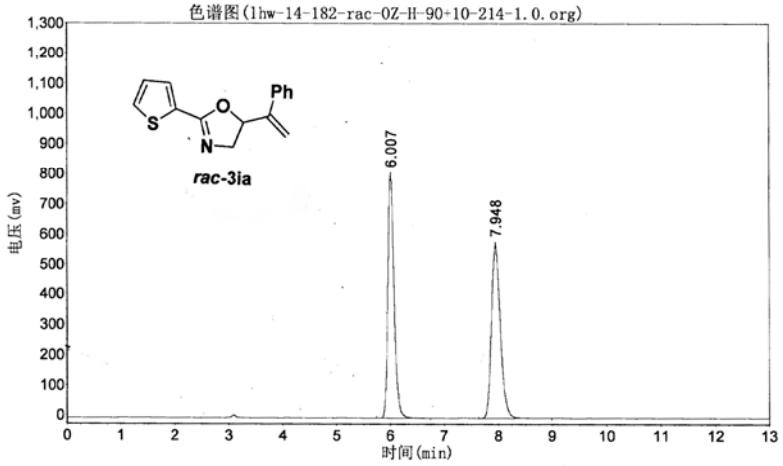
分析结果表

峰号	峰名	保留时间	峰高	峰面积	含量
1		6.048	621283.375	4959325.500	90.6139
2		8.010	45734.953	513706.281	9.3861
总计			667018.328	5473031.781	100.0000

lhw-14-182-rac

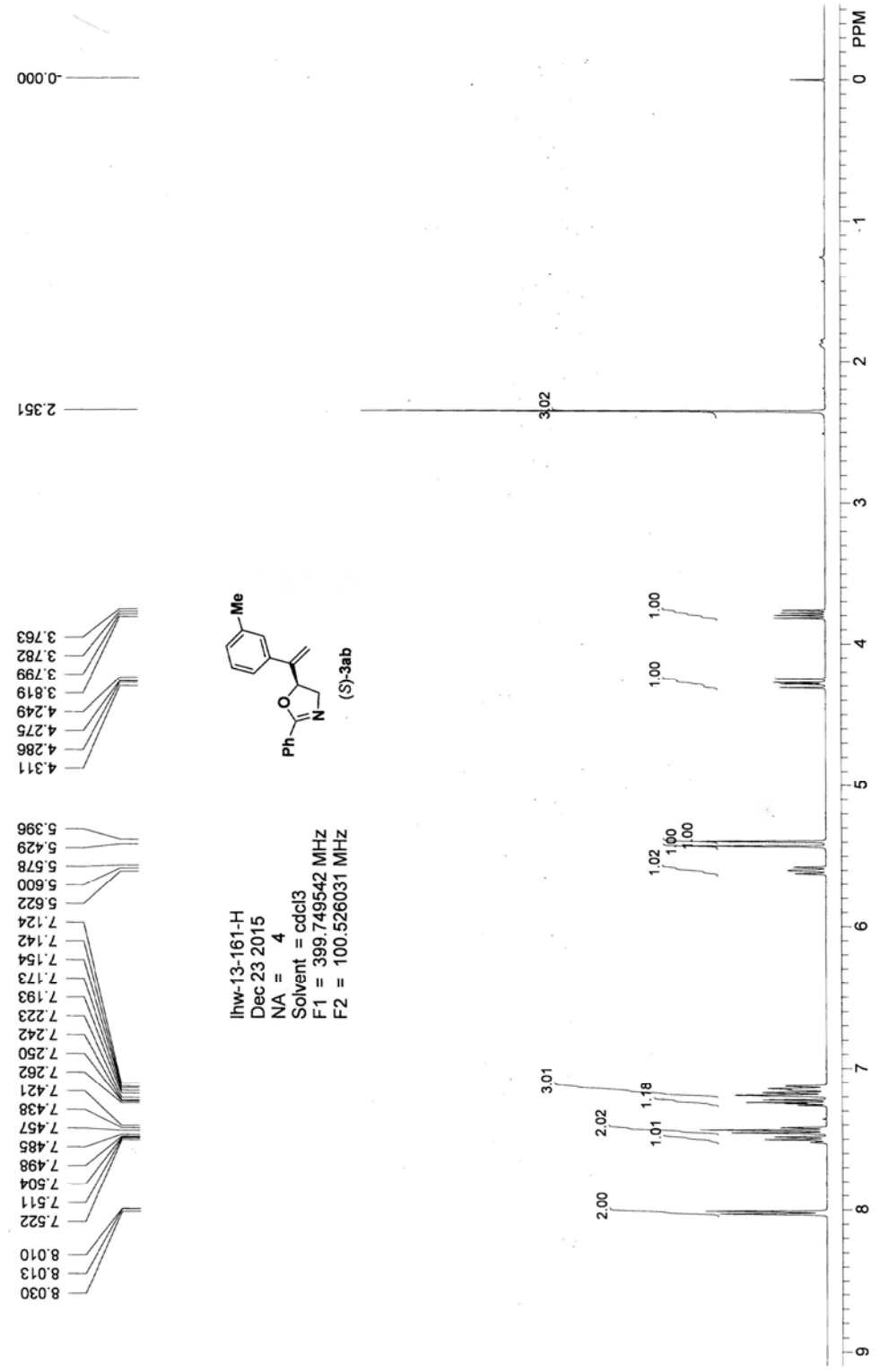
实验时间：2016-07-15,15:28:30　　报告时间：2016-07-15,15:26:07
谱图文件:F:\slf\luohongwen\2016-07-15\lhw-14-182-rac\lhw-14-182-rac-0Z-H-90+10-214-1.0.org

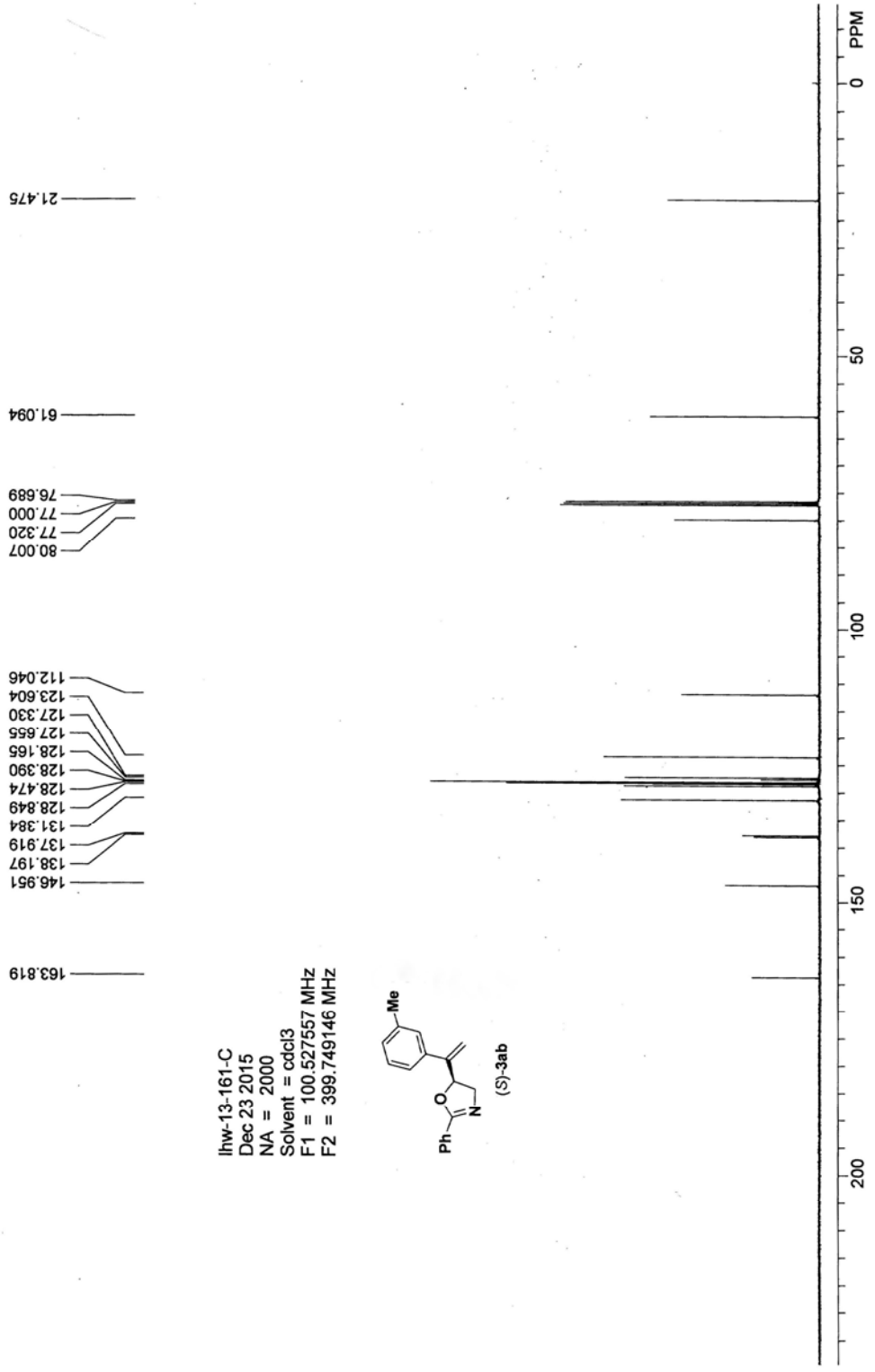
实验内容简介：
0Z-H　　90:10
214nm　　1.0ml/min



分析结果表

峰号	峰名	保留时间	峰高	峰面积	含量
1		6.007	802578.375	6504013.500	49.9751
2		7.948	573096.313	6510507.500	50.0249
总计			1375674.688	13014521.000	100.0000


lhw-13-161-H
Dec 23 2015
NA = 4
Solvent = cdcl3
F1 = 399.749542 MHz
F2 = 100.526031 MHz
Me
Ph
O
N
(S)-3ab
PPM


lhw-13-161-C
Dec 23 2015
NA = 2000
Solvent = cdcl3
F1 = 100.527557 MHz
F2 = 399.749146 MHz
Me
Ph
O
N
(S)-3ab
21.475
61.094
76.689
77.000
77.320
80.007
112.046
123.604
127.330
127.665
128.165
128.390
128.474
128.849
131.384
137.919
138.197
146.951
163.819
PPM
0
50
100
150
200

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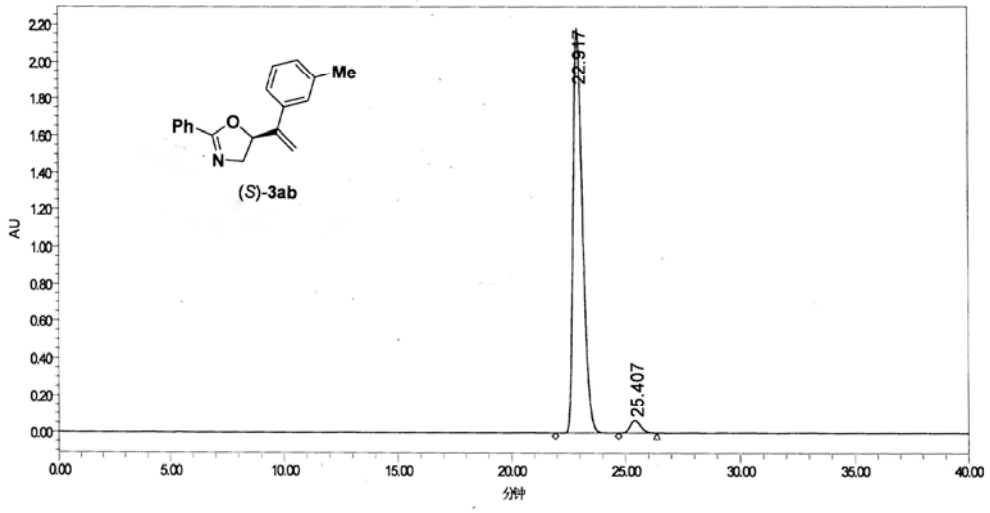
Project Name: defaults for copy

Reported by User: Breeze user (Breeze)

Breeze 2 HPLC System

SAMPLE INFORMATION

Sample Name:	lhw-13-161-ad-h-100-1-1-214	Acquired By:	Breeze
Sample Type:	未知	Date Acquired:	2016/1/4 15:13:55 CST
Vial:	1	Acq. Method:	zgj1001
Injection #:	7	Date Processed:	2016/1/5 16:46:50 CST
Injection Volume:	25.00 ul	Channel Name:	W2489 ChA
Run Time:	40.00 Minutes	Channel Desc.:	W2489 ChA 230nm
Column Type:		Sample Set Name:	



	RT (min)	Area (微伏sec)	% Area	Height (微伏)	% Height
1	22.917	63291658	96.70	2183573	97.01
2	25.407	2163222	3.30	67376	2.99

Report Method: Individual Report ASC

Page: 1 (共计 1)

Printed: 2016/1/5 16:49:46 PRC

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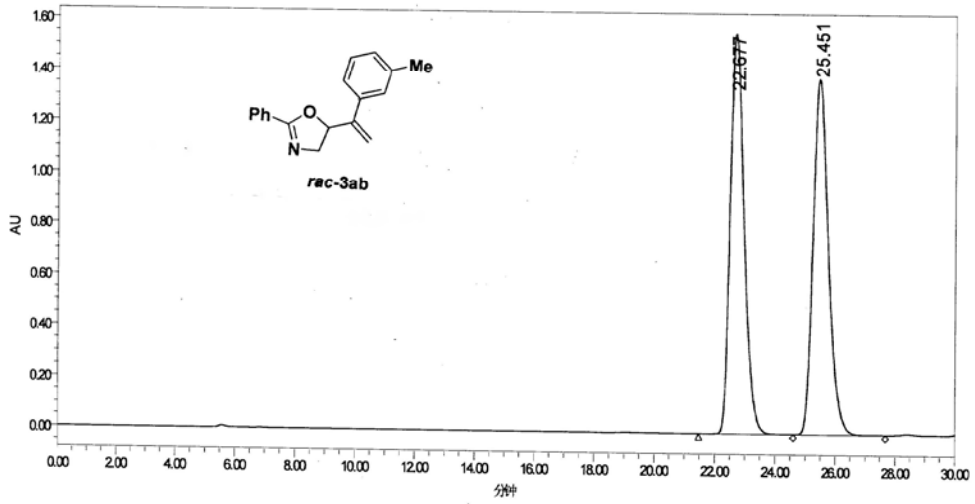
Project Name: defaults for copy

Reported by User: Breeze user (Breeze)

Breeze 2 HPLC System

SAMPLE INFORMATION

Sample Name:	zy-1-145-adh-100-1-1-214	Acquired By:	Breeze
Sample Type:	未知	Date Acquired:	2016/1/4 14:40:34 CST
Vial:	1	Acq. Method:	zgj1001
Injection #:	6	Date Processed:	2016/1/5 16:46:28 CST
Injection Volume:	25.00 ul	Channel Name:	W2489 ChA
Run Time:	30.00 Minutes	Channel Desc.:	W2489 ChA 230nm
Column Type:		Sample Set Name:	

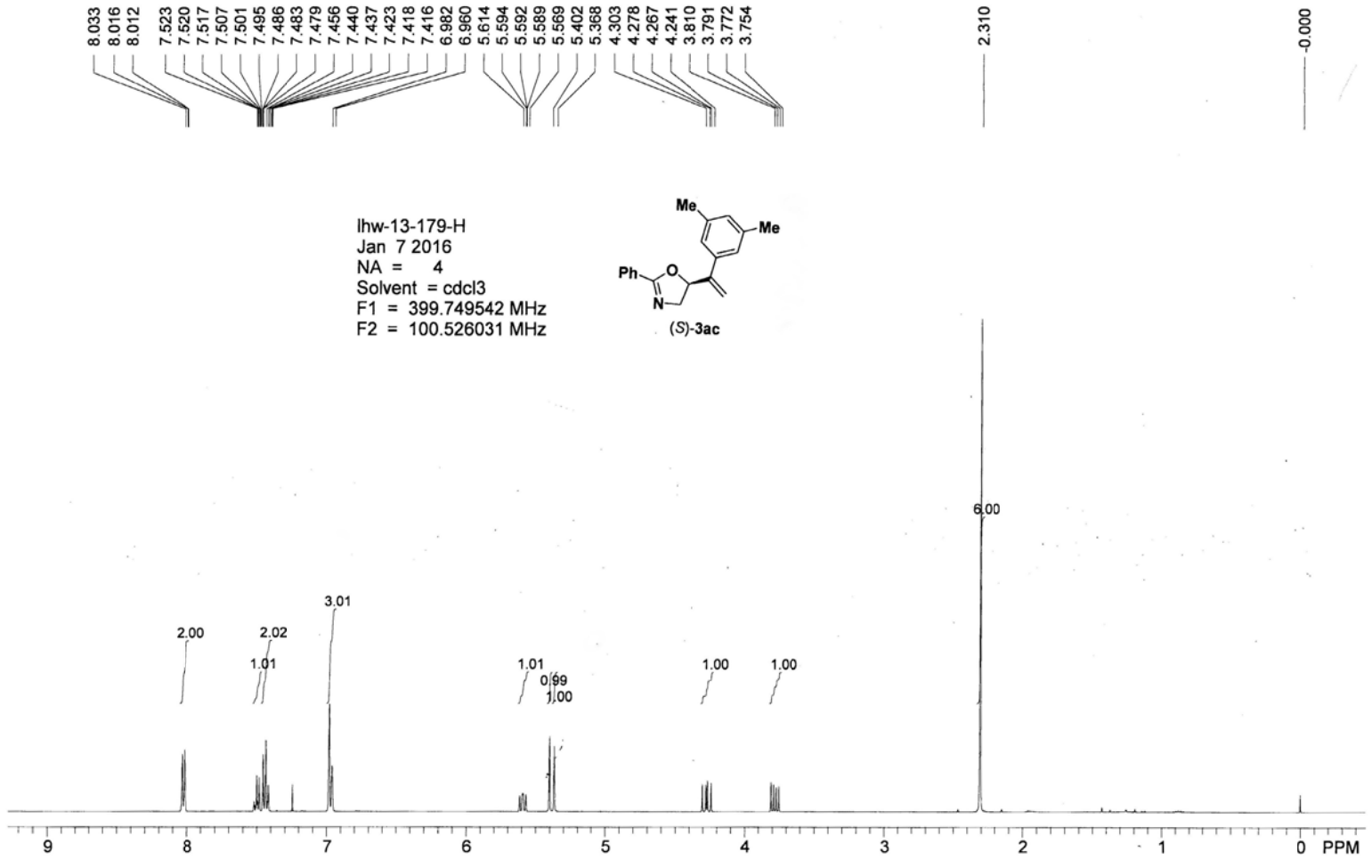


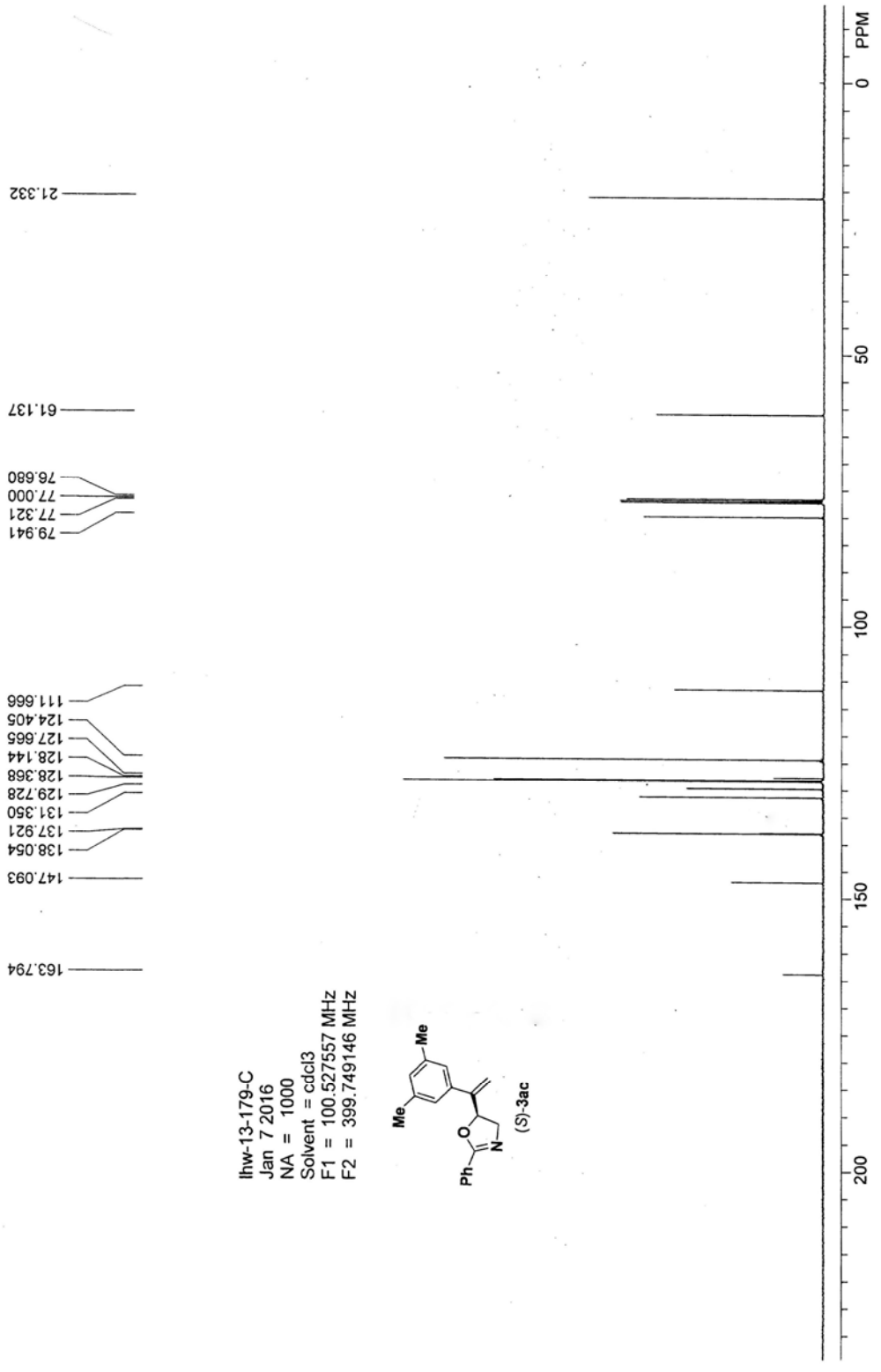
	RT (min)	Area (mAU*sec)	%Area	Height (mAU)	%Height
1	22.677	49725571	50.17	1558964	52.98
2	25.451	49385686	49.83	1383326	47.02

Report Method: Individual Report ASC

Page: 1 (共计 1)

Printed: 2016/1/5 16:49:11 PRC


8.033
8.016
8.012
7.523
7.520
7.517
7.507
7.501
7.495
7.486
7.483
7.479
7.456
7.440
7.437
7.423
7.418
7.416
6.982
6.960
5.614
5.594
5.592
5.589
5.569
5.402
5.368
4.303
4.278
4.267
4.241
3.810
3.791
3.772
3.754
2.310
-0.000
lhw-13-179-H
Jan 7 2016
NA = 4
Solvent = cdcl3
F1 = 399.749542 MHz
F2 = 100.526031 MHz
Me
Me
Ph
O
N
(S)-3ac
6.00
3.01
2.00
2.02
1.01
1.01
0.99
1.00
1.00
1.00
9
8
7
6
5
4
3
2
1
0
PPM


lhw-13-179-C
Jan 7 2016
NA = 1000
Solvent = cdcl3
F1 = 100.527557 MHz
F2 = 399.749146 MHz
Me
Me
Ph
O
N
(S)-3ac
21.332
61.137
76.680
77.000
77.321
79.941
111.666
124.405
127.665
128.144
128.368
129.728
131.350
137.921
138.054
147.093
163.794
PPM
0
50
100
150
200

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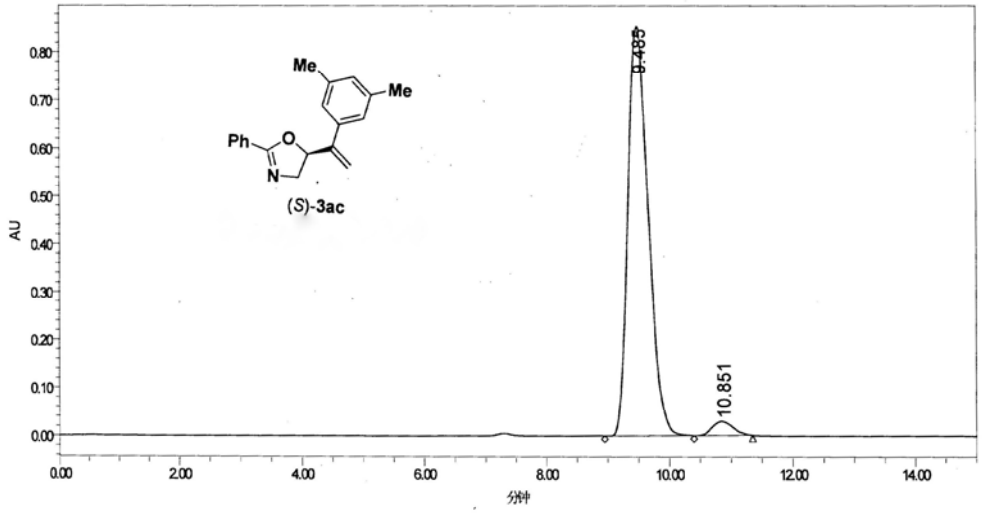
Project Name: defaults for copy

Reported by User: Breeze user (Breeze)

Breeze 2 HPLC System

SAMPLE INFORMATION

Sample Name:	lhw-13-179-oz-h-90-10-1-214	Acquired By:	Breeze
Sample Type:	未知	Date Acquired:	2016/1/15 14:04:24 CST
Vial:	1	Acq. Method:	zgj90
Injection #:	39	Date Processed:	2016/1/15 17:12:42 CST
Injection Volume:	25.00 ul	Channel Name:	W2489 ChA
Run Time:	15.00 Minutes	Channel Desc.:	W2489 ChA 214nm
Column Type:		Sample Set Name:	



	RT (min)	Area (微sec)	%Area	Height (微	% Height
1	9.485	19659687	96.57	853756	96.67
2	10.851	697523	3.43	29394	3.33

Report Method: Individual Report ASC

Page: 1 (共计 1)

Printed: 2016/1/15 17:14:21 PRC

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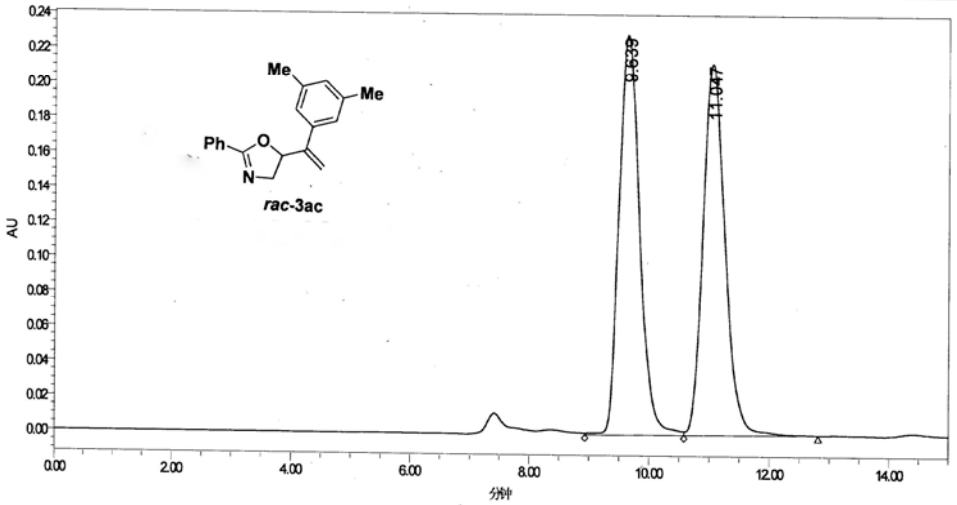
Project Name: defaults for copy

Reported by User: Breeze user (Breeze)

Breeze 2 HPLC System

SAMPLE INFORMATION

Sample Name:	lhw-13-179-rac-oz-h-90-10-1-214	Acquired By:	Breeze
Sample Type:	未知	Date Acquired:	2016/1/15 12:25:37 CST
Vial:	1	Acq. Method:	zgj90
Injection #:	37	Date Processed:	2016/1/15 17:12:12 CST
Injection Volume:	25.00 ul	Channel Name:	W2489 ChA
Run Time:	15.00 Minutes	Channel Desc.:	W2489 ChA 214nm
Column Type:		Sample Set Name:	

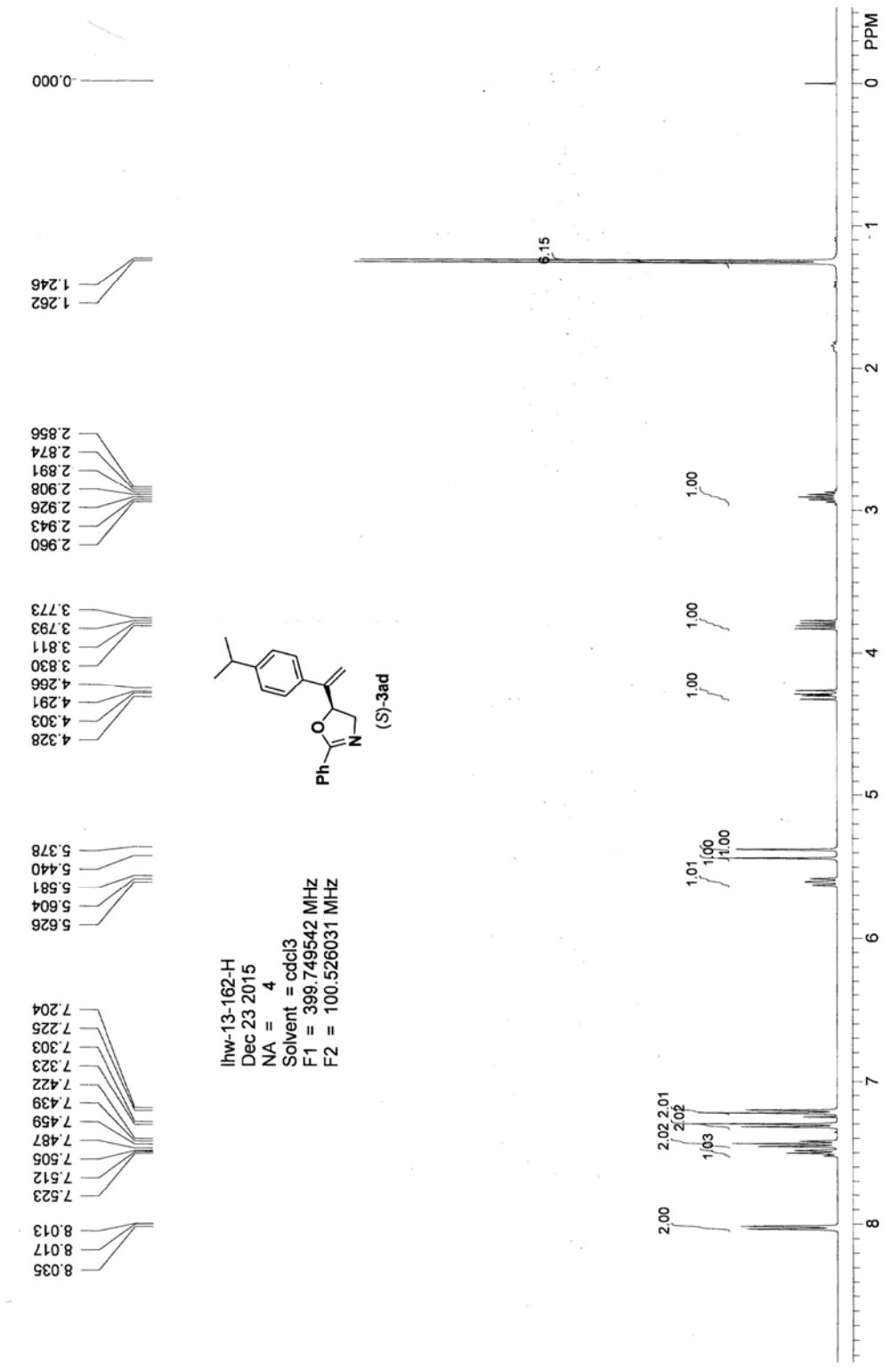


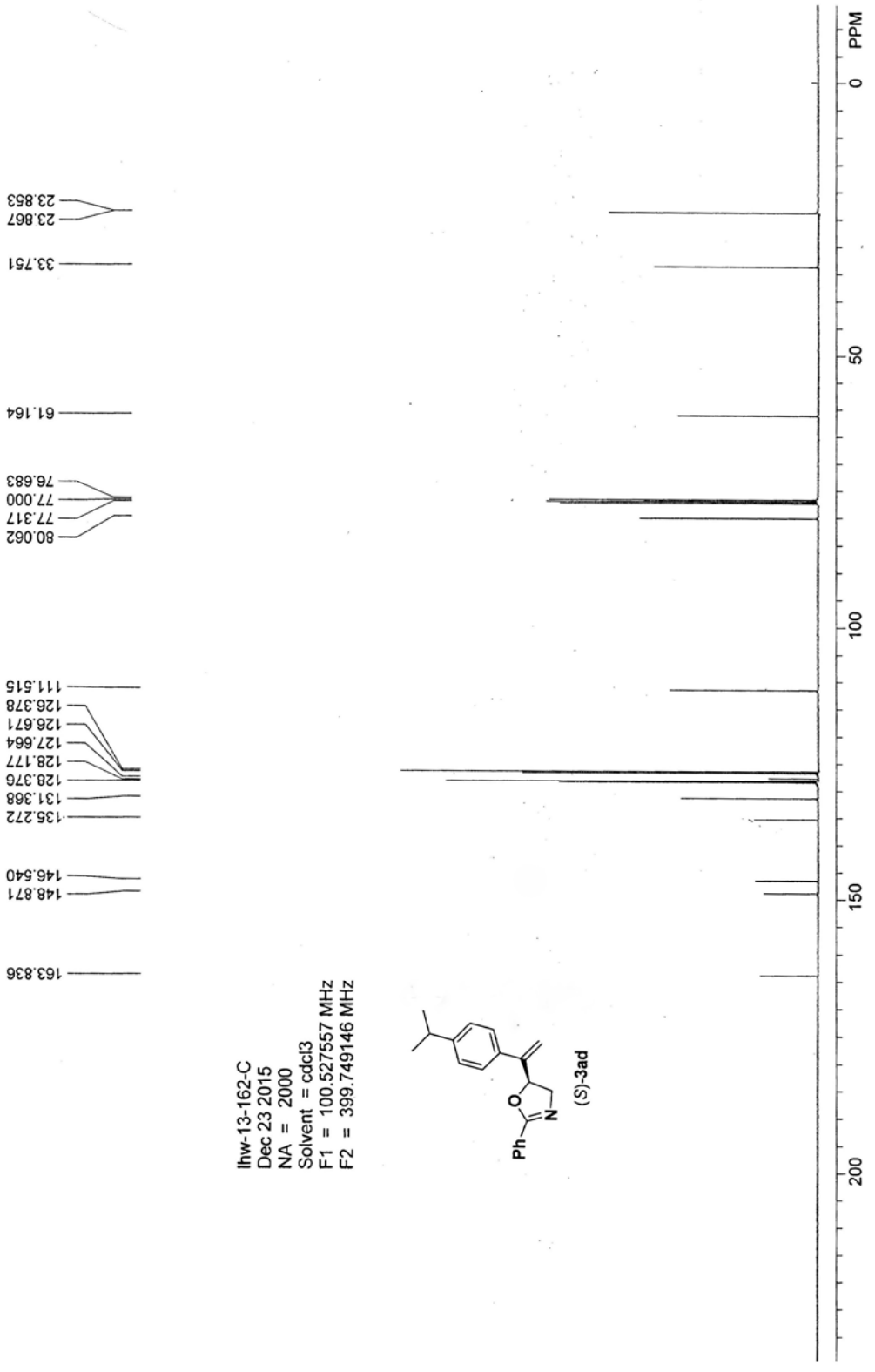
	RT (min)	Area (微sec)	%Area	Height (微)	%Height
1	9.639	5499666	50.36	229573	51.86
2	11.047	5421027	49.64	213065	48.14

Report Method: Individual Report ASC

Page: 1 (共计 1)

Printed: 2016/1/15 17:13:42 PRC


lhw-13-162-H
Dec 23 2015
NA = 4
Solvent = cdcl3
F1 = 399.749542 MHz
F2 = 100.526031 MHz
(S)-3ad
Ph
O
N
PPM


lhw-13-162-C
Dec 23 2015
NA = 2000
Solvent = cdcl3
F1 = 100.527557 MHz
F2 = 399.749146 MHz
Ph
O
N
(S)-3ad
23.853
23.867
33.751
61.164
76.683
77.000
77.317
80.062
111.515
126.378
126.671
127.664
128.177
128.376
131.368
135.272
146.540
148.871
163.836
PPM
0
50
100
150
200

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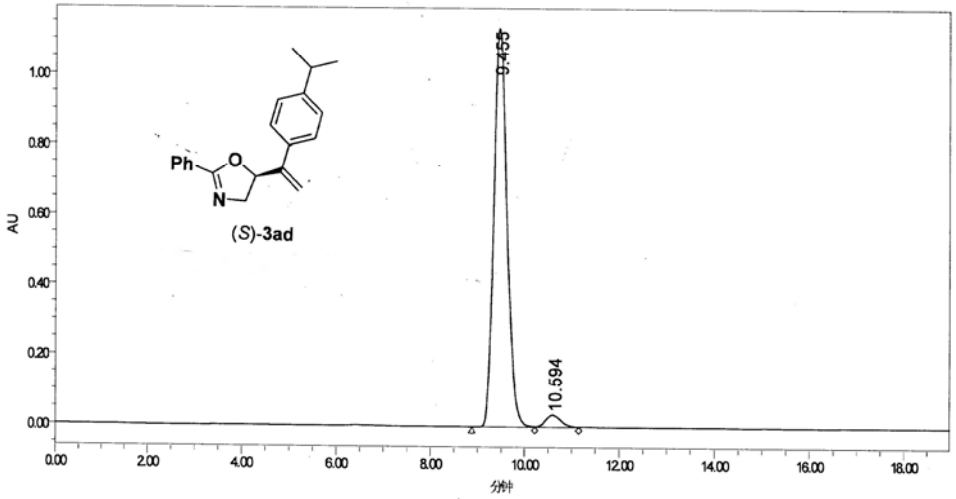
Project Name: defaults for copy

Reported by User: Breeze user (Breeze)

Breeze 2 HPLC System

SAMPLE INFORMATION

Sample Name:	lhw-13-162-oz-h-95-5-1-214	Acquired By:	Breeze
Sample Type:	未知	Date Acquired:	2016/1/6 10:31:30 CST
Vial:	1	Acq. Method:	zgj95
Injection #:	23	Date Processed:	2016/1/6 17:25:16 CST
Injection Volume:	25.00 ul	Channel Name:	W2489 ChA
Run Time:	60.00 Minutes	Channel Desc.:	W2489 ChA 230nm
Column Type:		Sample Set Name:	



(*S*)-3ad

	RT (min)	Area (微伏*sec)	% Area	Height (微伏)	% Height
1	9.455	22320241	96.59	1136168	97.05
2	10.594	788140	3.41	34478	2.95

Report Method: Individual Report ASC

Page: 1 (共计 1)

Printed: 2016/1/6 17:27:23 PRC

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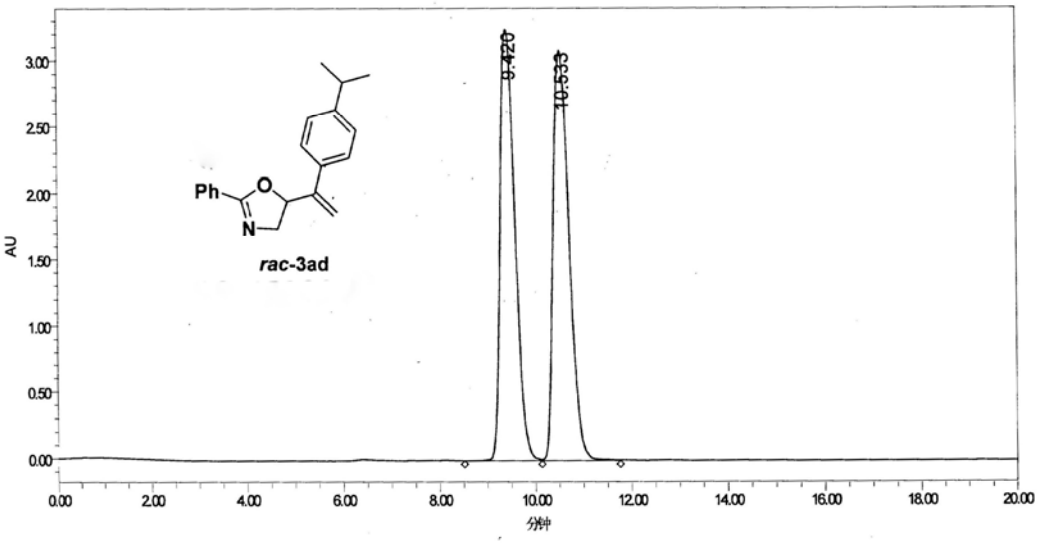
Project Name: defaults for copy

Reported by User: Breeze user (Breeze)

Breeze 2 HPLC System

SAMPLE INFORMATION

Sample Name:	zy-1-146-oz-h-95-5-1-214	Acquired By:	Breeze
Sample Type:	未知	Date Acquired:	2016/1/6 10:52:14 CST
Vial:	1	Acq. Method:	zgj95
Injection #:	24	Date Processed:	2016/1/6 17:25:30 CST
Injection Volume:	25.00 ul	Channel Name:	W2489 ChA
Run Time:	20.00 Minutes	Channel Desc.:	W2489 ChA 230nm
Column Type:		Sample Set Name:	

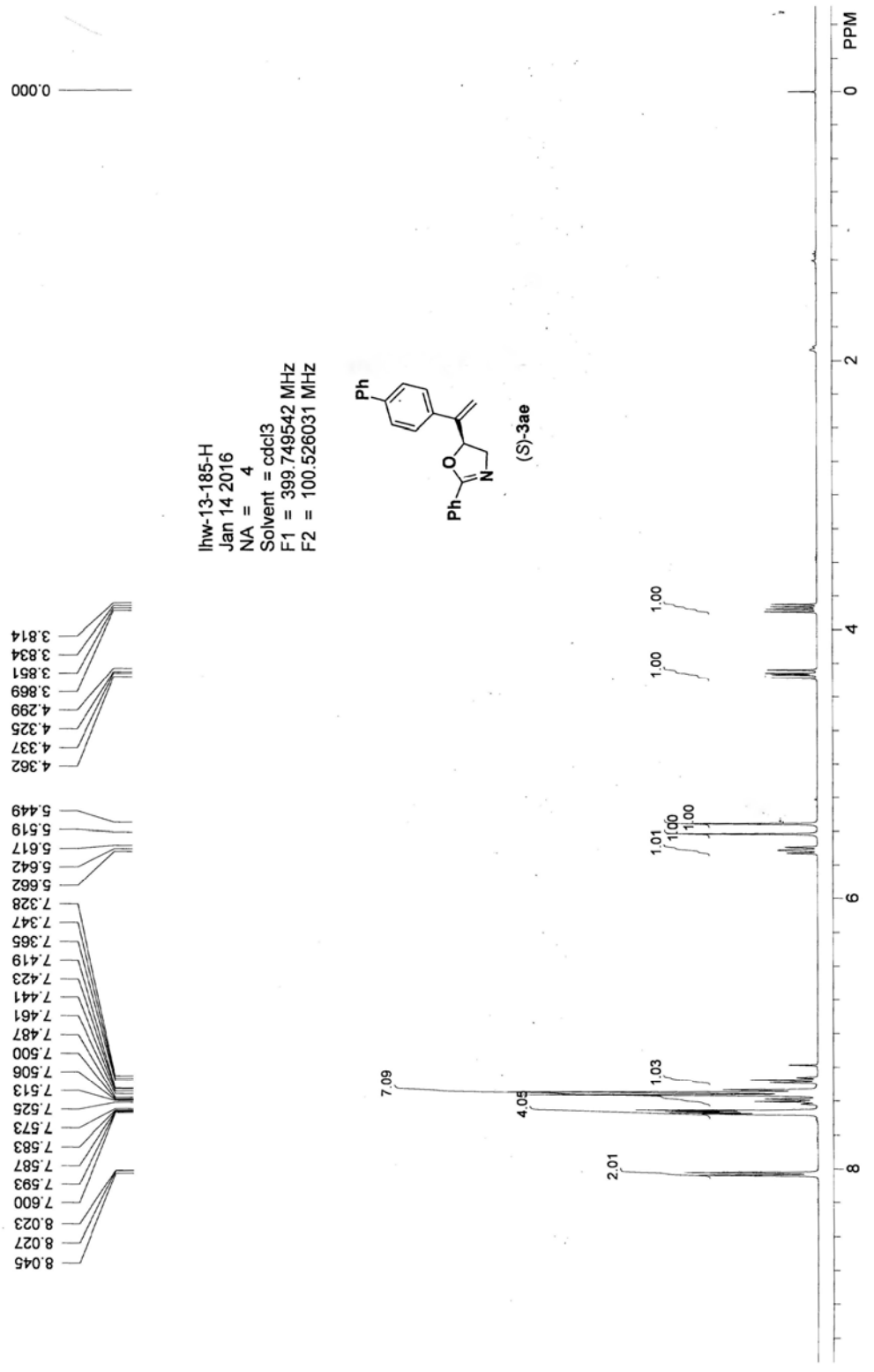


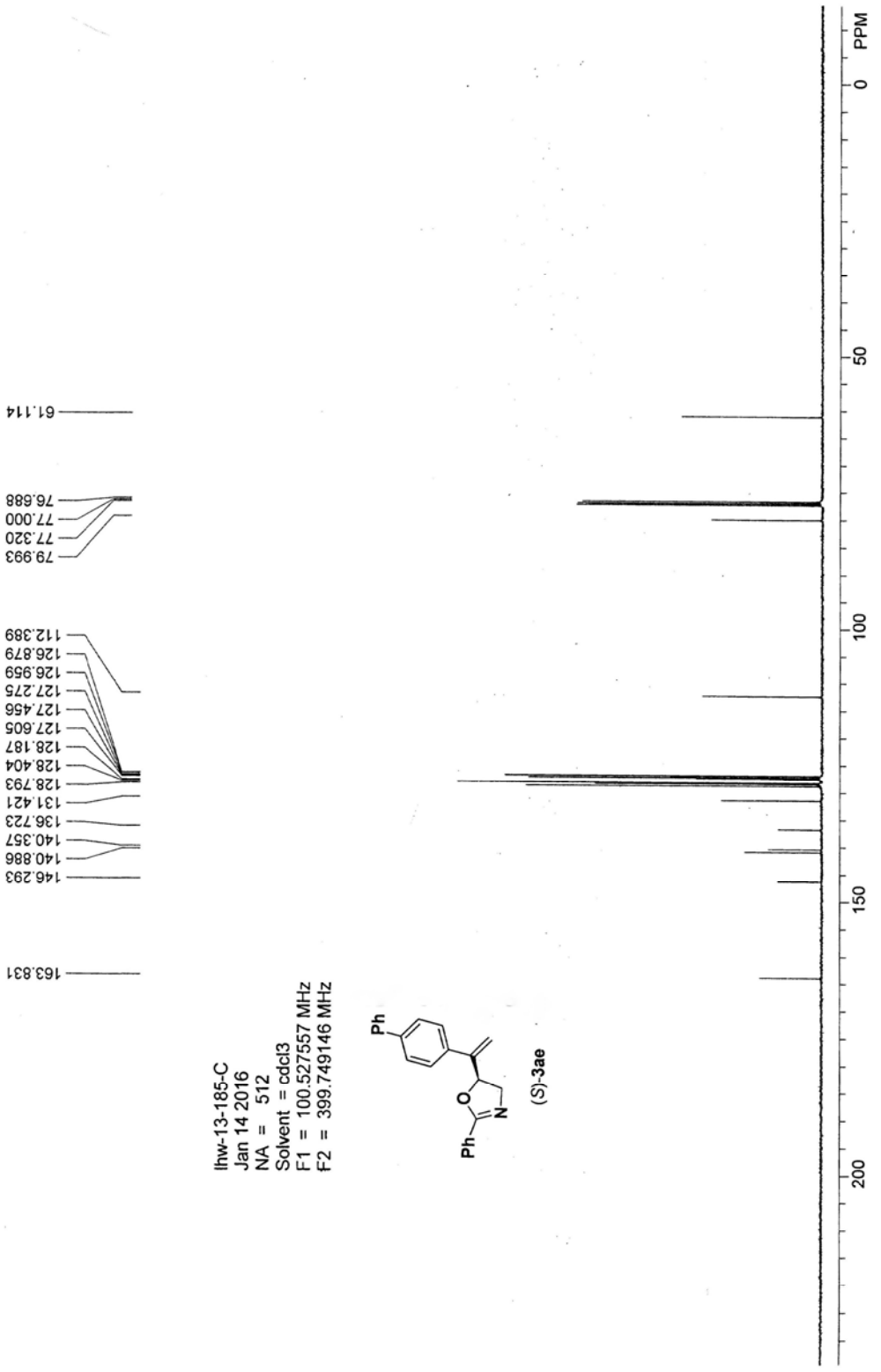
	RT (min)	Area (微sec)	% Area	Height (微)	% Height
1	9.420	70115208	49.71	3249301	51.27
2	10.533	70937311	50.29	3088755	48.73

Report Method: Individual Report ASC

Page: 1 (共计 1)

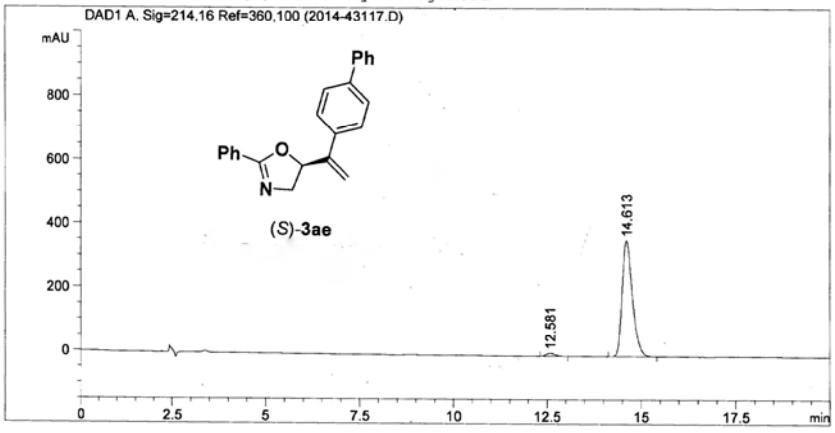
Printed: 2016/1/6 17:28:00 PRC


lhw-13-185-H
Jan 14 2016
NA = 4
Solvent = cdcl3
F1 = 399.749542 MHz
F2 = 100.526031 MHz
Ph
O
N
Ph
(S)-3ae
PPM
0
2
4
6
8
7.09
4.05
2.01
1.03
1.01
1.00
1.00
1.00
1.00
0.000
8.045
8.027
8.023
7.600
7.593
7.587
7.583
7.573
7.525
7.513
7.506
7.500
7.487
7.461
7.441
7.423
7.419
7.365
7.347
7.328
5.662
5.642
5.617
5.519
5.449
4.362
4.337
4.325
4.299
3.869
3.851
3.834
3.814


61.114
76.688
77.000
77.320
79.993
112.389
126.879
126.959
127.275
127.456
127.605
128.187
128.404
128.793
131.421
136.723
140.357
140.886
146.293
163.831
lhw-13-185-C
Jan 14 2016
NA = 512
Solvent = cdcl3
F1 = 100.527557 MHz
F2 = 399.749146 MHz
Ph
O
N
Ph
(S)-3ae
PPM
0
50
100
150
200

Data File C:\CHEM32\1\DATA\2014-43117.D
Sample Name: lhw-13-185-chiral

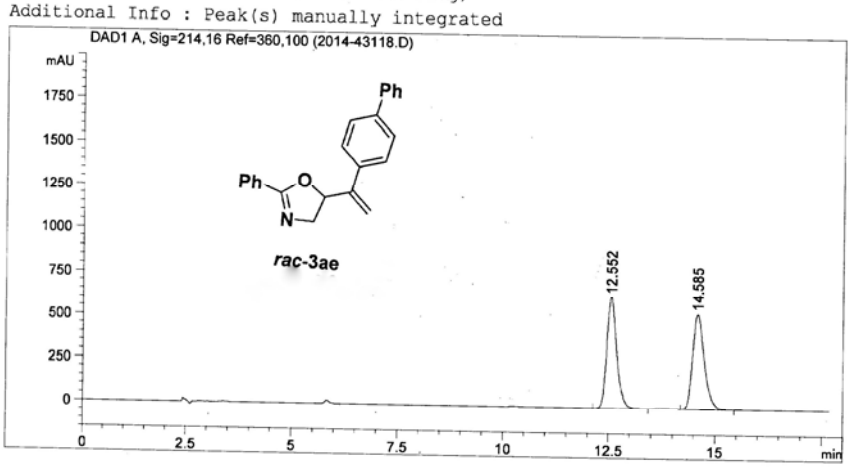
```
Acq. Operator   : 系统
Sample Operator : 系统
Acq. Instrument : SFC                              Location : Vial 63
Injection Date  : 1/22/2016 10:25:51 AM
                                                   Inj Volume : 5.000 µl
Acq. Method     : C:\CHEM32\1\METHODS\DEF_LC-TEST-2016.M
Last changed    : 1/22/2016 10:08:32 AM by 系统
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\DEF_LC-TEST-2016.M
Last changed    : 1/22/2016 11:09:57 AM by 系统
                  (modified after loading)
Additional Info : Peak(s) manually integrated
```




```
                          Area Percent Report

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Do not use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=214,16 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  12.581 BB    0.2056  153.15714    9.73401   2.2011
   2  14.613 BB    0.2866 6804.95557  363.14755  97.7989

Totals :                  6958.11270  372.88156


                          *** End of Report ***
```

Data File C:\CHEM32\1\DATA\2014-43118.D
Sample Name: lhw-13-185-rac-ad-h-7-3-1.3-214

Acq. Operator : 系统
Sample Operator : 系统
Acq. Instrument : SFC Location : Vial 62
Injection Date : 1/22/2016 10:50:57 AM Inj Volume : 5.000 µl
Acq. Method : C:\CHEM32\1\METHODS\DEF_LC-TEST-2016.M
Last changed : 1/22/2016 10:08:32 AM by 系统
(modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\DEF_LC-TEST-2016.M
Last changed : 1/22/2016 11:10:36 AM by 系统
(modified after loading)
Additional Info : Peak(s) manually integrated



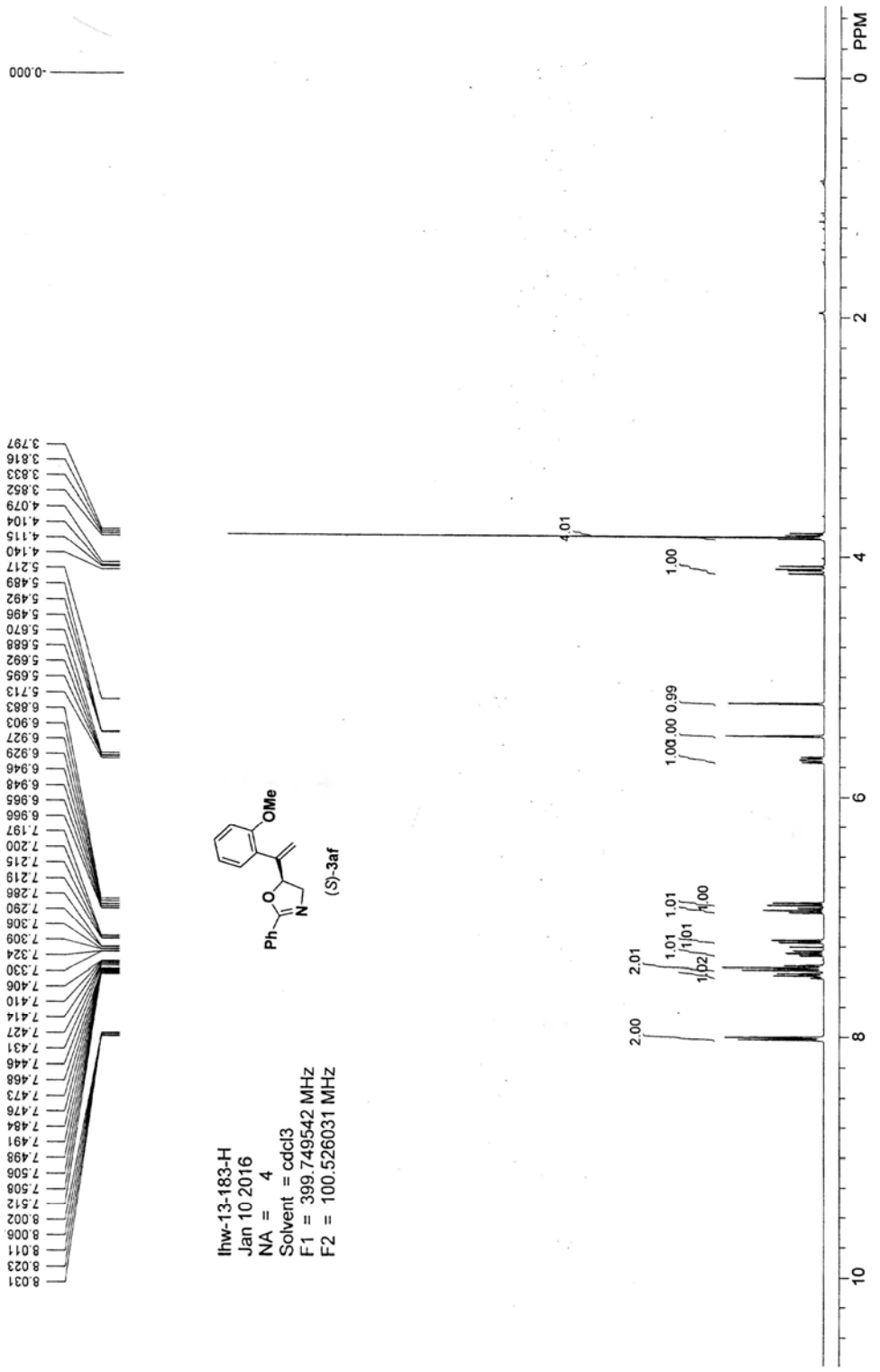
Area Percent Report

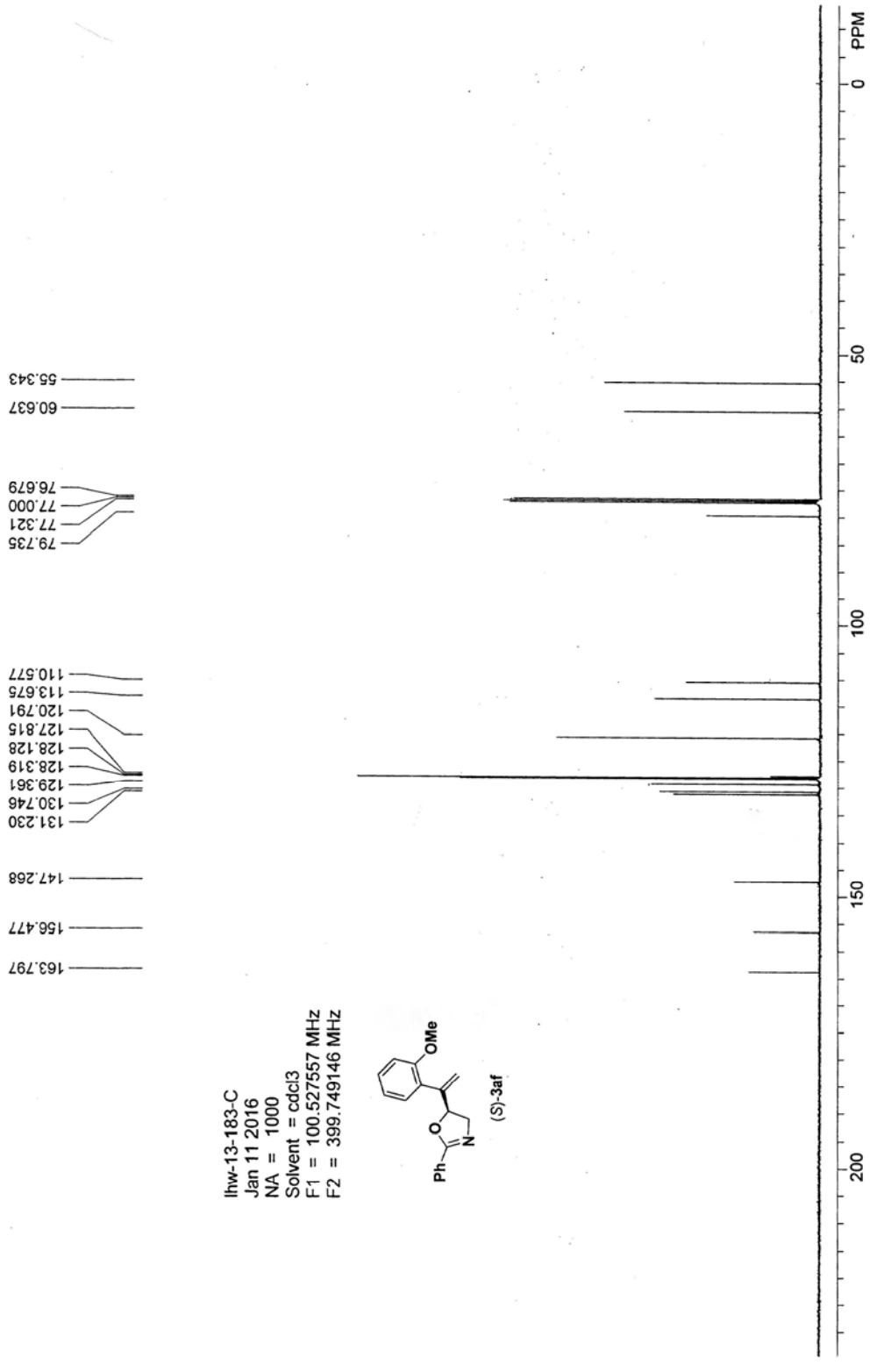
Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000
Do not use Multiplier & Dilution Factor with ISTDs

Signal 1: DAD1 A, Sig=214,16 Ref=360,100

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	12.552	BB	0.2416	1.02079e4	638.28204	49.9079
2	14.585	VB	0.2872	1.02455e4	545.22955	50.0921
Totals :				2.04534e4	1183.51160	

*** End of Report ***


lhw-13-183-H
Jan 10 2016
NA = 4
Solvent = cdcl3
F1 = 399.749542 MHz
F2 = 100.526031 MHz
OMe
Ph
O
N
(S)-3af
PPM
0
2
4
6
8
10
4.01
1.00
1.00
1.00
0.99
1.01
1.01
1.01
1.00
2.01
2.00

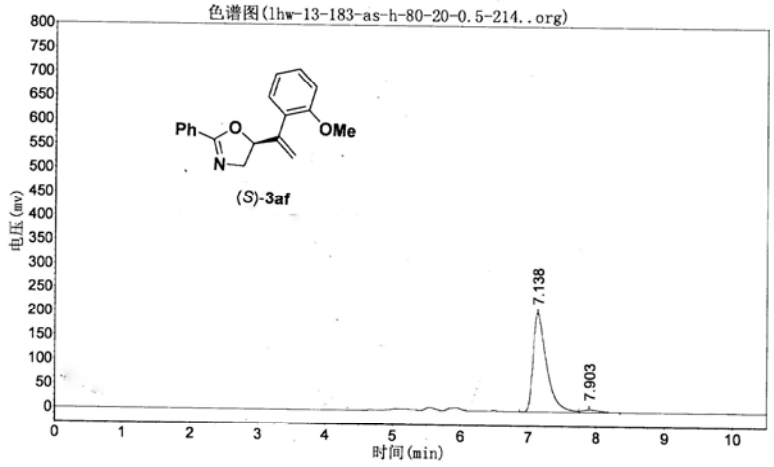

lhw-13-183-C
Jan 11 2016
NA = 1000
Solvent = cdcl3
F1 = 100.527557 MHz
F2 = 399.749146 MHz
OMe
Ph
O
N
(S)-3af
55.343
60.637
76.679
77.000
77.321
79.735
110.577
113.675
120.791
127.815
128.128
128.319
129.361
130.746
131.230
147.268
156.477
163.797
PPM
0
50
100
150
200

lhw-13-183-as-h-80-20-0.5-214

实验时间：2016-01-15,13:47:38
谱图文件:d:\zhuguangjiong\lhw\20160115\lhw-13-183-as-h-80-20-0.5-214..org

报告时间：2016-01-15,17:21:21

实验内容简介：



分析结果表

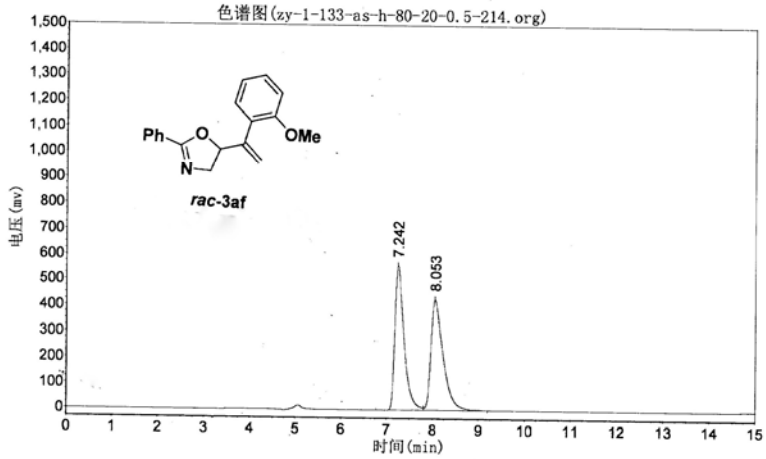
峰号	峰名	保留时间	峰高	峰面积	含量
1		7.138	202947.281	2793675.500	96.9138
2		7.903	5159.826	88964.258	3.0862
总计			208107.107	2882639.758	100.0000

zy-1-133-as-h-80-20-0.5-214

实验时间：2016-01-15,11:43:39
谱图文件:d:\zhuguangjiong\lhw\20160115\zy-1-133-as-h-80-20-0.5-214.org

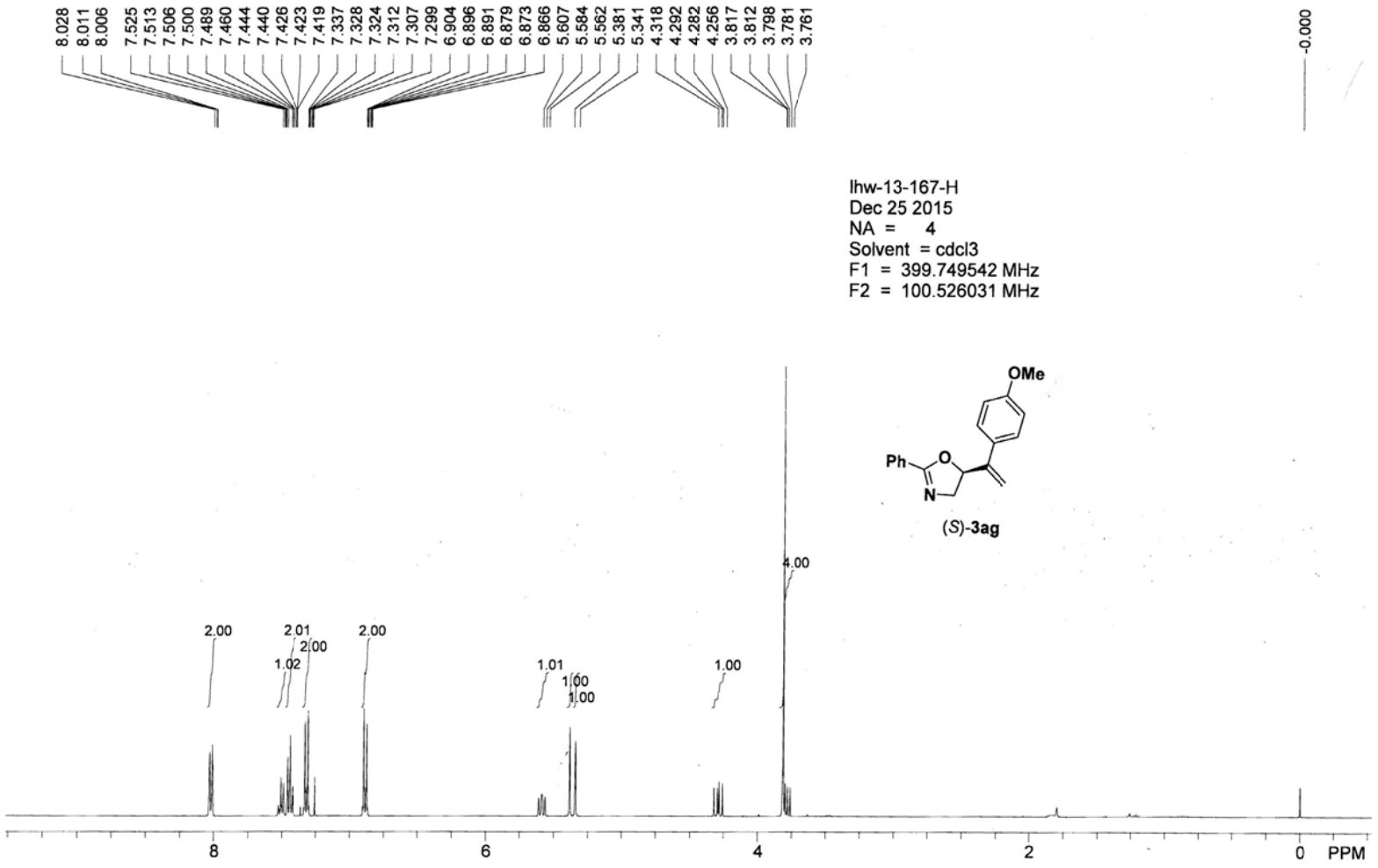
报告时间：2016-01-15,17:20:31

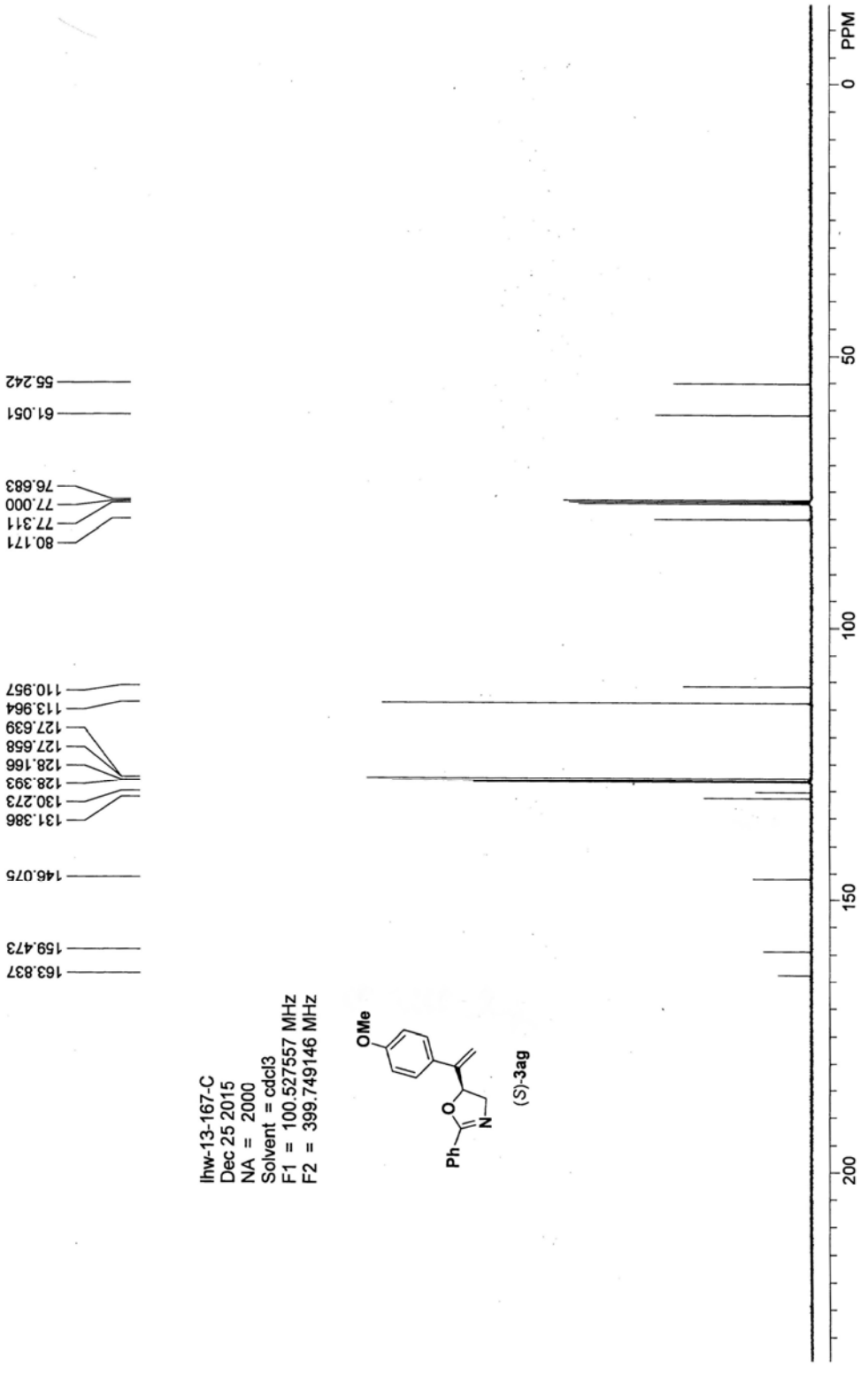
实验内容简介：



分析结果表

峰号	峰名	保留时间	峰高	峰面积	含量
1		7.242	559842.000	7872663.500	49.5971
2		8.053	427990.281	8000561.500	50.4029
总计			987832.281	15873225.000	100.0000


8.028
8.011
8.006
7.525
7.513
7.506
7.500
7.489
7.460
7.444
7.440
7.426
7.423
7.419
7.337
7.328
7.324
7.312
7.307
7.299
6.904
6.896
6.891
6.879
6.873
6.866
5.607
5.584
5.562
5.381
5.341
4.318
4.292
4.282
4.256
3.817
3.812
3.798
3.781
3.761
-0.000
lhw-13-167-H
Dec 25 2015
NA = 4
Solvent = cdcl3
F1 = 399.749542 MHz
F2 = 100.526031 MHz
OMe
Ph
O
N
(S)-3ag
2.00
2.01
2.00
1.02
2.00
1.01
1.00
1.00
1.00
4.00
8
6
4
2
0
PPM


lhw-13-167-C
Dec 25 2015
NA = 2000
Solvent = cdcl3
F1 = 100.527557 MHz
F2 = 399.749146 MHz
OMe
Ph
O
N
(S)-3ag
55.242
61.051
76.683
77.000
77.311
80.171
110.957
113.964
127.639
127.658
128.166
128.393
130.273
131.386
146.075
159.473
163.837
PPM
0
50
100
150
200

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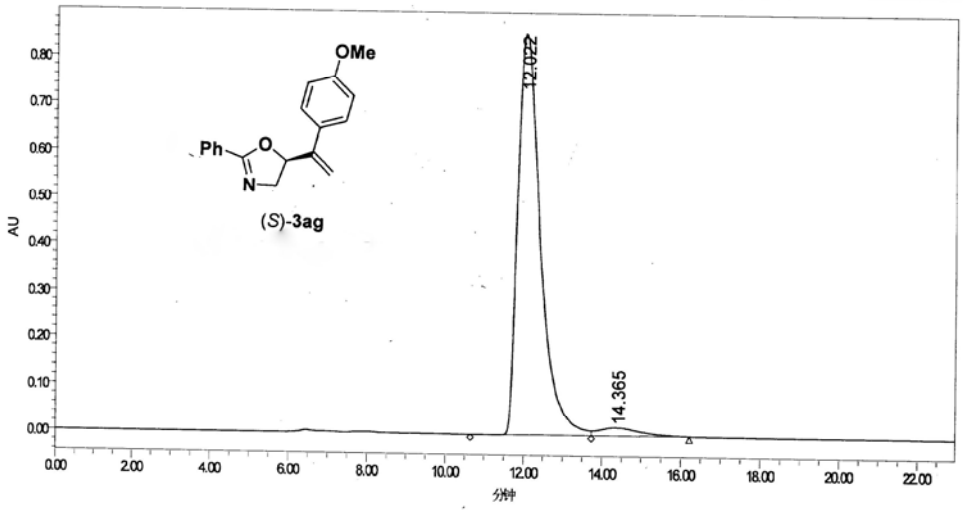
Project Name: defaults for copy

Reported by User: Breeze user (Breeze)

Breeze 2 HPLC System

SAMPLE INFORMATION

Sample Name:	lhw-13-167-as-h-80-20-0.5-214	Acquired By:	Breeze
Sample Type:	未知	Date Acquired:	2016/1/7 14:58:40 CST
Vial:	1	Acq. Method:	zgj90
Injection #:	45	Date Processed:	2016/1/7 16:57:23 CST
Injection Volume:	25.00 ul	Channel Name:	W2489 ChA
Run Time:	25.00 Minutes	Channel Desc.:	W2489 ChA 214nm
Column Type:		Sample Set Name:	



	RT (min)	Area (微sec)	%Area	Height (微	% Height
1	12.022	34226610	96.42	855676	98.01
2	14.365	1271107	3.58	17366	1.99

Report Method: Individual Report ASC

Page: 1 (共计 1)

Printed: 2016/1/7 16:58:45 PRC

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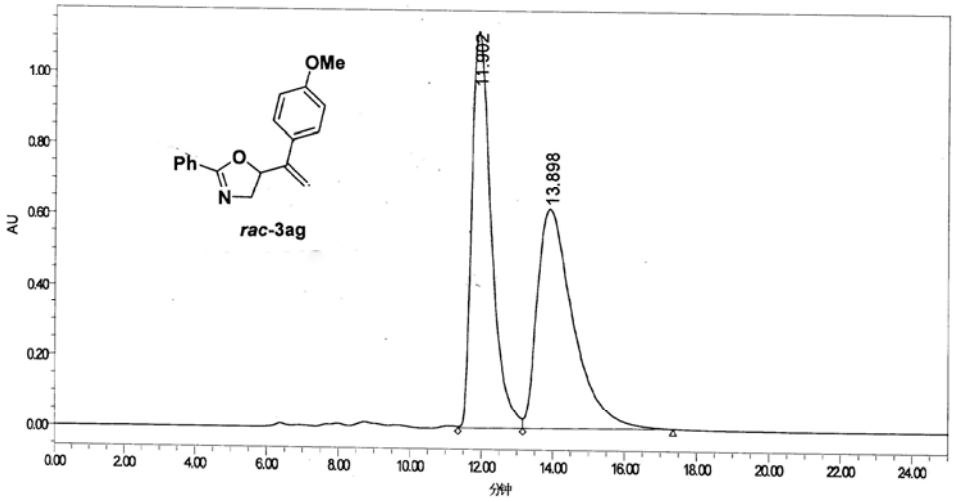
Project Name: defaults for copy

Reported by User: Breeze user (Breeze)

Breeze 2 HPLC System

SAMPLE INFORMATION

Sample Name:	zy-1-134-as-h-80-20-0.5-214	Acquired By:	Breeze
Sample Type:	未知	Date Acquired:	2016/1/7 13:36:10 CST
Vial:	1	Acq. Method:	zgj90
Injection #:	44	Date Processed:	2016/1/7 16:56:44 CST
Injection Volume:	25.00 ul	Channel Name:	W2489 ChA
Run Time:	25.00 Minutes	Channel Desc.:	W2489 ChA 214nm
Column Type:		Sample Set Name:	

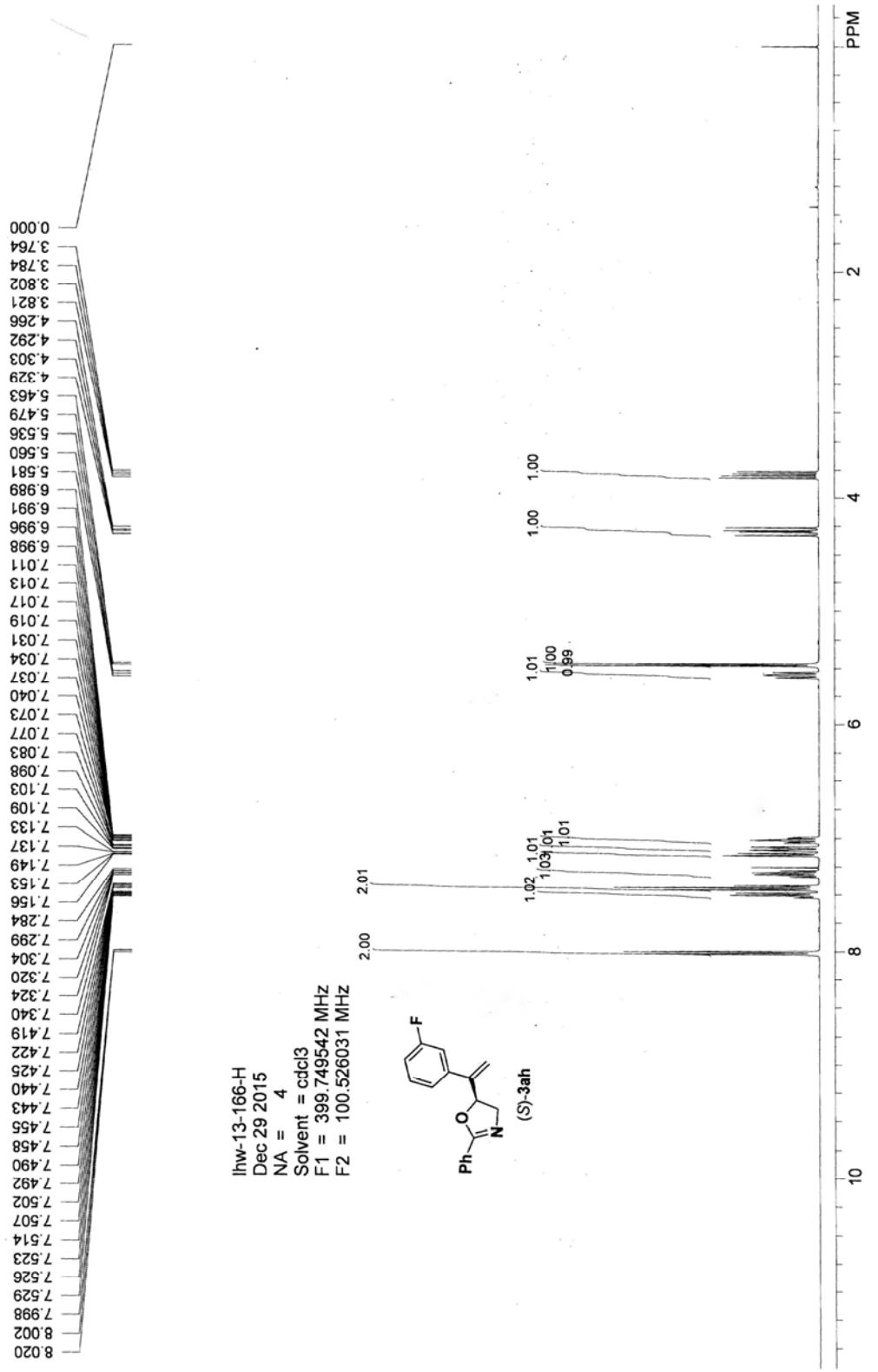


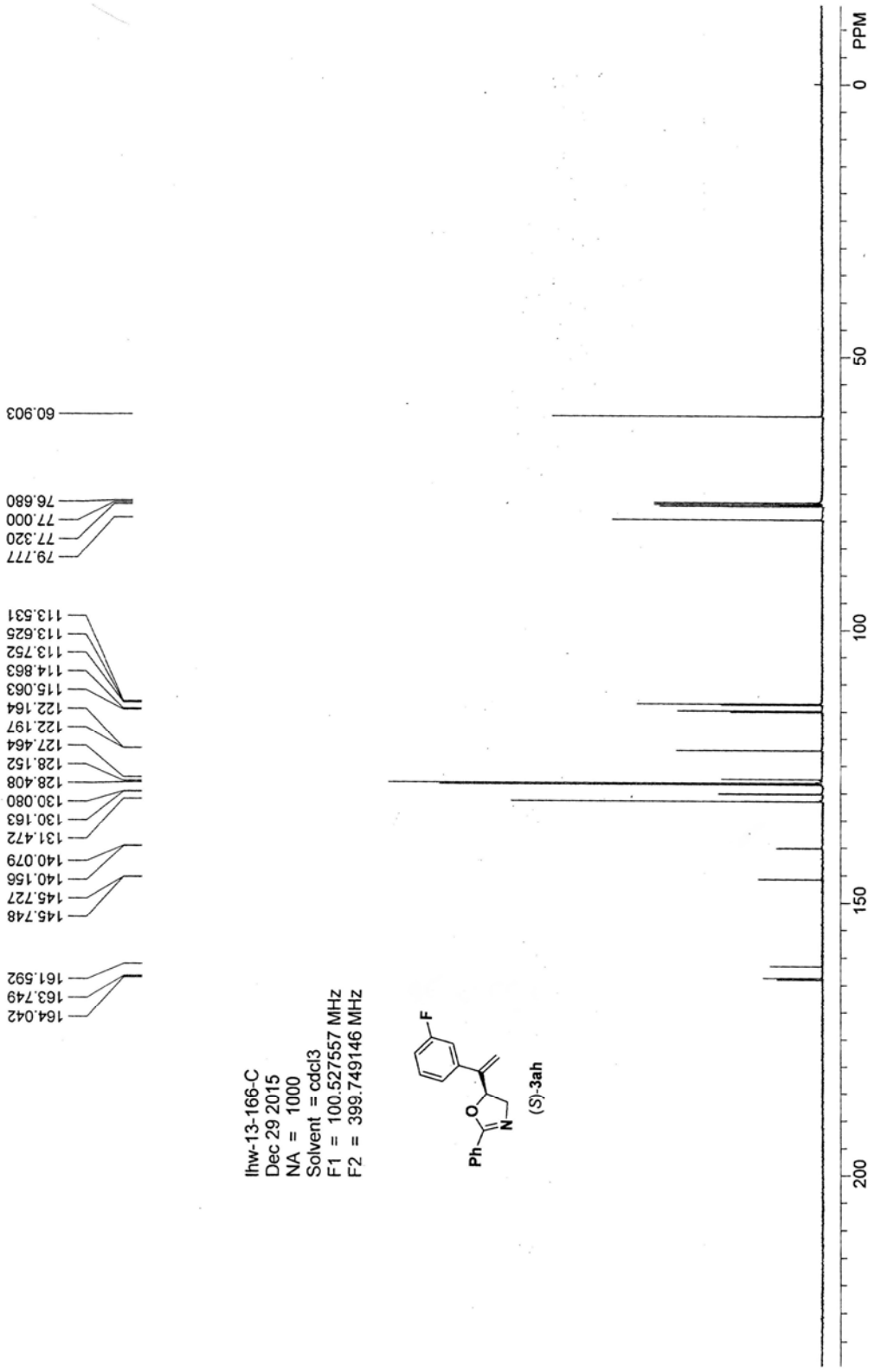
	RT (min)	Area (微sec)	% Area	Height (微)	% Height
1	11.902	42577019	49.61	1117143	64.37
2	13.898	43354408	50.39	618467	35.63

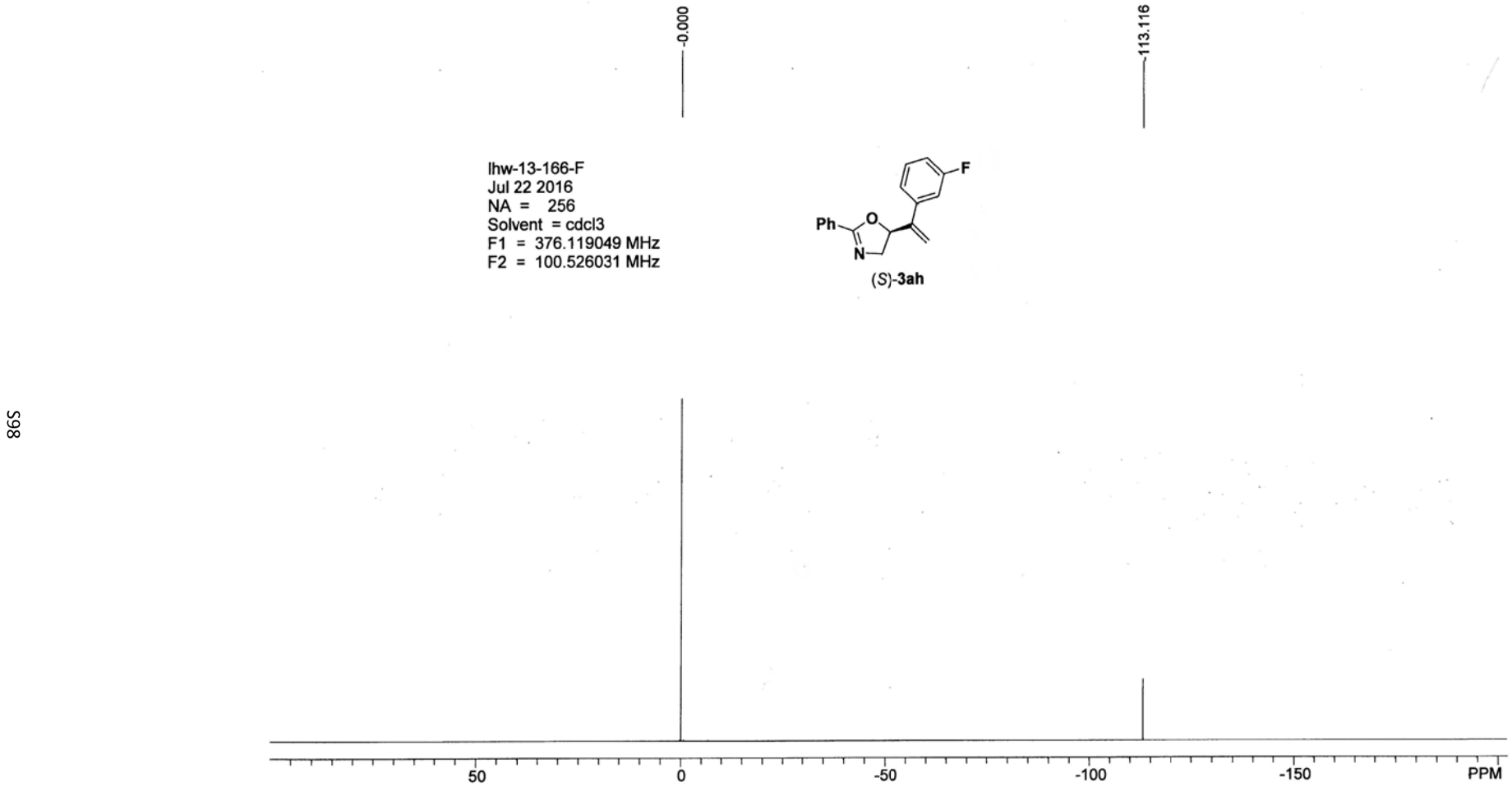
Report Method: Individual Report ASC

Page: 1 (共计 1)

Printed: 2016/1/7 16:58:25 PRC


lhw-13-166-H
Dec 29 2015
NA = 4
Solvent = cdcl3
F1 = 399.749542 MHz
F2 = 100.526031 MHz
(S)-3ah
Ph
F
O
N
PPM


60.903
76.680
77.000
77.320
79.777
113.531
113.625
113.752
114.863
115.063
122.164
122.197
127.464
128.152
128.408
130.080
130.163
131.472
140.079
140.156
145.727
145.748
161.592
163.749
164.042
lhw-13-166-C
Dec 29 2015
NA = 1000
Solvent = cdcl3
F1 = 100.527557 MHz
F2 = 399.749146 MHz
F
O
N
Ph
(S)-3ah
PPM
0
50
100
150
200


-0.000
-113.116
lhw-13-166-F
Jul 22 2016
NA = 256
Solvent = cdcl3
F1 = 376.119049 MHz
F2 = 100.526031 MHz
Ph
O
N
F
(S)-3ah
50
0
-50
-100
-150
PPM

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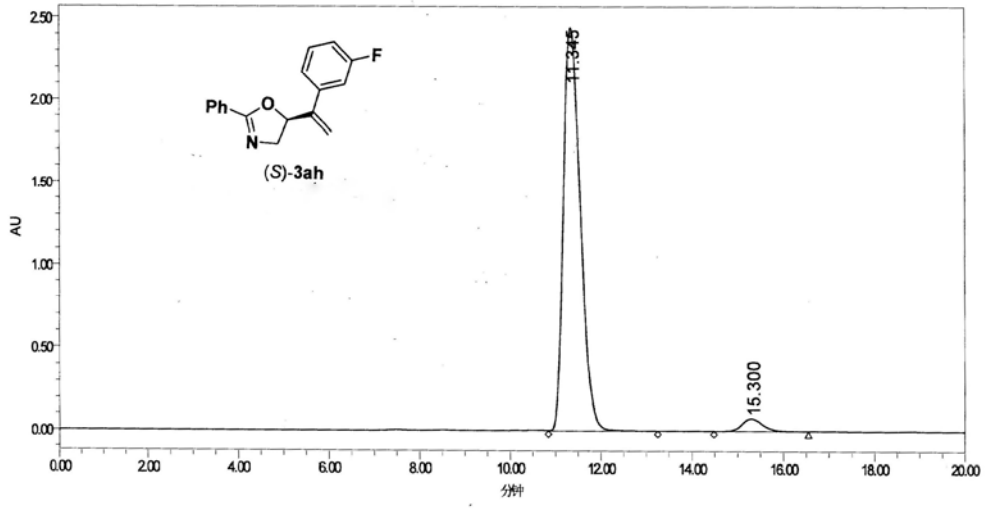
Project Name: defaults for copy

Reported by User: Breeze user (Breeze)

Breeze 2 HPLC System

SAMPLE INFORMATION

Sample Name:	lhw-13-166-oz-h-90-10-1-214	Acquired By:	Breeze
Sample Type:	未知	Date Acquired:	2016/1/14 15:16:27 CST
Vial:	1	Acq. Method:	zgj90
Injection #:	28	Date Processed:	2016/1/14 17:35:50 CST
Injection Volume:	25.00 ul	Channel Name:	W2489 ChA
Run Time:	20.00 Minutes	Channel Desc.:	W2489 ChA 214nm
Column Type:		Sample Set Name:	



	RT (min)	Area (微sec)	% Area	Height (微)	% Height
1	11.345	63730773	96.31	2442733	96.98
2	15.300	2443530	3.69	76136	3.02

Report Method: Individual Report ASC

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Printed: 2016/1/14 17:39:22 PRC

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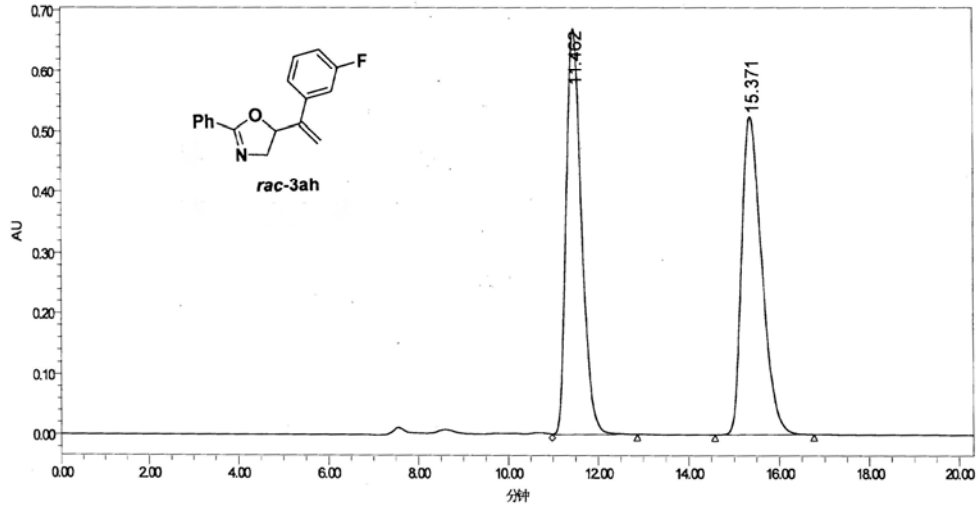
Project Name: defaults for copy

Reported by User: Breeze user (Breeze)

Breeze 2 HPLC System

SAMPLE INFORMATION

Sample Name:	lhw-3-f-cz-h-90-10-1-214	Acquired By:	Breeze
Sample Type:	未知	Date Acquired:	2016/1/14 14:32:39 CST
Vial:	1	Acq. Method:	zgj90
Injection #:	26	Date Processed:	2016/1/14 17:35:22 CST
Injection Volume:	25.00 ul	Channel Name:	W2489 ChA
Run Time:	25.00 Minutes	Channel Desc.:	W2489 ChA 214nm
Column Type:		Sample Set Name:	

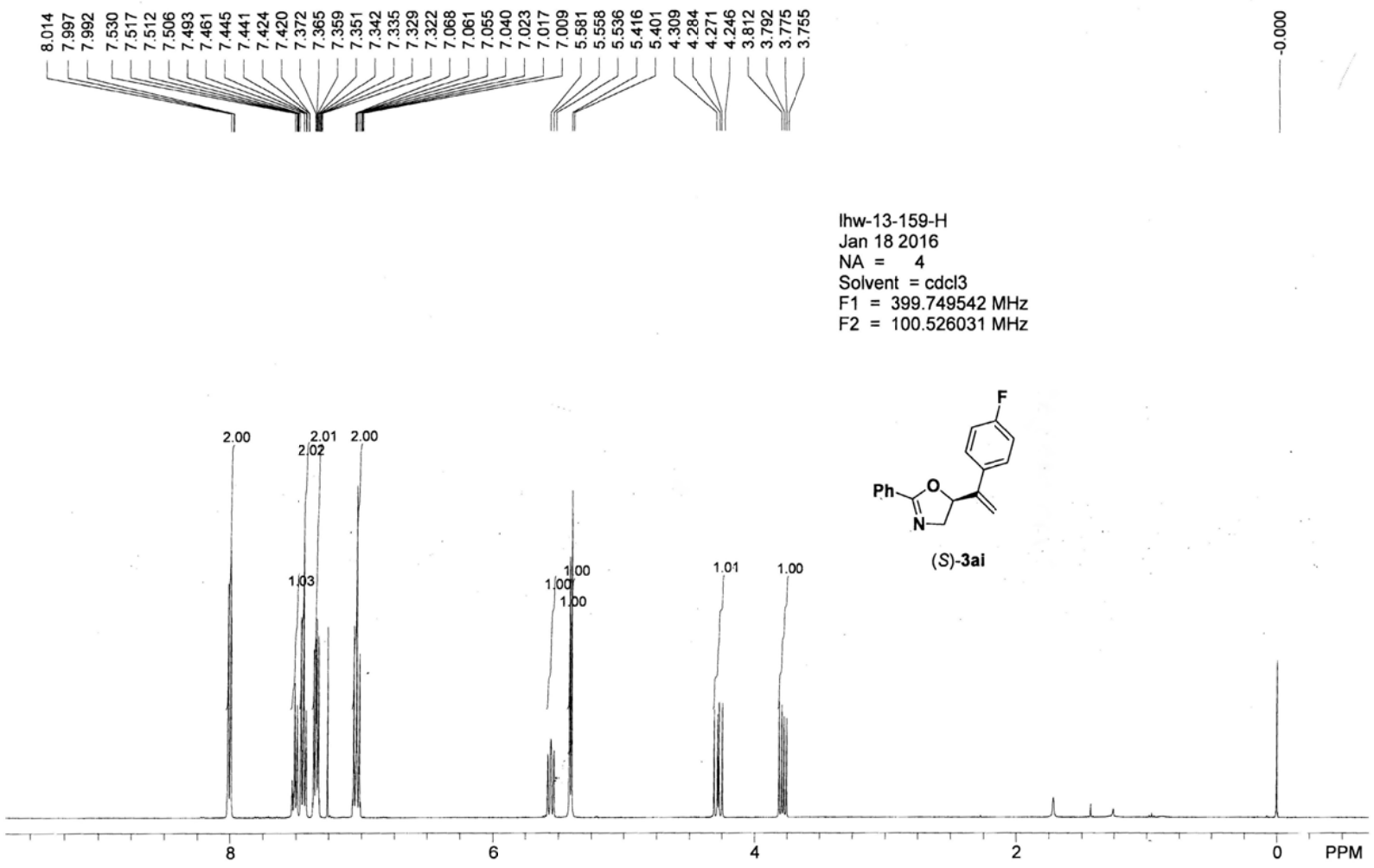


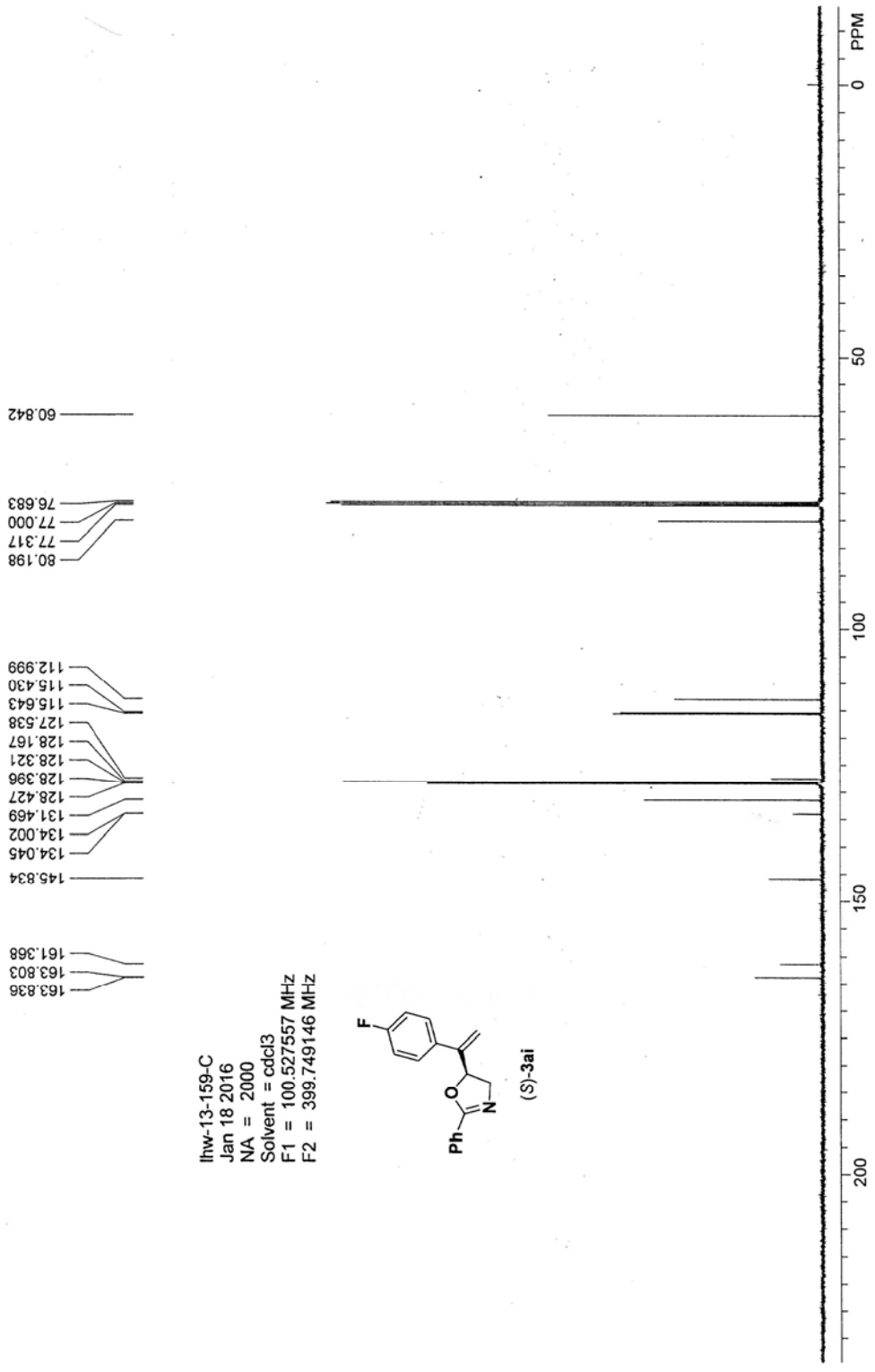
	RT (min)	Area (微伏sec)	% Area	Height (微伏)	% Height
1	11.462	15970742	49.72	669957	56.15
2	15.371	16149088	50.28	523107	43.85

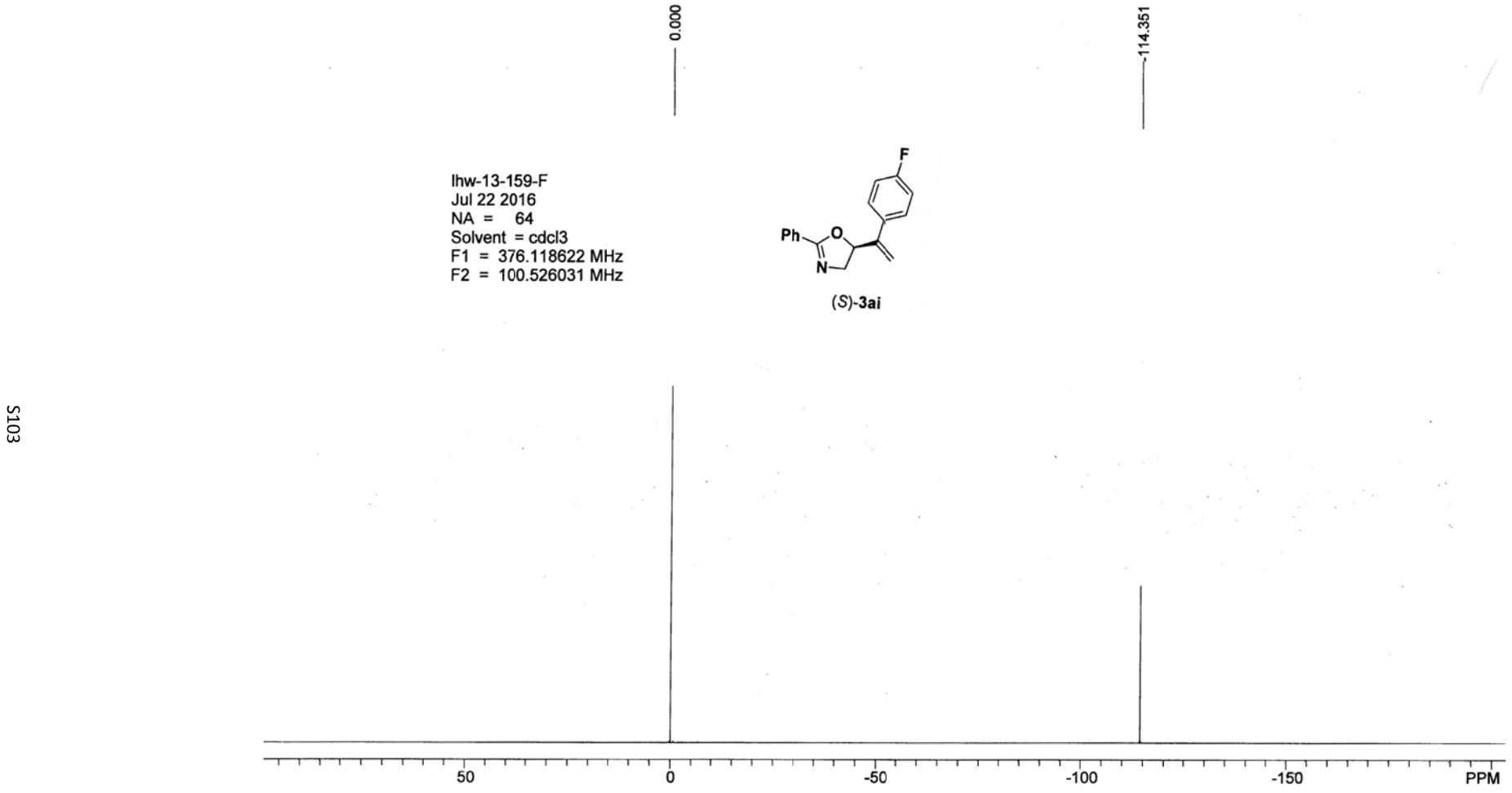
Report Method: Individual Report ASC

Page: 1 (共计 1)

Printed: 2016/1/14 17:38:30 PRC


8.014
7.997
7.992
7.530
7.517
7.512
7.506
7.493
7.461
7.445
7.441
7.424
7.420
7.372
7.365
7.359
7.351
7.342
7.335
7.329
7.322
7.068
7.061
7.055
7.040
7.023
7.017
7.009
5.581
5.558
5.536
5.416
5.401
4.309
4.284
4.271
4.246
3.812
3.792
3.775
3.755
-0.000
lhw-13-159-H
Jan 18 2016
NA = 4
Solvent = cdcl3
F1 = 399.749542 MHz
F2 = 100.526031 MHz
2.00
2.01
2.02
2.00
1.03
1.00
1.00
1.00
1.01
1.00
F
Ph
O
N
(S)-3ai
8
6
4
2
0
PPM


lhw-13-159-C
Jan 18 2016
NA = 2000
Solvent = cdcl3
F1 = 100.527557 MHz
F2 = 399.749146 MHz
(S)-3ai
Ph
O
N
F
PPM
0
50
100
150
200
60.842
76.683
77.000
77.317
80.198
112.999
115.430
115.643
127.538
128.167
128.321
128.396
128.427
131.469
134.002
134.045
145.834
161.368
163.803
163.836


0.000
-114.351
lhw-13-159-F
Jul 22 2016
NA = 64
Solvent = cdcl3
F1 = 376.118622 MHz
F2 = 100.526031 MHz
F
Ph
O
N
(S)-3ai
50
0
-50
-100
-150
PPM

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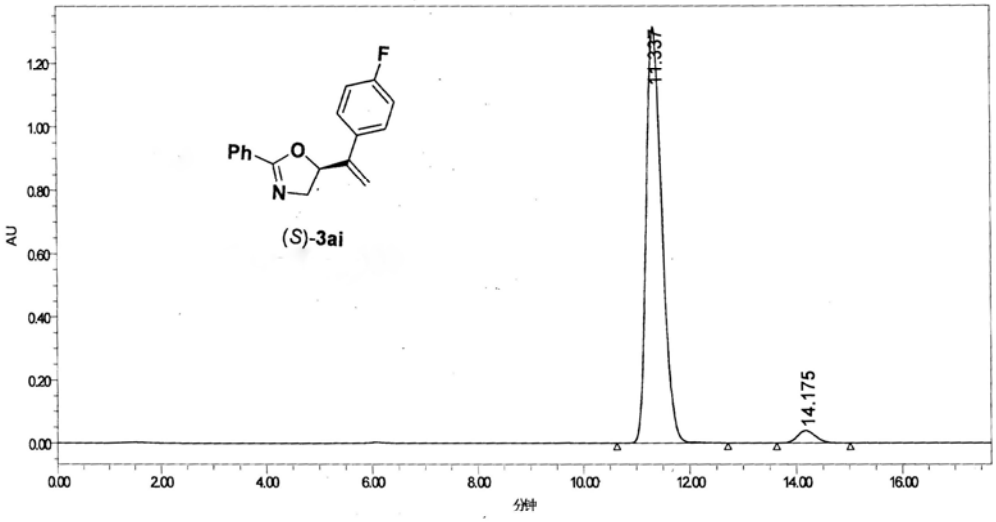
Project Name: defaults for copy

Reported by User: Breeze user (Breeze)

Breeze 2 HPLC System

SAMPLE INFORMATION

Sample Name:	lhw-13-159-cz-h-95-5-1-214	Acquired By:	Breeze
Sample Type:	未知	Date Acquired:	2015/12/24 12:35:03 CST
Vial:	1	Acq. Method:	zgj95
Injection #:	43	Date Processed:	2015/12/24 17:06:18 CST
Injection Volume:	25.00 ul	Channel Name:	W2489 ChA
Run Time:	30.00 Minutes	Channel Desc.:	W2489 ChA 230nm
Column Type:		Sample Set Name:	



	RT (min)	Area (毫sec)	% Area	Height (毫)	% Height
1	11.337	27047818	96.62	1314027	97.08
2	14.175	947170	3.38	39514	2.92

Report Method: Individual Report ASC

Page: 1 (共计 1)

Printed: 2015/12/24 17:11:21 PRC

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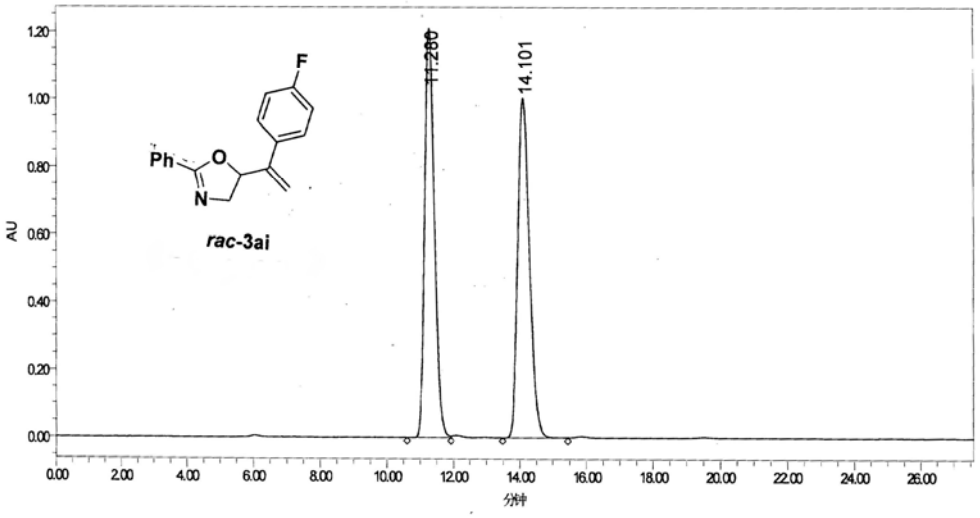
Project Name: defaults for copy

Reported by User: Breeze user (Breeze)

Breeze 2 HPLC System

SAMPLE INFORMATION

Sample Name:	zy-1-111-oz-h-95-5-1-214	Acquired By:	Breeze
Sample Type:	未知	Date Acquired:	2015/12/24 11:46:32 CST
Vial:	1	Acq. Method:	zgj95
Injection #:	41	Date Processed:	2015/12/24 17:08:01 CST
Injection Volume:	25.00 ul	Channel Name:	W2489 ChA
Run Time:	30.00 Minutes	Channel Desc.:	W2489 ChA 230nm
Column Type:		Sample Set Name:	

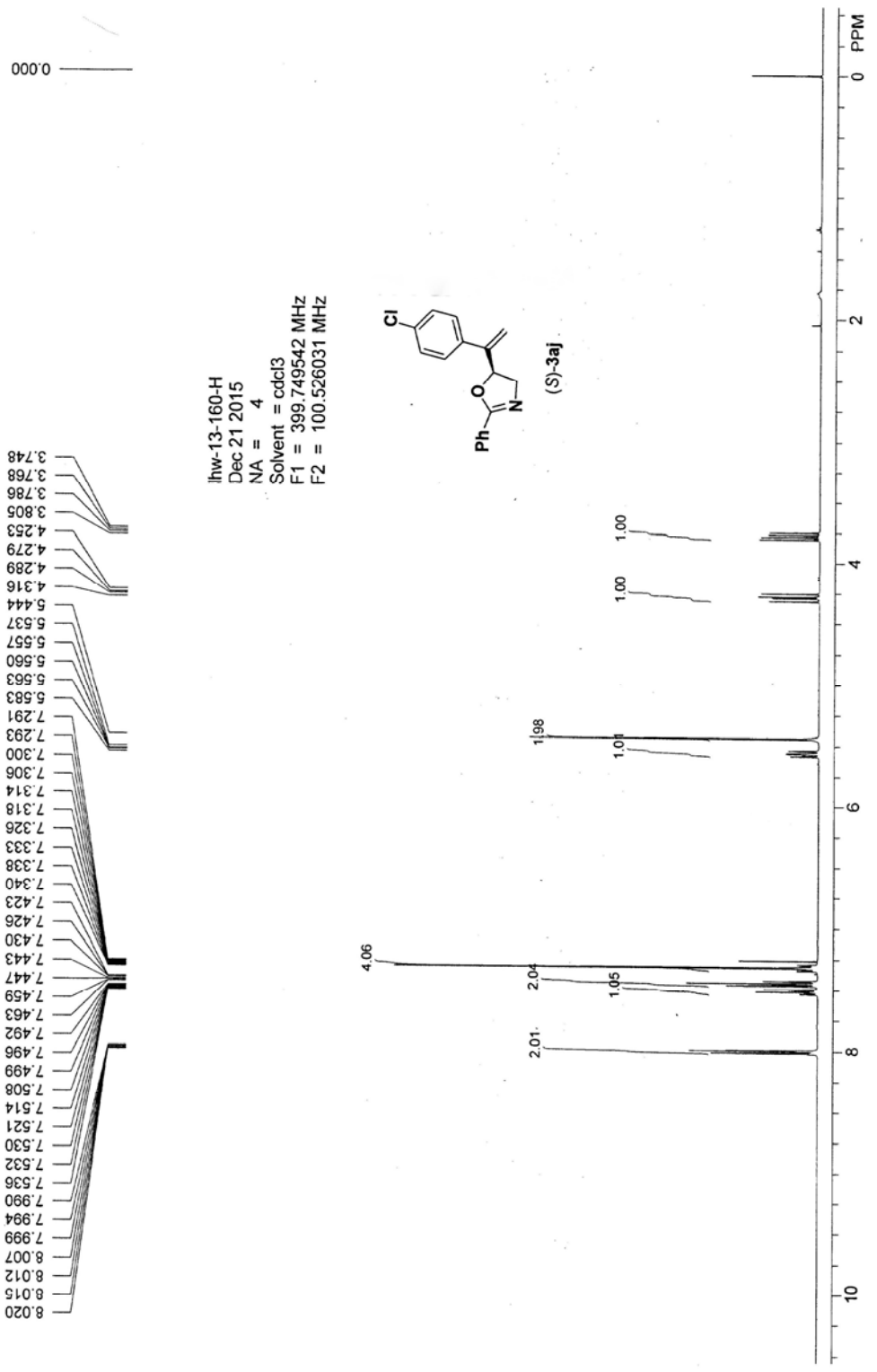


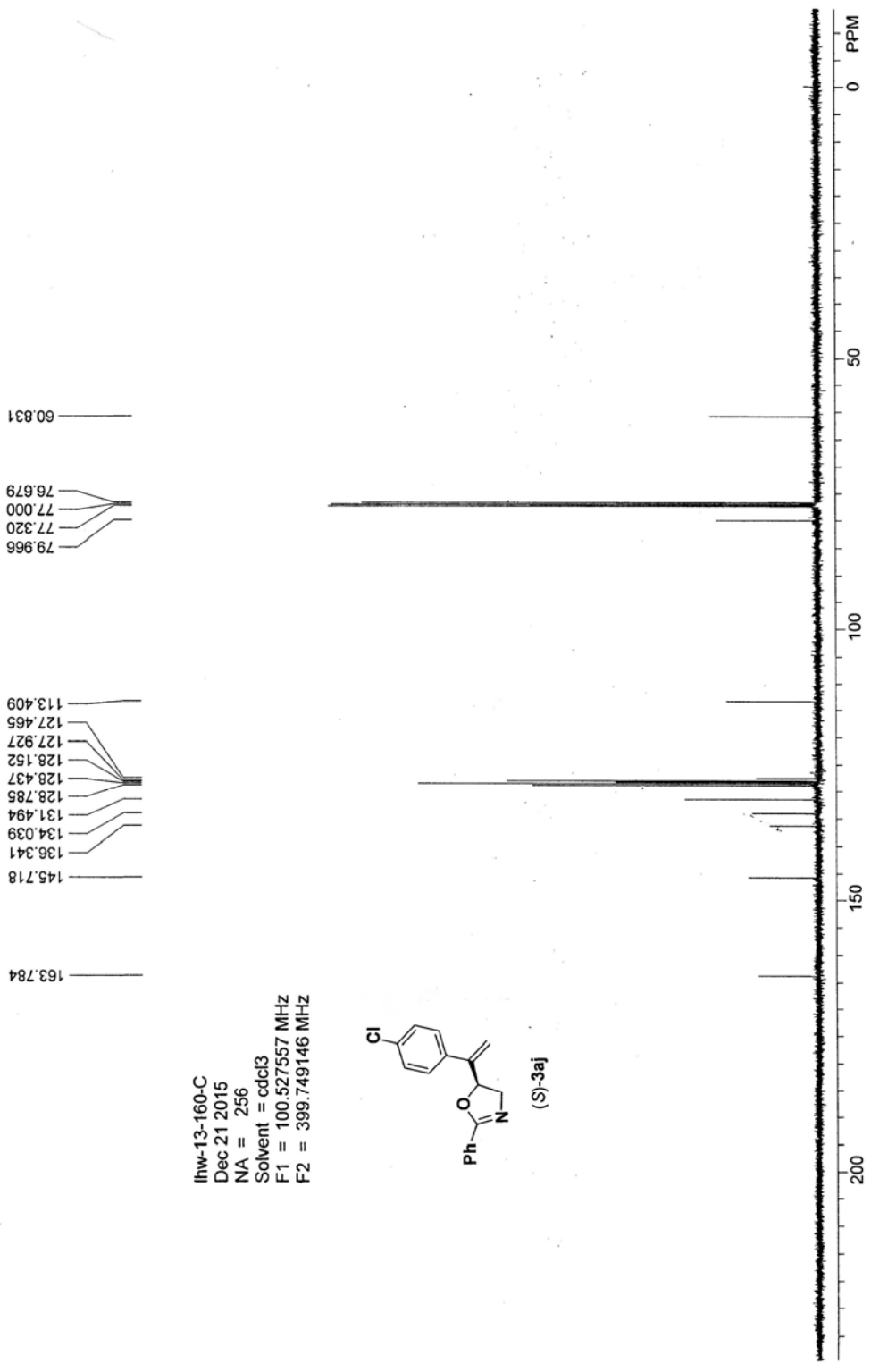
	RT (min)	Area (mAU*sec)	% Area	Height (mAU)	% Height
1	11.280	24408264	49.93	1210171	54.68
2	14.101	24480266	50.07	1003216	45.32

Report Method: Individual Report ASC

Page: 1 (共计 1)

Printed: 2015/12/24 17:10:54 PRC


lhw-13-160-H
Dec 21 2015
NA = 4
Solvent = cdcl3
F1 = 399.749542 MHz
F2 = 100.526031 MHz
(S)-3aj
Cl
Ph
O
N
PPM
0
2
4
6
8
10
4.06
2.04
1.05
2.01
1.98
1.01
1.00
1.00
0.000
3.748
3.768
3.786
3.805
4.253
4.279
4.289
4.316
5.444
5.537
5.557
5.560
5.563
5.583
7.291
7.293
7.300
7.306
7.314
7.318
7.326
7.333
7.338
7.340
7.423
7.426
7.430
7.443
7.447
7.459
7.463
7.492
7.496
7.499
7.508
7.514
7.521
7.530
7.532
7.536
7.990
7.994
7.999
8.007
8.012
8.015
8.020


lhw-13-160-C
Dec 21 2015
NA = 256
Solvent = cdcl3
F1 = 100.527557 MHz
F2 = 399.749146 MHz
Cl
O
N
Ph
(S)-3aj
60.831
76.679
77.000
77.320
79.966
113.409
127.465
127.927
128.152
128.437
128.785
131.494
134.039
136.341
145.718
163.784
PPM
0
50
100
150
200

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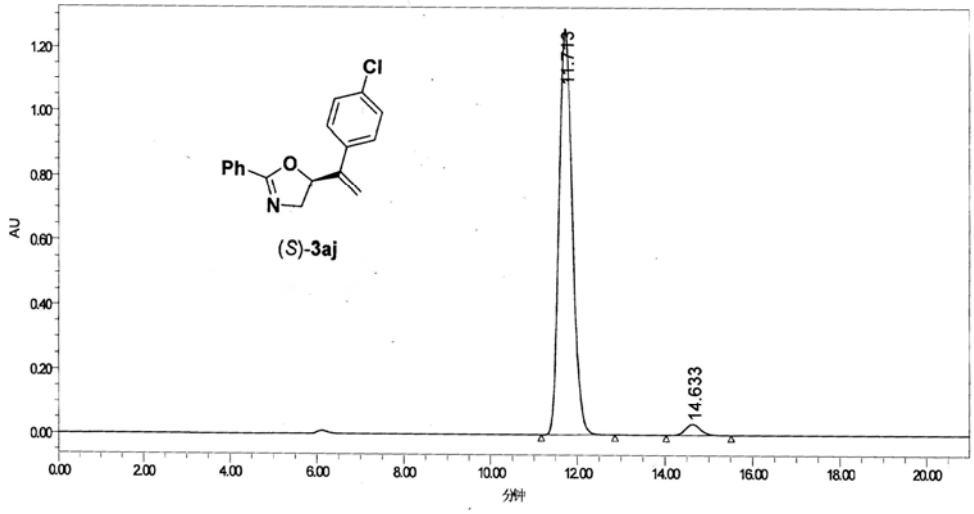
Project Name: defaults for copy

Reported by User: Breeze user (Breeze)

Breeze 2 HPLC System

SAMPLE INFORMATION

Sample Name:	lhw-13-160-cz-h-90-10-1-214	Acquired By:	Breeze
Sample Type:	未知	Date Acquired:	2015/12/24 14:04:05 CST
Vial:	1	Acq. Method:	zgj95
Injection #:	46	Date Processed:	2015/12/24 17:07:38 CST
Injection Volume:	25.00 ul	Channel Name:	W2489 ChA
Run Time:	60.00 Minutes	Channel Desc.:	W2489 ChA 230nm
Column Type:		Sample Set Name:	



	RT (min)	Area (微sec)	%Area	Height (微)	% Height
1	11.713	27002548	96.97	1260314	97.34
2	14.633	844098	3.03	34407	2.66

Report Method: Individual Report ASC

Page: 1 (共计 1)

Printed: 2015/12/24 17:22:14 PRC

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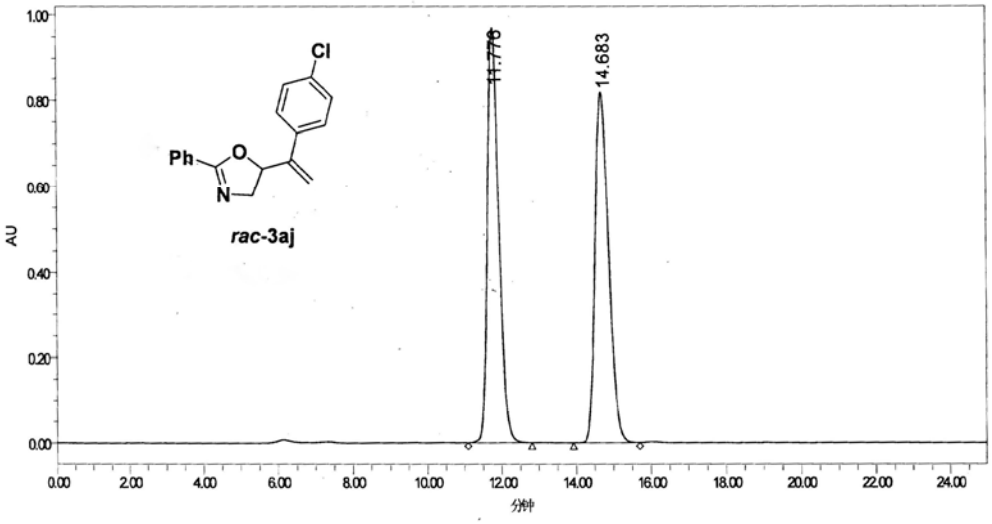
Project Name: defaults for copy

Reported by User: Breeze user (Breeze)

Breeze 2 HPLC System

SAMPLE INFORMATION

Sample Name:	zy-1-115-cz-h-80-10-1-214	Acquired By:	Breeze
Sample Type:	未知	Date Acquired:	2015/12/24 13:24:39 CST
Vial:	1	Acq. Method:	zgj95
Injection #:	45	Date Processed:	2015/12/24 17:07:20 CST
Injection Volume:	25.00 ul	Channel Name:	W2489 ChA
Run Time:	60.00 Minutes	Channel Desc.:	W2489 ChA 230nm
Column Type:		Sample Set Name:	

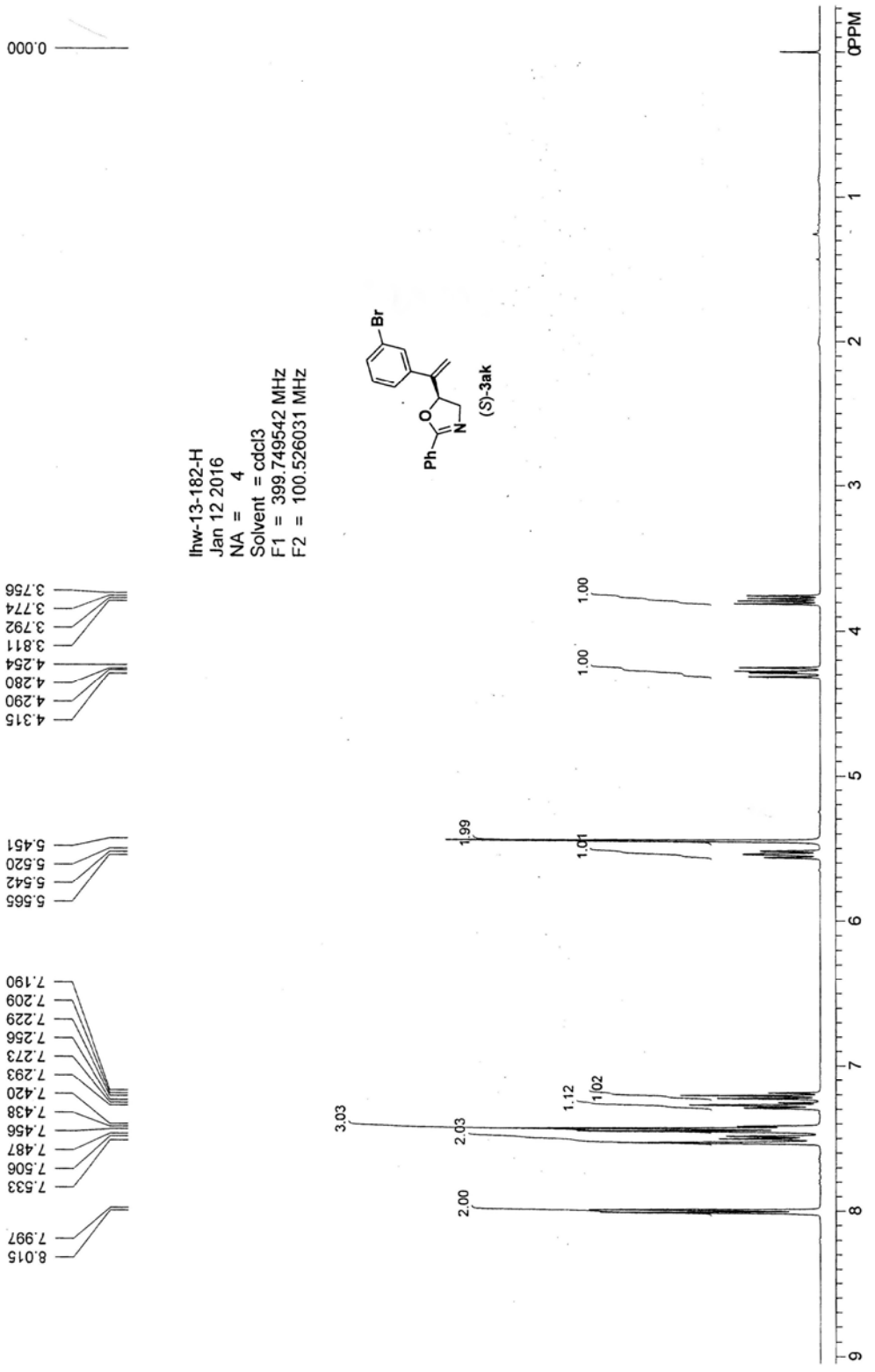


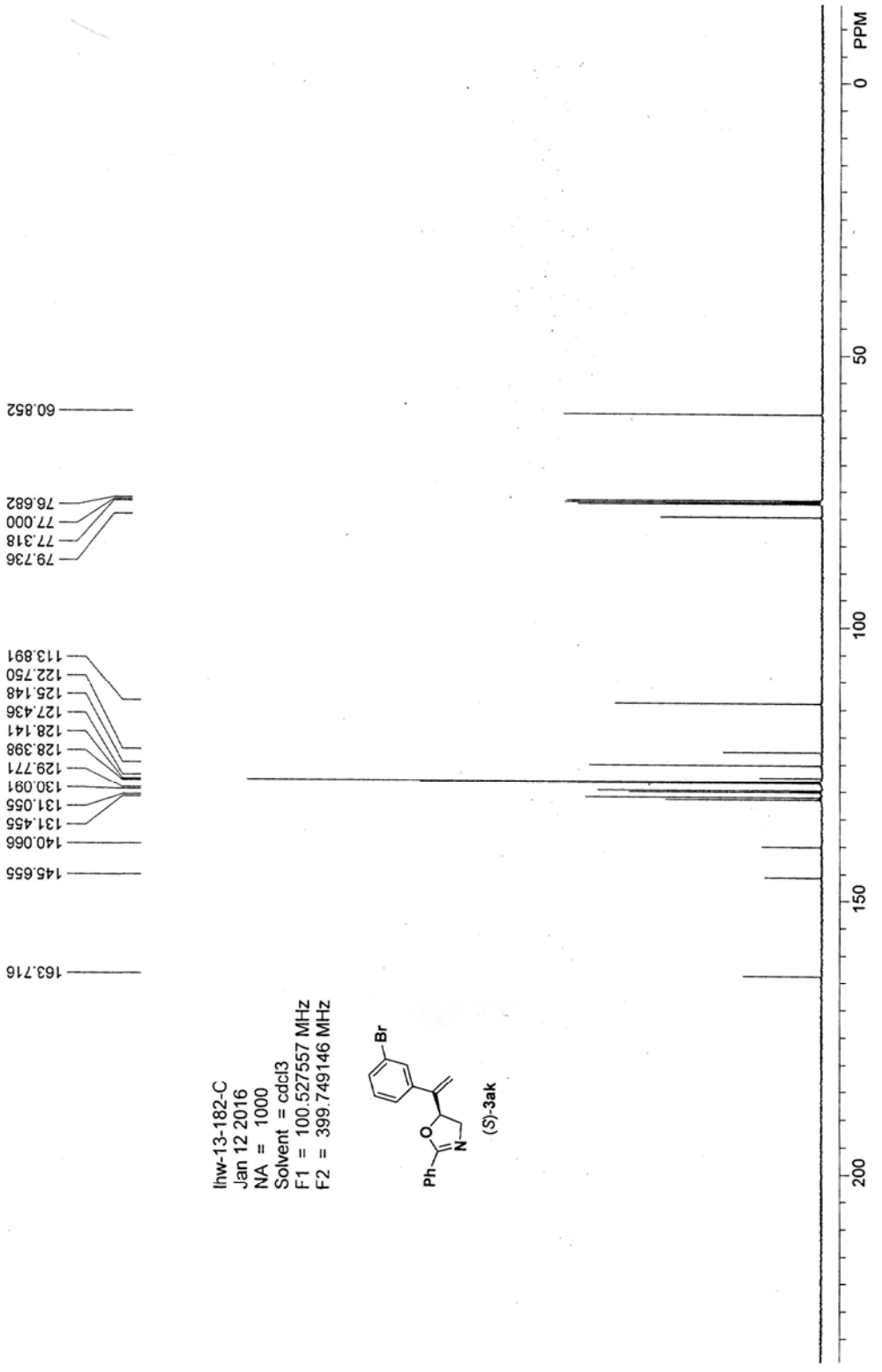
	RT (min)	Area (微sec)	% Area	Height (微)	% Height
1	11.776	20682381	50.20	970446	54.27
2	14.683	20514516	49.80	817599	45.73

Report Method: Individual Report ASC

Page: 1 (共计 1)

Printed: 2015/12/24 17:21:42 PRC


lhw-13-182-H
Jan 12 2016
NA = 4
Solvent = cdcl3
F1 = 399.749542 MHz
F2 = 100.526031 MHz
Br
Ph
O
N
(S)-3ak
PPM
0.000
3.756
3.774
3.792
3.811
4.254
4.280
4.290
4.315
5.451
5.520
5.542
5.565
7.190
7.209
7.229
7.256
7.273
7.293
7.420
7.438
7.456
7.487
7.506
7.533
7.997
8.015
1.00
1.00
1.99
1.01
1.12
1.02
3.03
2.03
2.00


lhw-13-182-C
Jan 12 2016
NA = 1000
Solvent = cdcl3
F1 = 100.527557 MHz
F2 = 399.749146 MHz
Br
Ph
O
N
(S)-3ak
60.852
76.682
77.000
77.318
79.736
113.891
122.750
125.148
127.436
128.141
128.398
129.771
130.091
131.055
131.455
140.066
145.655
163.716
PPM
0
50
100
150
200

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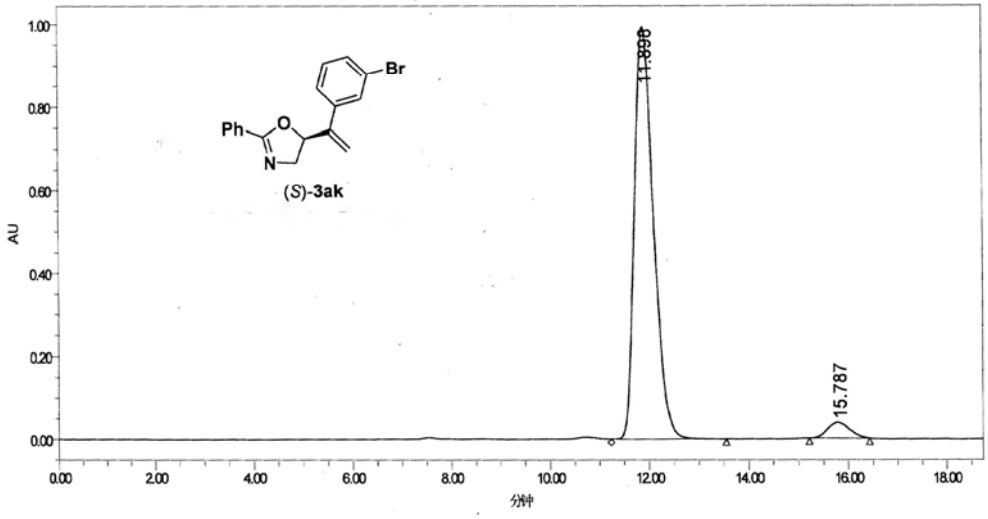
Project Name: defaults for copy

Reported by User: Breeze user (Breeze)

Breeze 2 HPLC System

SAMPLE INFORMATION

Sample Name:	lhw-13-182-oz-h-90-10-1-214	Acquired By:	Breeze
Sample Type:	未知	Date Acquired:	2016/1/14 17:13:04 CST
Vial:	1	Acq. Method:	zgj90
Injection #:	33	Date Processed:	2016/1/14 17:36:45 CST
Injection Volume:	25.00 ul	Channel Name:	W2489 ChA
Run Time:	20.00 Minutes	Channel Desc.:	W2489 ChA 214nm
Column Type:		Sample Set Name:	



	RT (min)	Area (微sec)	% Area	Height (微)	% Height
1	11.898	26462086	95.67	992694	96.28
2	15.787	1197488	4.33	38327	3.72

Report Method: Individual Report ASC

Page: 1 (共计 1)

Printed: 2016/1/14 17:40:11 PRC

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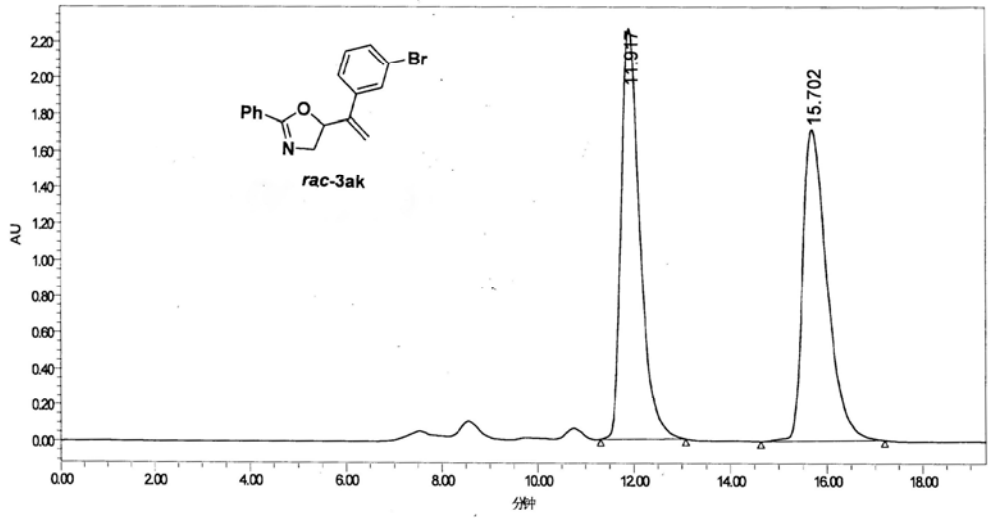
Project Name: defaults for copy

Reported by User: Breeze user (Breeze)

Breeze 2 HPLC System

SAMPLE INFORMATION

Sample Name:	zy-1-123-cz-h-90-10-1-214	Acquired By:	Breeze
Sample Type:	未知	Date Acquired:	2016/1/14 17:53:03 CST
Vial:	1	Acq. Method:	zgj90
Injection #:	35	Date Processed:	2016/1/14 18:10:31 CST
Injection Volume:	25.00 ul	Channel Name:	W2489 ChA
Run Time:	20.00 Minutes	Channel Desc.:	W2489 ChA 214nm
Column Type:		Sample Set Name:	

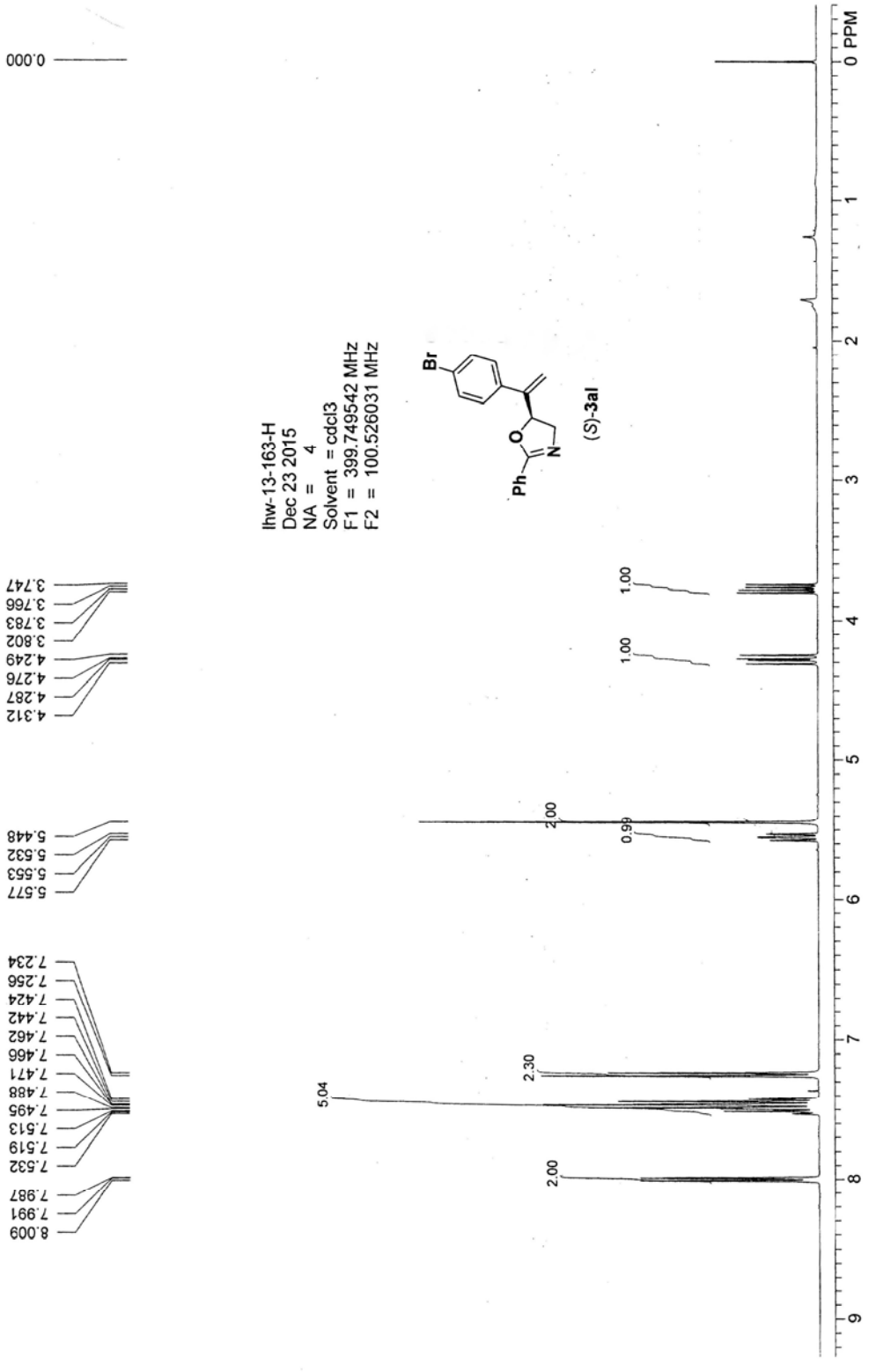


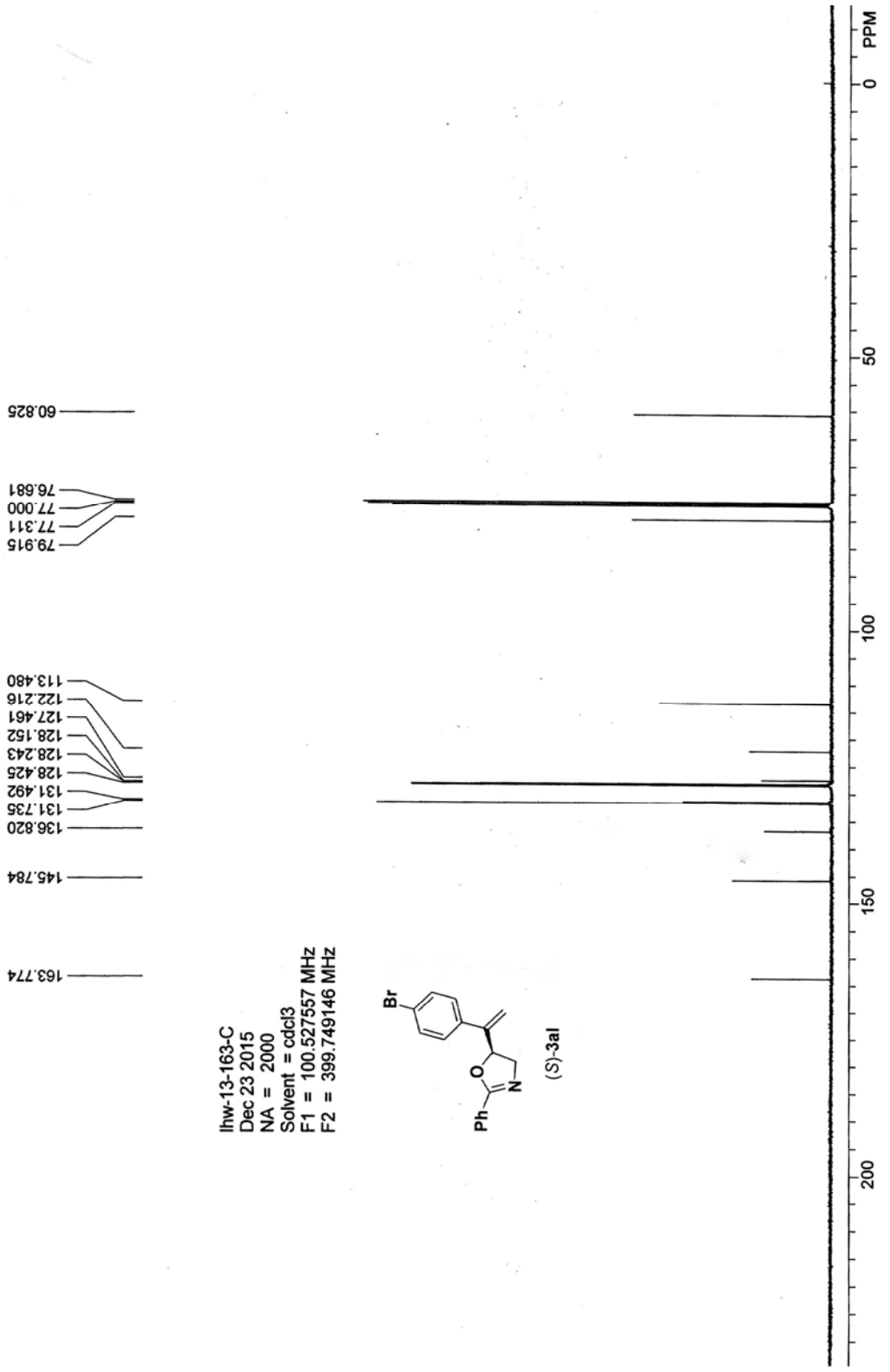
	RT (min)	Area (碘sec)	% Area	Height (碘)	% Height
1	11.917	61026939	50.36	2259922	56.84
2	15.702	60150838	49.64	1715760	43.16

Report Method: Individual Report ASC

Page: 1 (共计 1)

Printed: 2016/1/14 18:12:47 PRC


lhw-13-163-H
Dec 23 2015
NA = 4
Solvent = cdcl3
F1 = 399.749542 MHz
F2 = 100.526031 MHz
(S)-3al
Br
Ph
O
N
0.000
3.747
3.766
3.783
3.802
4.249
4.276
4.287
4.312
5.448
5.532
5.553
5.577
7.234
7.256
7.424
7.442
7.462
7.466
7.471
7.488
7.495
7.513
7.519
7.532
7.987
7.991
8.009
1.00
1.00
2.00
0.99
5.04
2.30
2.00
0 PPM


60.825
76.681
77.000
77.311
79.915
113.480
122.216
127.461
128.152
128.243
128.425
131.492
131.735
136.820
145.784
163.774
lhw-13-163-C
Dec 23 2015
NA = 2000
Solvent = cdcl3
F1 = 100.527557 MHz
F2 = 399.749146 MHz
Br
O
N
Ph
(S)-3al
PPM
0
50
100
150
200

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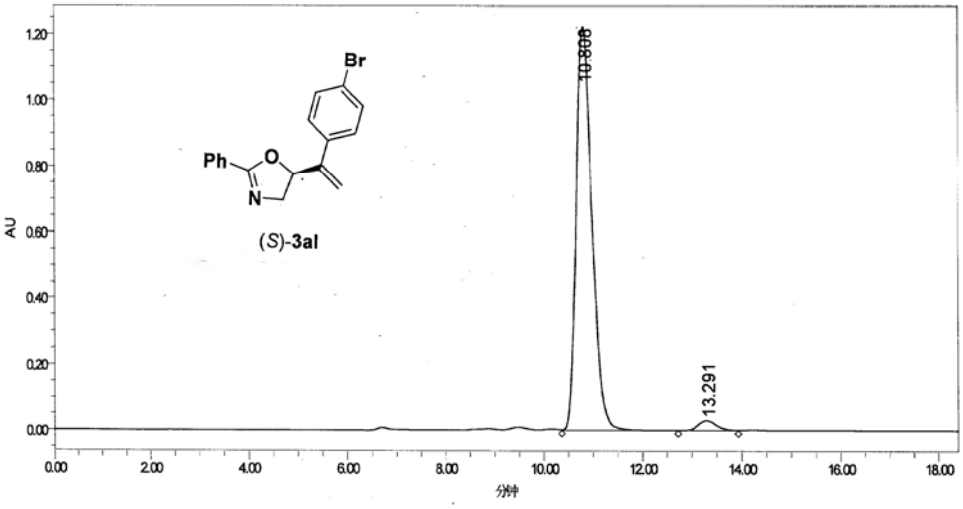
Project Name: defaults for copy

Reported by User: Breeze user (Breeze)

Breeze 2 HPLC System

SAMPLE INFORMATION

Sample Name:	lhw-13-163-oz-h-90-10-1-214	Acquired By:	Breeze
Sample Type:	未知	Date Acquired:	2016/1/6 13:25:03 CST
Vial:	1	Acq. Method:	zgj90
Injection #:	28	Date Processed:	2016/1/6 17:26:01 CST
Injection Volume:	25.00 ul	Channel Name:	W2489 ChA
Run Time:	35.00 Minutes	Channel Desc.:	W2489 ChA 214nm
Column Type:		Sample Set Name:	



	RT (min)	Area (微伏*sec)	%Area	Height (微伏)	%Height
1	10.808	27190151	97.20	1224105	97.58
2	13.291	783345	2.80	30294	2.42

Report Method: Individual Report ASC

Page: 1 (共计 1)

Printed: 2016/1/6 17:28:42 PRC

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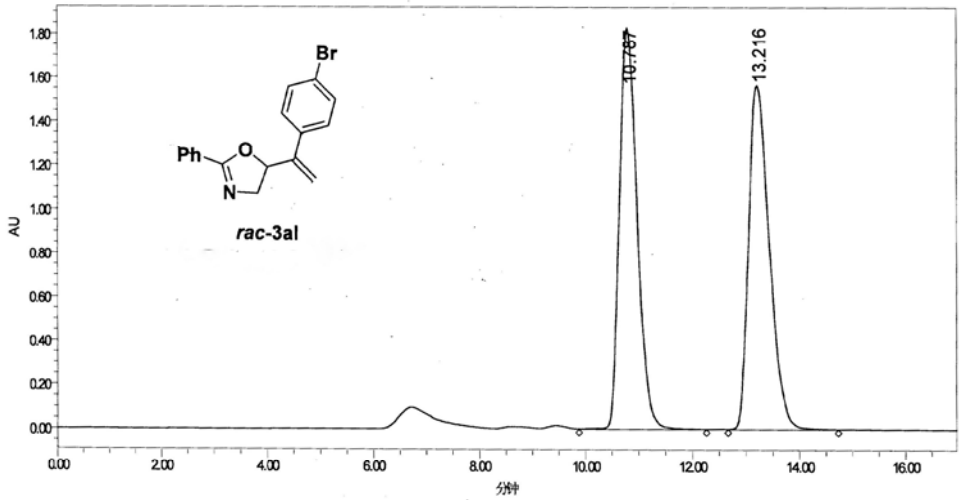
Project Name: defaults for copy

Reported by User: Breeze user (Breeze)

Breeze 2 HPLC System

SAMPLE INFORMATION

Sample Name:	zy-1-124-oz-h-90-10-1-214	Acquired By:	Breeze
Sample Type:	未知	Date Acquired:	2016/1/6 13:44:38 CST
Vial:	1	Acq. Method:	zgj90
Injection #:	29	Date Processed:	2016/1/6 17:26:10 CST
Injection Volume:	25.00 ul	Channel Name:	W2489 ChA
Run Time:	35.00 Minutes	Channel Desc.:	W2489 ChA 214nm
Column Type:		Sample Set Name:	

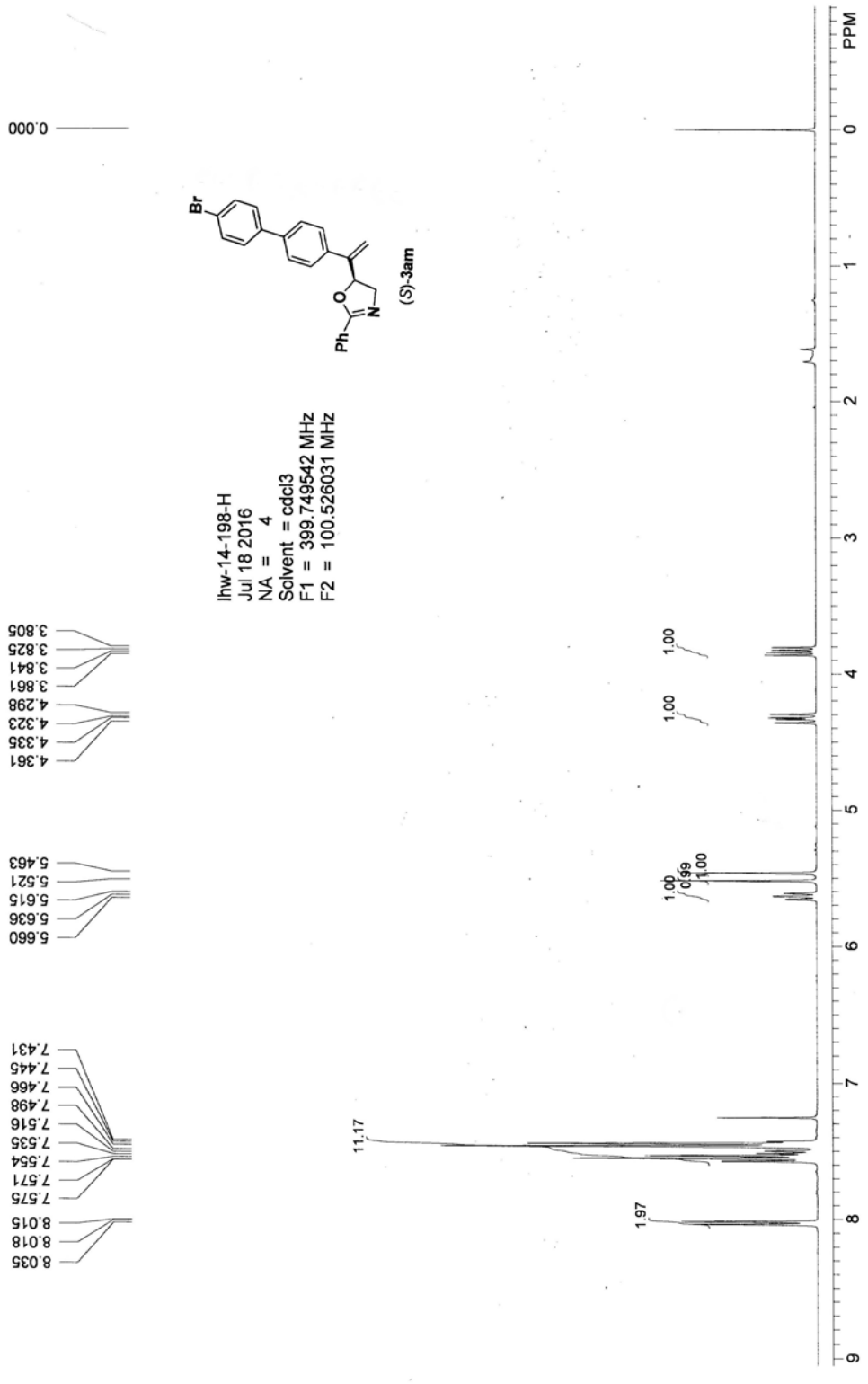


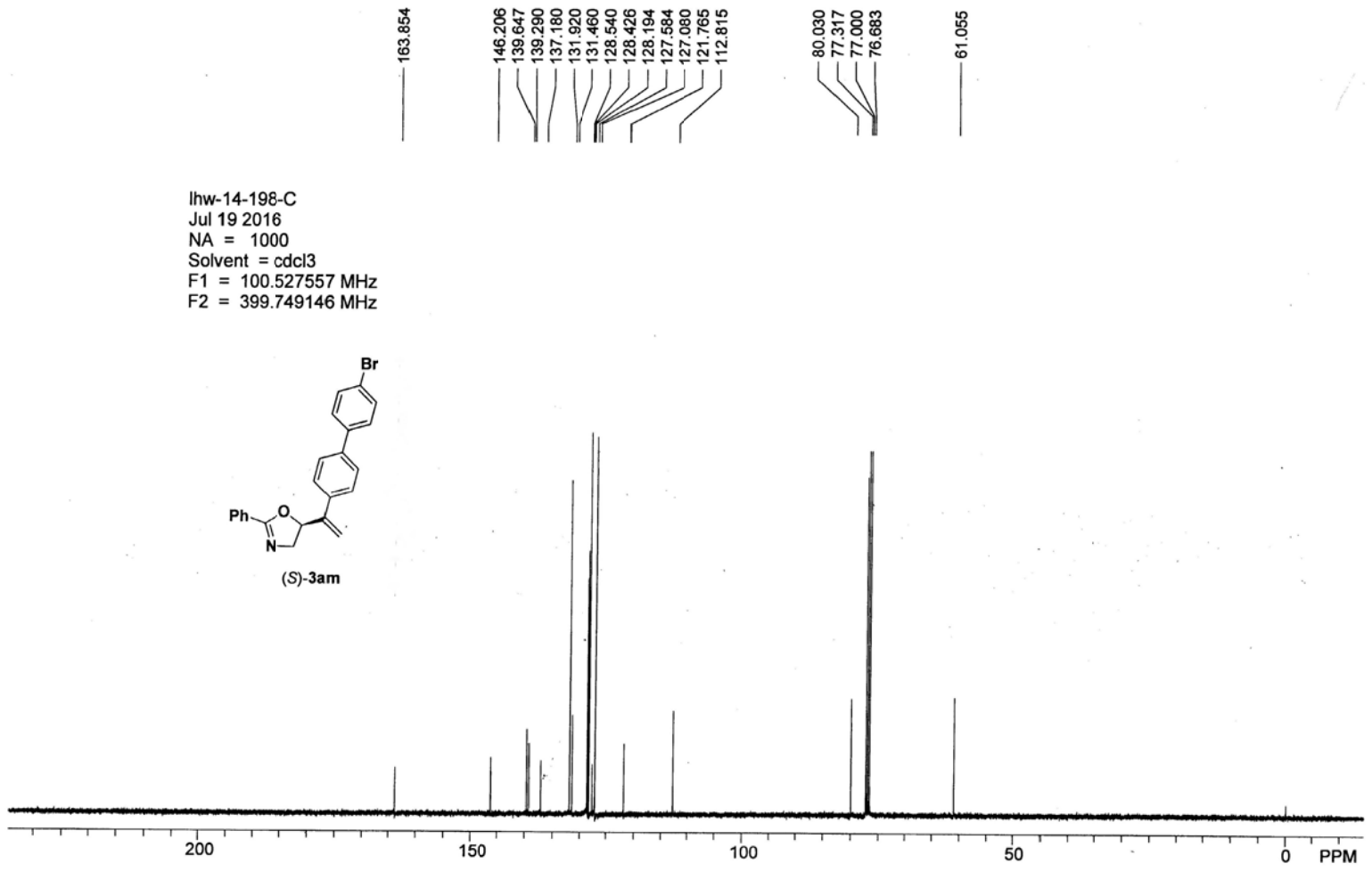
	RT (min)	Area (微sec)	%Area	Height (微)	% Height
1	10.787	42544821	50.18	1831245	53.90
2	13.216	42242802	49.82	1566207	46.10

Report Method: Individual Report ASC

Page: 1 (共计 1)

Printed: 2016/1/6 17:29:00 PRC

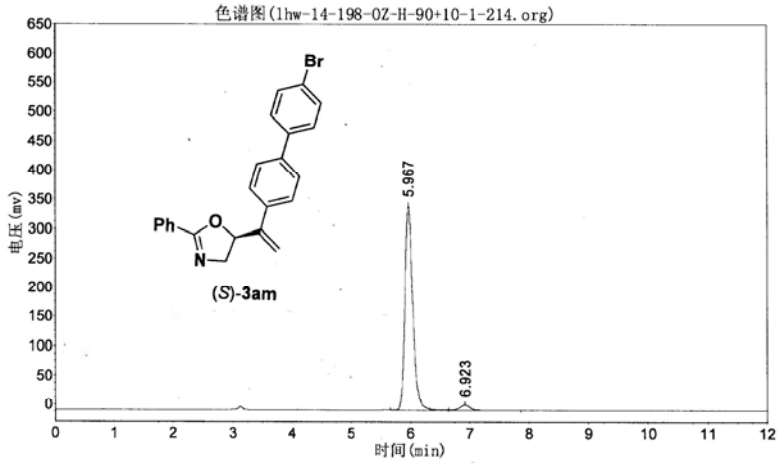

lhw-14-198-H
Jul 18 2016
NA = 4
Solvent = cdcl3
F1 = 399.749542 MHz
F2 = 100.526031 MHz
(S)-3am
Br
Ph
O
N
0.000
3.805
3.825
3.841
3.861
4.298
4.323
4.335
4.361
5.463
5.521
5.615
5.636
5.660
7.431
7.445
7.466
7.498
7.516
7.535
7.554
7.571
7.575
8.015
8.018
8.035
11.17
1.97
1.00
1.00
1.00
0.99
1.00
PPM


163.854
146.206
139.647
139.290
137.180
131.920
131.460
128.540
128.426
128.194
127.584
127.080
121.765
112.815
80.030
77.317
77.000
76.683
61.055
lhw-14-198-C
Jul 19 2016
NA = 1000
Solvent = cdcl3
F1 = 100.527557 MHz
F2 = 399.749146 MHz
Br
Ph
O
N
(S)-3am
200
150
100
50
0
PPM

lhw-14-198

实验时间：2016-07-18,13:15:08　　报告时间：2016-07-18,13:17:21
谱图文件:F:\slf\luohongwen\2016-07-18\lhw-14-198\lhw-14-198-OZ-H-90+10-1-214.org

实验内容简介：
OZ-H　　90:10
214nm　　1.0ml/min



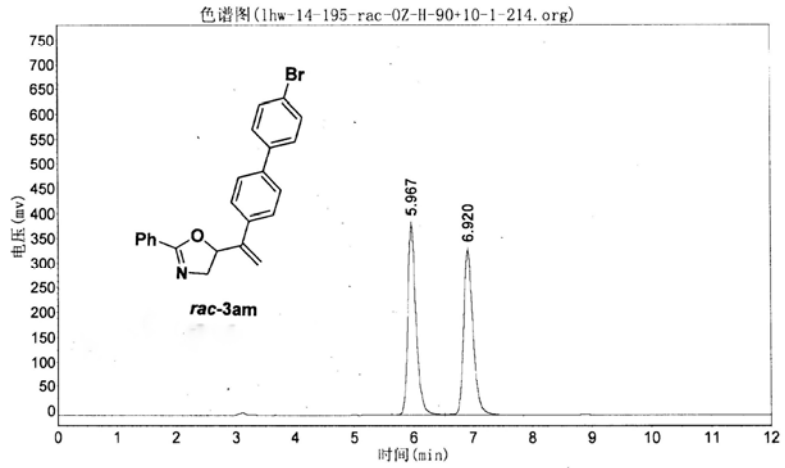
分析结果表

峰号	峰名	保留时间	峰高	峰面积	含量
1		5.967	348293.844	3256140.000	96.6506
2		6.923	8937.972	112839.289	3.3494
总计			357231.815	3368979.289	100.0000

lhw-14-195-rac

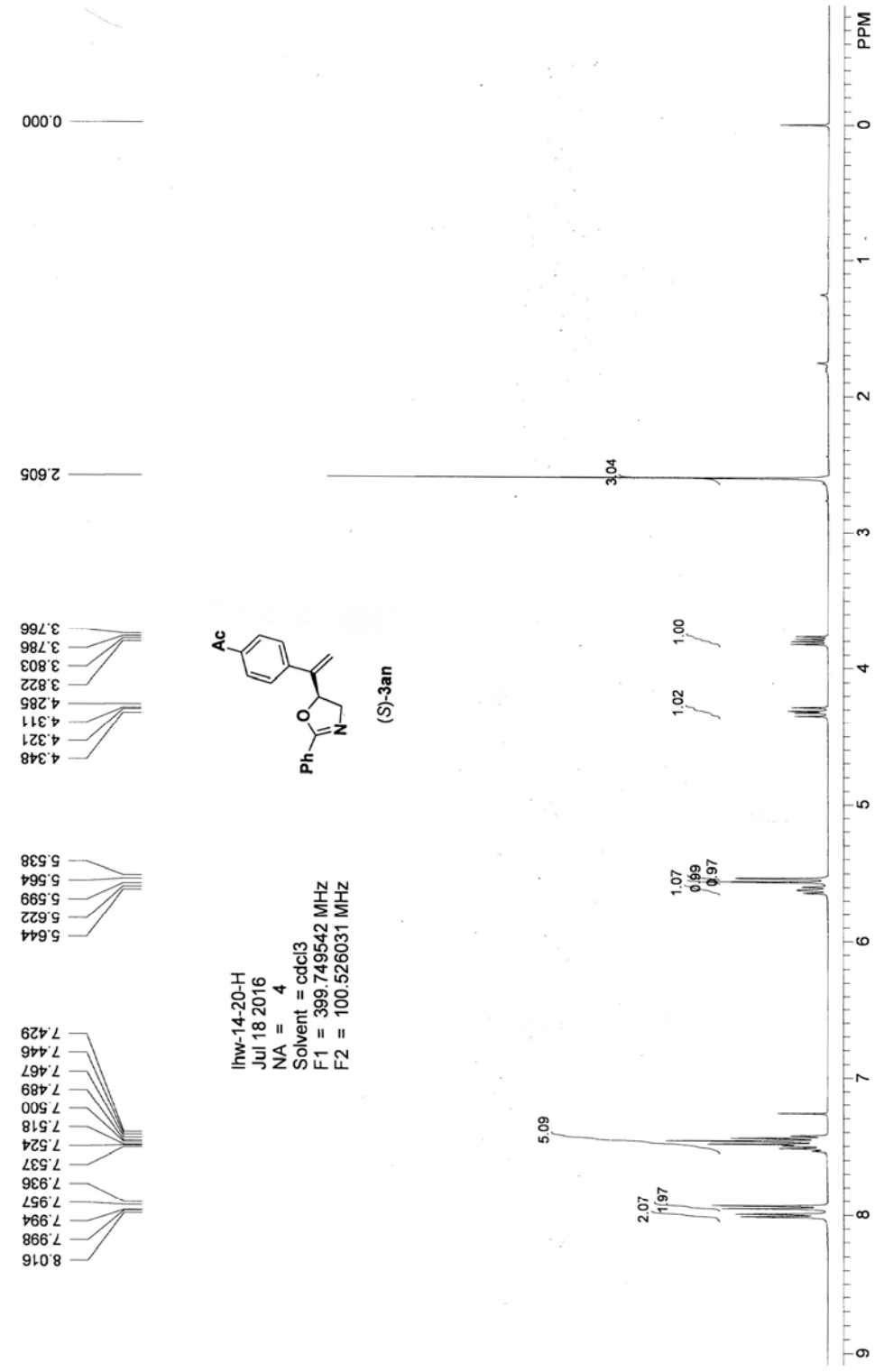
实验时间：2016-07-18,12:40:35　　报告时间：2016-07-18,12:42:16
谱图文件:F:\slf\luohongwen\2016-07-18\lhw-14-195-rac\lhw-14-195-rac-0Z-H-90+10-1-214.org

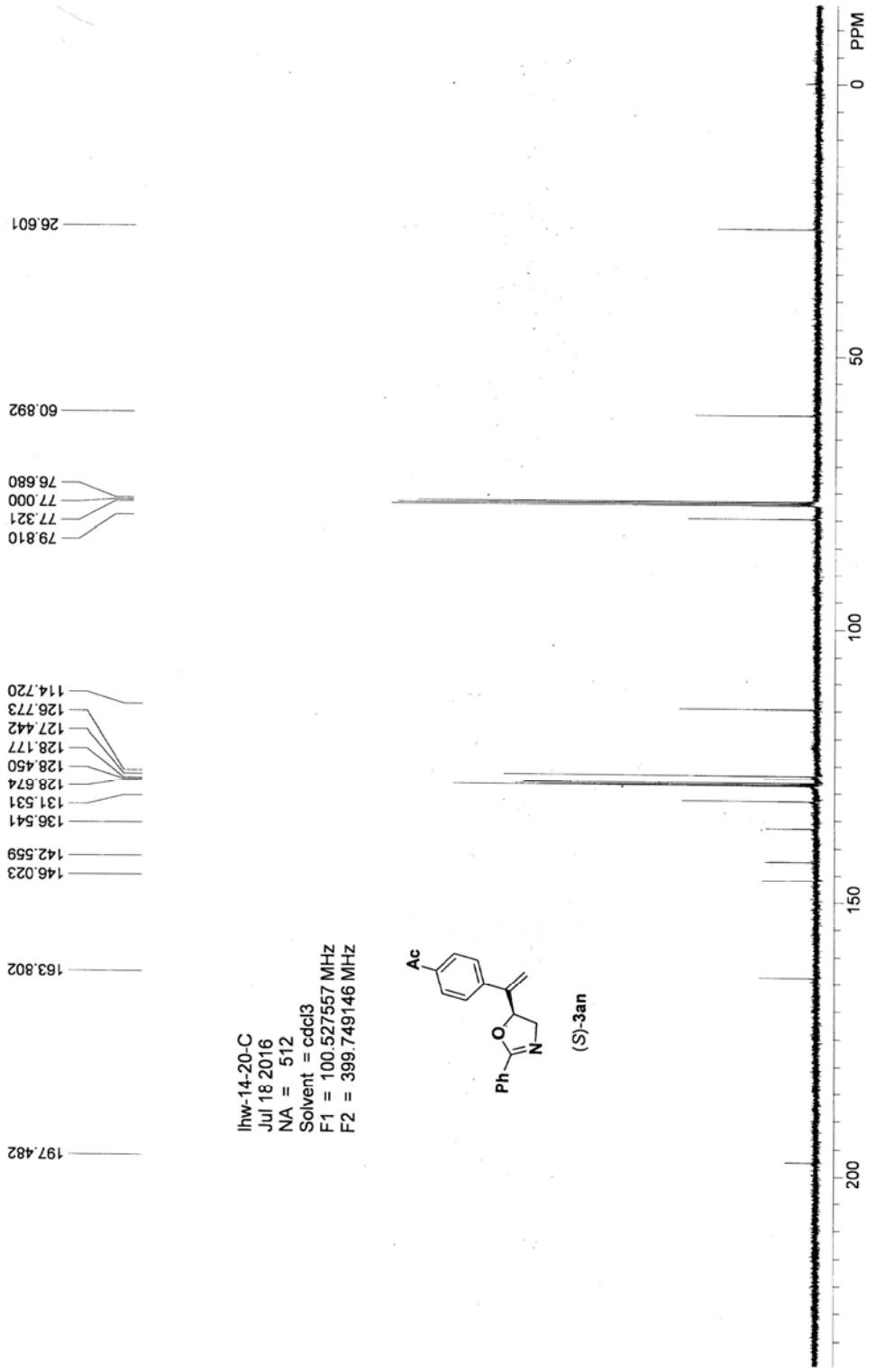
实验内容简介：
0Z-H　90:10
214nm　1.0ml/min



分析结果表

峰号	峰名	保留时间	峰高	峰面积	含量
1		5.967	385292.156	3731798.500	50.2240
2		6.920	333933.594	3698509.500	49.7760
总计			719225.750	7430308.000	100.0000

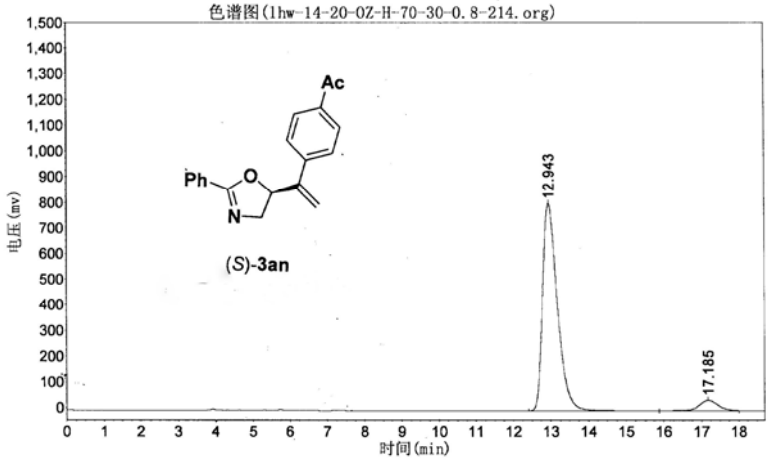

lhw-14-20-H
Jul 18 2016
NA = 4
Solvent = cdcl3
F1 = 399.749542 MHz
F2 = 100.526031 MHz
(S)-3an
Ac
Ph
O
N
PPM
0.000
2.605
3.04
3.766
3.786
3.803
3.822
4.285
4.311
4.321
4.348
5.538
5.564
5.599
5.622
5.644
7.429
7.446
7.467
7.489
7.500
7.518
7.524
7.537
7.936
7.957
7.994
7.998
8.016
1.00
1.02
1.07
0.99
0.97
5.09
2.07
1.97


lhw-14-20-C
Jul 18 2016
NA = 512
Solvent = cdcl3
F1 = 100.527557 MHz
F2 = 399.749146 MHz
Ac
Ph
(S)-3an
PPM
0
50
100
150
200
26.601
60.892
76.680
77.000
77.321
79.810
114.720
126.773
127.442
128.177
128.450
128.674
131.531
136.541
142.559
146.023
163.802
197.482

LHW-14-20-OZ-H-70-30-0.8-214

实验时间：2016-03-18,18:11:12　　报告时间：2016-03-18,18:12:16
谱图文件:F:\zhuguangjiong\lhw\2016-03-17\lhw-14-20-OZ-H-70-30-0.8-214.org

实验内容简介：



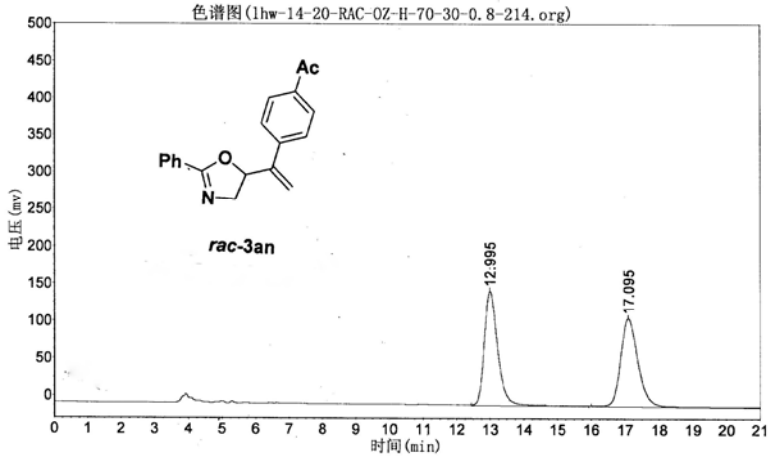
分析结果表

峰号	峰名	保留时间	峰高	峰面积	含量
1		12.943	807325.875	21977226.000	93.8155
2		17.185	40617.402	1448788.250	6.1845
总计			847943.277	23426014.250	100.0000

LHW-14-20-RAC-OZ-H-70-30-0.8-214

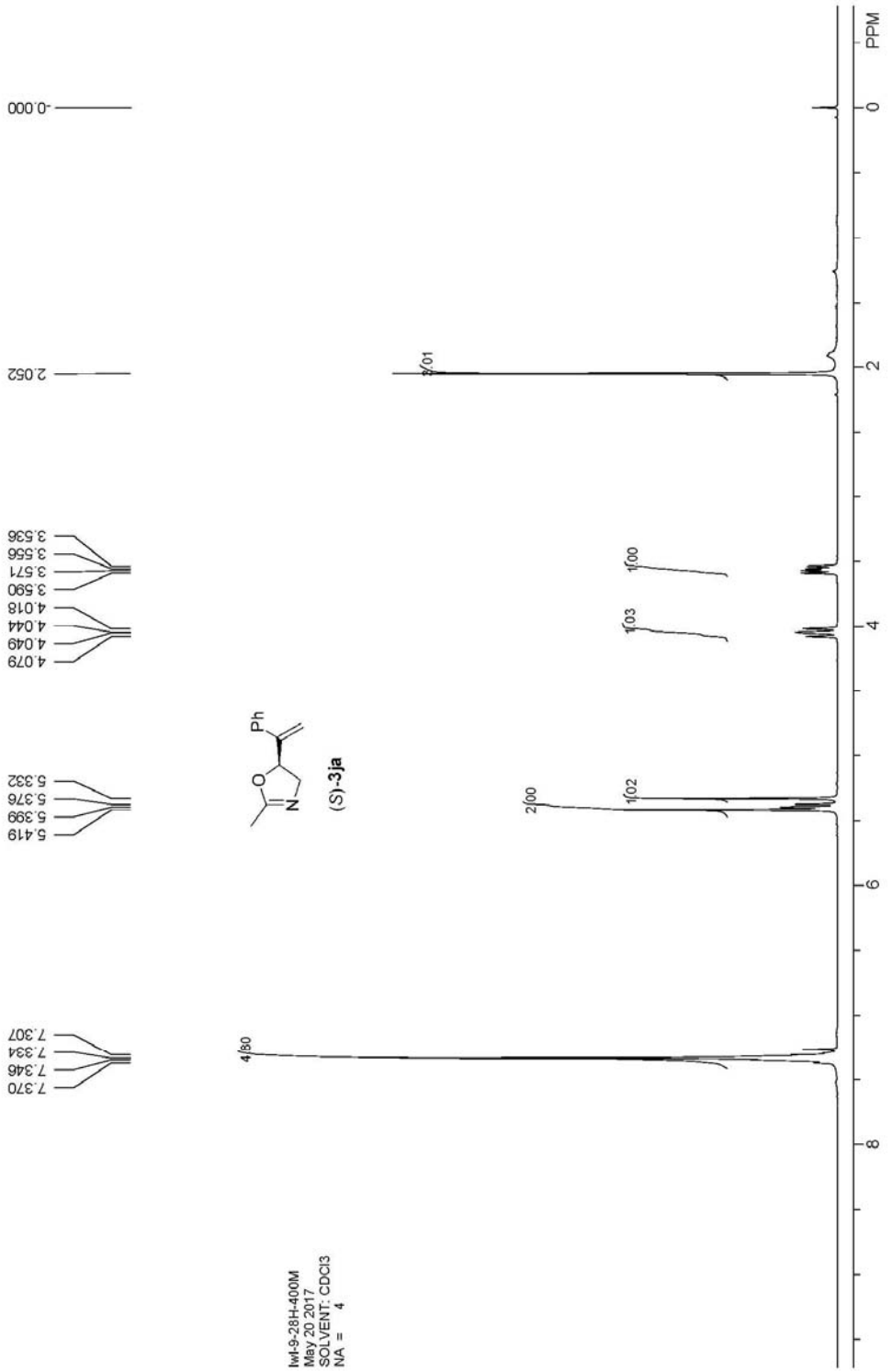
实验时间：2016-03-18,17:51:31　　报告时间：2016-03-18,17:59:25
谱图文件:F:\zhuguangjiong\lhw\2016-03-17\lhw-14-20-RAC-OZ-H-70-30-0.8-214.org

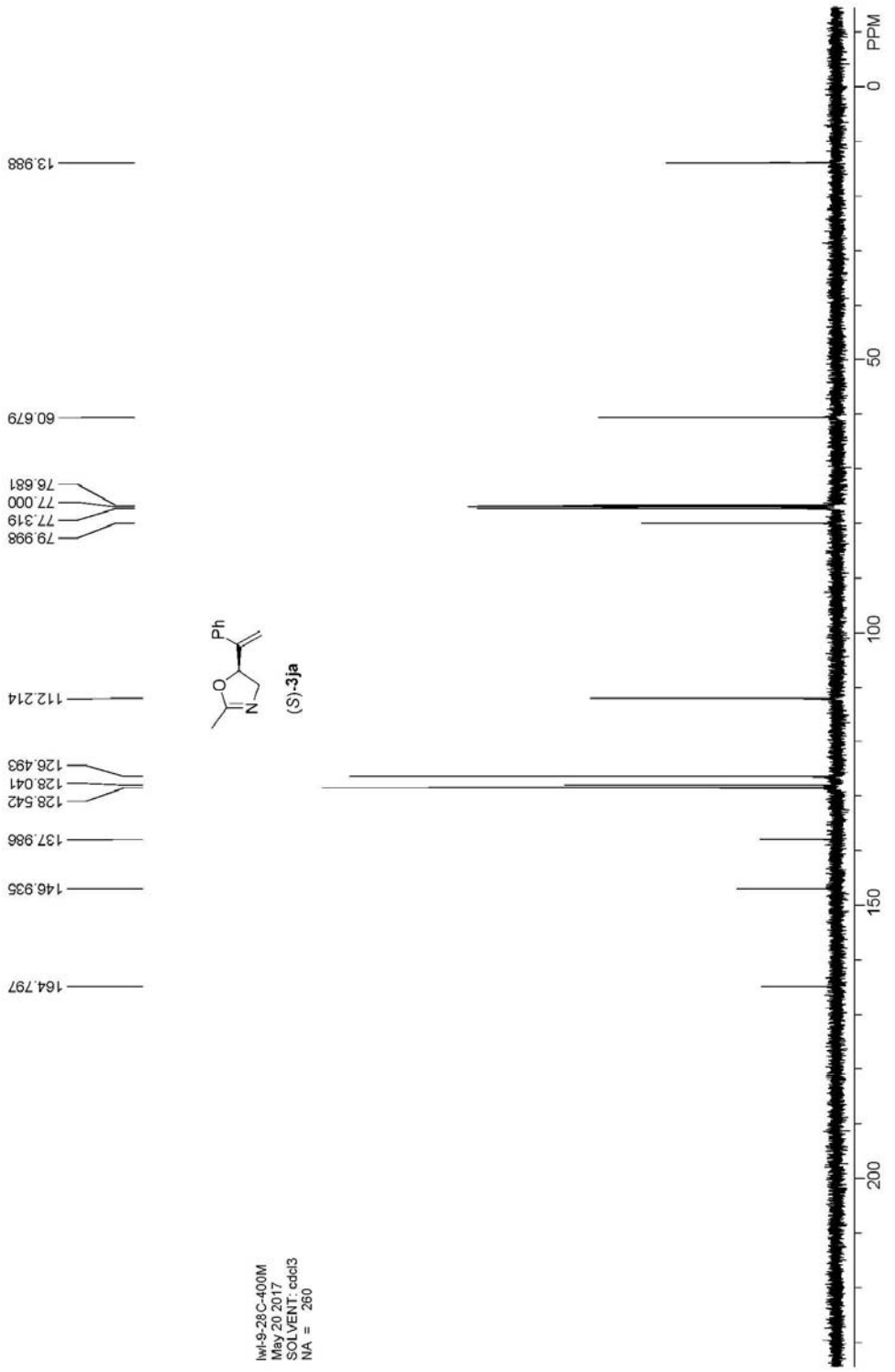
实验内容简介：



分析结果表

峰号	峰名	保留时间	峰高	峰面积	含量
1		12.995	152752.203	4212635.500	50.1037
2		17.095	117331.641	4195202.000	49.8963
总计			270083.844	8407837.500	100.0000

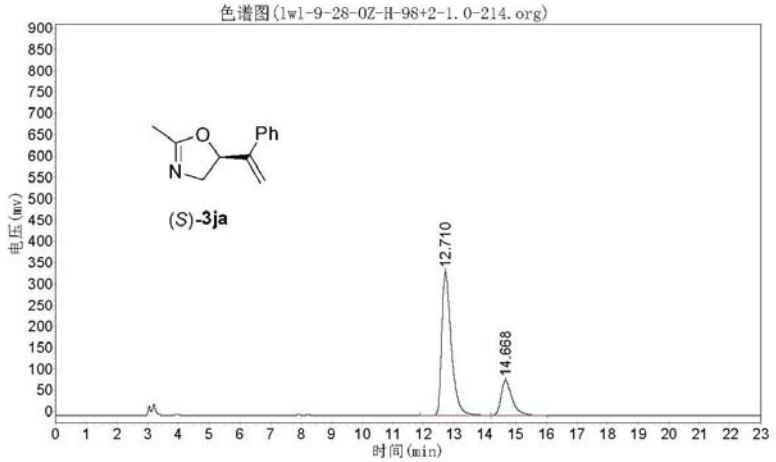

0.000
2.052
3.536
3.556
3.571
3.590
4.018
4.044
4.049
4.079
5.332
5.376
5.399
5.419
7.307
7.334
7.346
7.370
4.80
2.00
1.02
1.03
1.00
2.01
Ph
O
N
(S)-3ja
lwl-9-28H-400M
May 20 2017
SOLVENT: CDCl3
NA = 4
PPM
0
2
4
6
8


13.988
60.679
76.681
77.000
77.319
79.998
112.214
126.493
128.041
128.542
137.986
146.935
164.797
Ph
O
N
(S)-3ja
lwl-9-28C-400M
May 20 2017
SOLVENT: cdcl3
NA = 260
PPM
0
50
100
150
200

lwl-9-28

实验时间：2017-03-31,16:02:30　　报告时间：2017-03-31,16:03:45
谱图文件:F:\slf\lwl\2017-03-31\lwl-9-28\新建文件夹\lwl-9-28-OZ-H-98+2-1.0-214.org

实验内容简介：
OZ-H　　98:2
214nm　　1.0ml/min



分析结果表

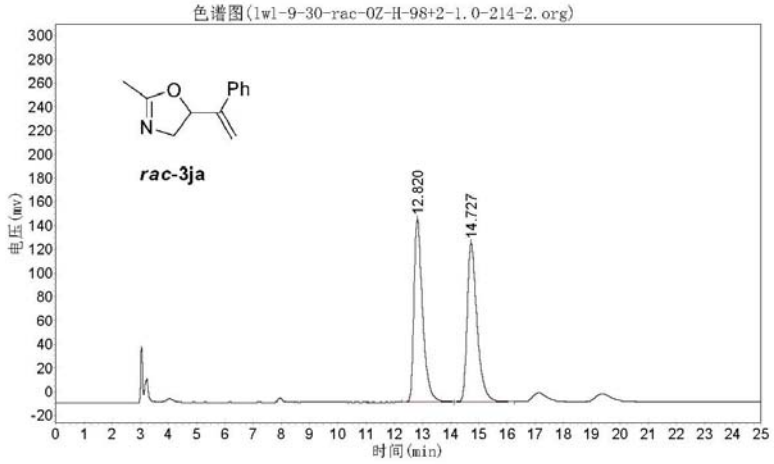
峰号	峰名	保留时间	峰高	峰面积	含量
1		12.710	336314.750	7253600.000	78.1341
2		14.668	81636.531	2029926.375	21.8659
总计			417951.281	9283526.375	100.0000

lwl-9-30-rac

实验时间：2017-03-31,15:14:08　　报告时间：2017-03-31,15:24:06
谱图文件:F:\slf\lwl\2017-03-31\lwl-9-30-rac\lwl-9-30-rac-OZ-H-98+2-1.0-214-2.org

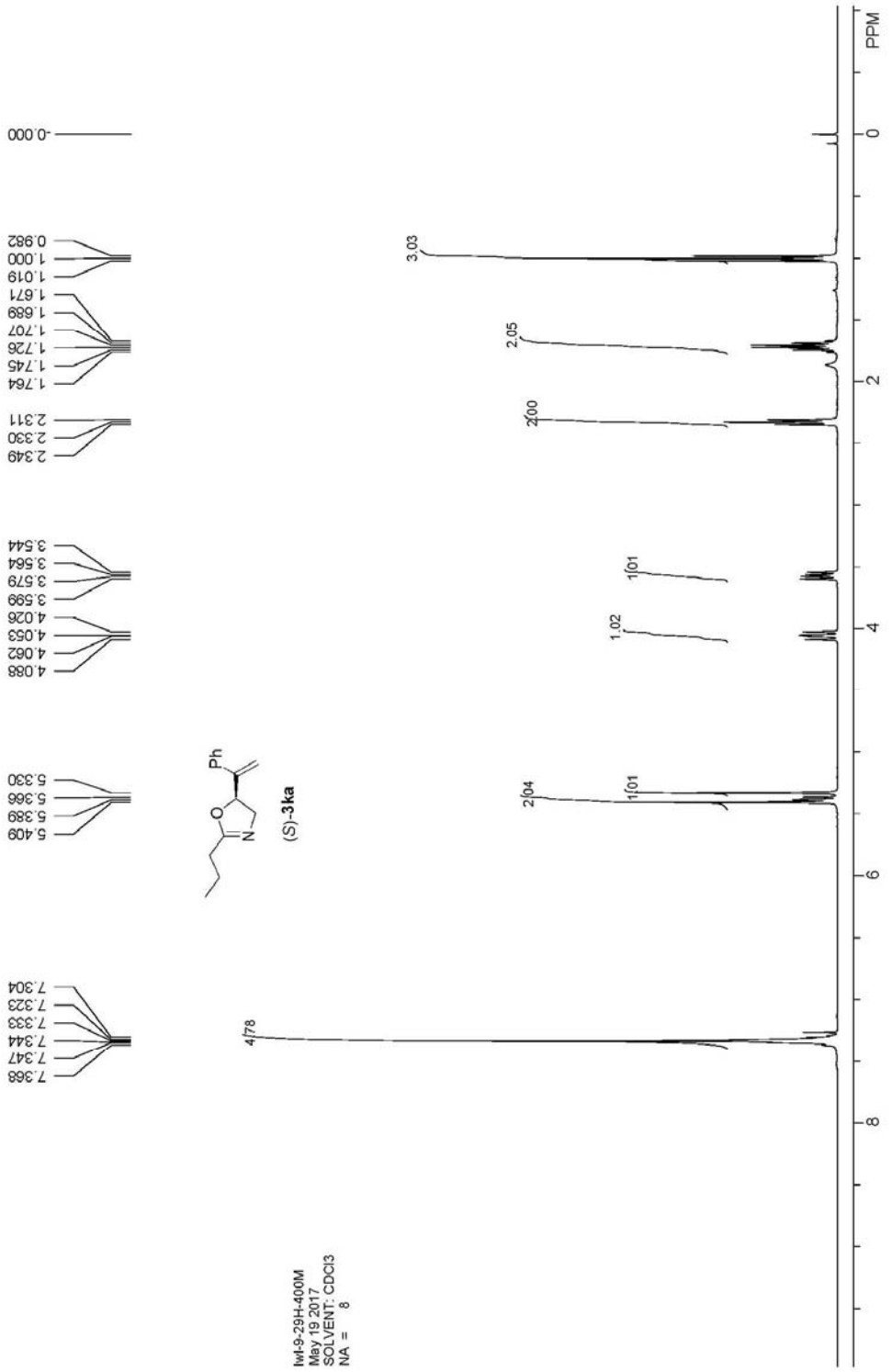
实验内容简介：
OZ-H　　98:2
214nm　　1.0ml/min

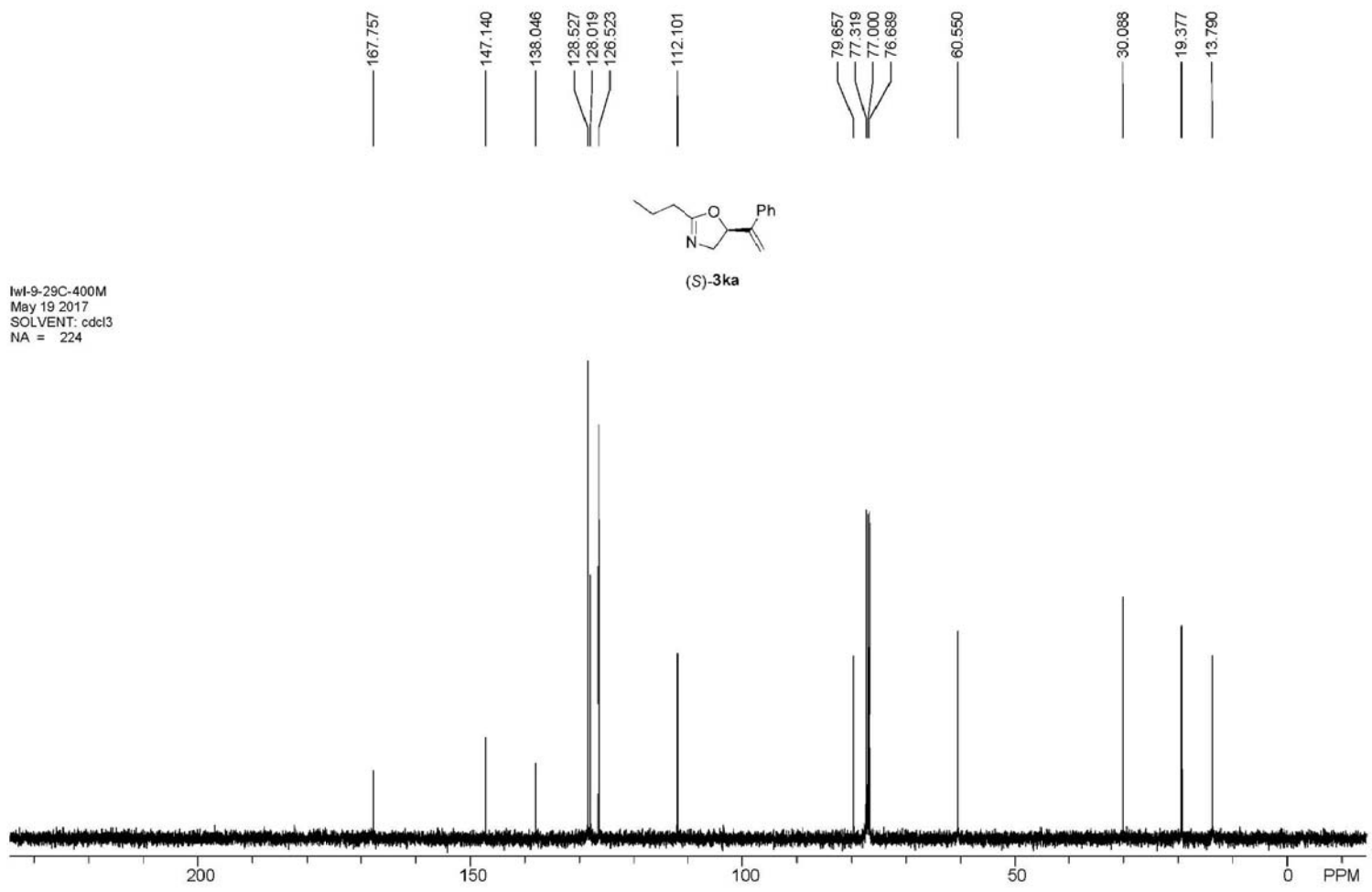
色谱图(lwl-9-30-rac-OZ-H-98+2-1.0-214-2.org)



分析结果表

峰号	峰名	保留时间	峰高	峰面积	含量
1		12.820	154141.719	3280217.500	50.1779
2		14.727	133832.453	3256964.250	49.8221
总计			287974.172	6537181.750	100.0000

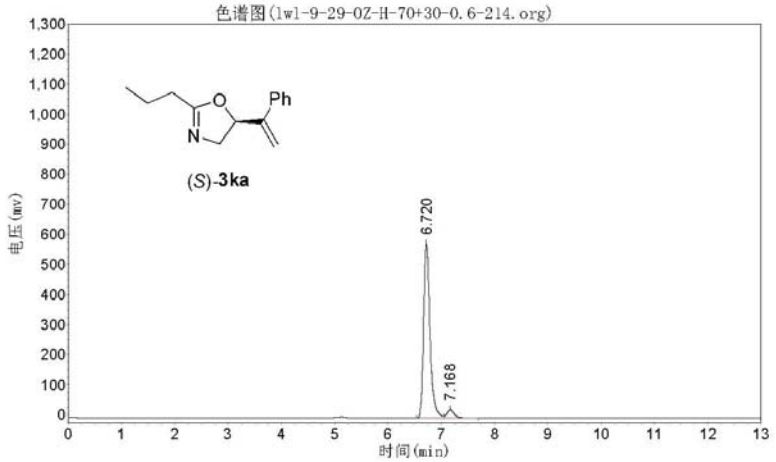

0.000
0.982
1.000
1.019
1.671
1.689
1.707
1.726
1.745
1.764
2.311
2.330
2.349
3.544
3.564
3.579
3.599
4.026
4.053
4.062
4.088
5.330
5.366
5.389
5.409
7.304
7.323
7.333
7.344
7.347
7.368
4.78
3.03
2.05
2.00
2.04
1.02
1.01
1.01
Ph
O
N
(S)-3ka
lwl-9-29H-400M
May 19 2017
SOLVENT: CDCl3
NA = 8
PPM
0
2
4
6
8


167.757
147.140
138.046
128.527
128.019
126.523
112.101
79.657
77.319
77.000
76.689
60.550
30.088
19.377
13.790
Ph
O
N
(S)-3ka
lwl-9-29C-400M
May 19 2017
SOLVENT: cdcl3
NA = 224
200
150
100
50
0
PPM

lwl-9-29

实验时间：2017-03-31,10:41:58　　报告时间：2017-03-31,10:44:16
谱图文件:F:\slf\lwl\2017-03-31\lwl-9-29\新建文件夹\lwl-9-29-OZ-H-70+30-0.6-214.org

实验内容简介：
OZ-H　70:30
214nm　0.6ml/min



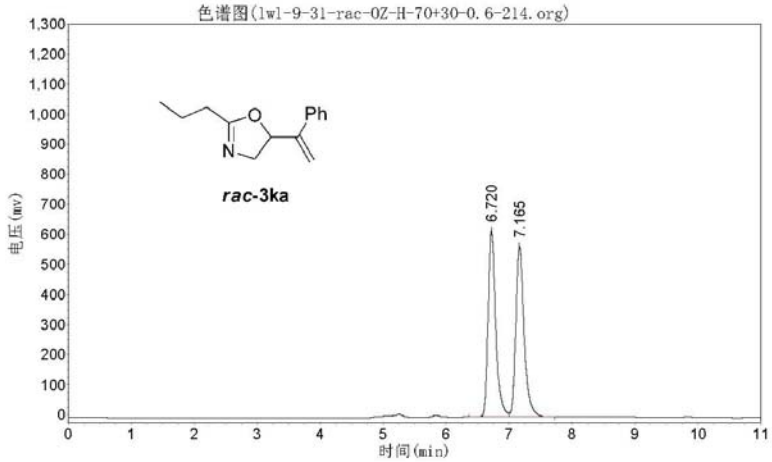
分析结果表

峰号	峰名	保留时间	峰高	峰面积	含量
1		6.720	580200.188	4842645.000	94.6355
2		7.168	28172.840	274507.344	5.3645
总计			608373.027	5117152.344	100.0000

LWL-9-31-RAC

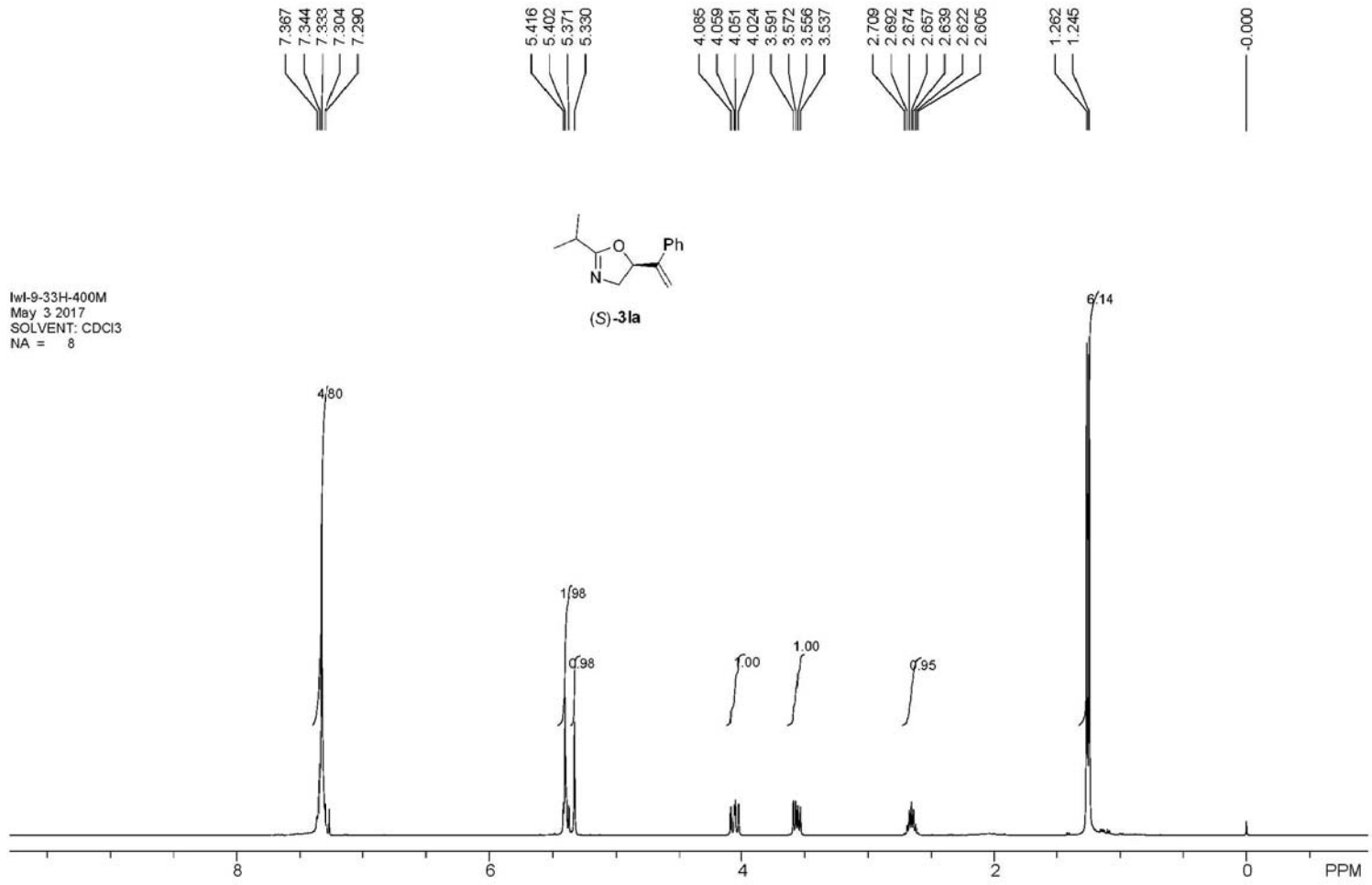
实验时间：2017-03-31,10:16:26　　报告时间：2017-03-31,10:18:58
谱图文件:F:\slf\lwl\2017-03-31\lwl-9-31-rac\lwl-9-31-rac-OZ-H-70+30-0.6-214.org

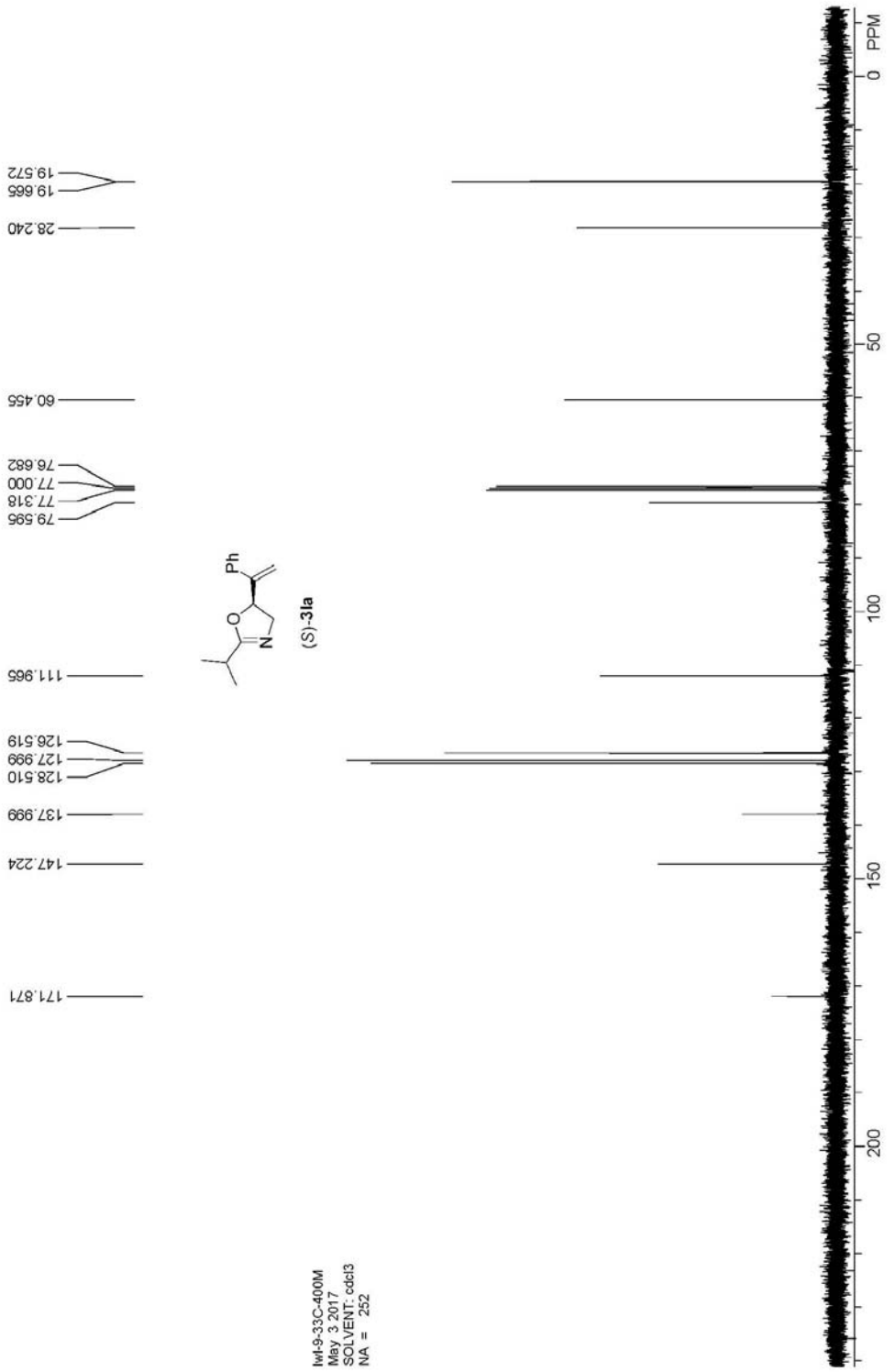
实验内容简介：
OZ-H　70:30
214nm　0.6ml/min



分析结果表

峰号	峰名	保留时间	峰高	峰面积	含量
1		6.720	619916.875	5211762.000	49.9211
2		7.165	568121.063	5228229.000	50.0789
总计			1188037.938	10439991.000	100.0000

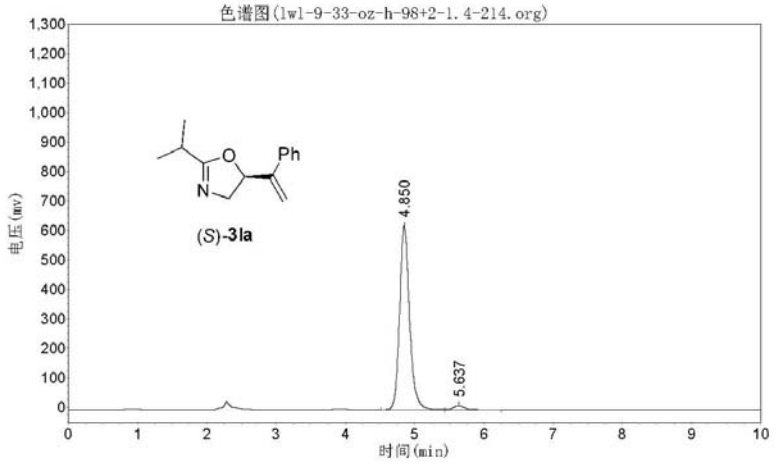

7.367
7.344
7.333
7.304
7.290
5.416
5.402
5.371
5.330
4.085
4.059
4.051
4.024
3.591
3.572
3.556
3.537
2.709
2.692
2.674
2.657
2.639
2.622
2.605
1.262
1.245
-0.000
Ph
O
N
(S)-3la
lwl-9-33H-400M
May 3 2017
SOLVENT: CDCl3
NA = 8
4.80
1.98
0.98
1.00
1.00
0.95
6.14
8
6
4
2
0
PPM


19.572
19.665
28.240
60.455
76.682
77.000
77.318
79.596
111.965
126.519
127.999
128.510
137.999
147.224
171.871
Ph
O
N
(S)-3la
lwl-9-33C-400M
May 3 2017
SOLVENT: cdcl3
NA = 252
PPM
0
50
100
150
200

lwl-9-33

实验时间：2017-04-05,11:32:43　　报告时间：2017-04-05,11:33:39
谱图文件:F:\slf\lwl\2017-04-05\lwl-9-33\新建文件夹\lwl-9-33-oz-h-98+2-1.4-214.org

实验内容简介：
OZ-H　98:2
214nm　1.0ml/min



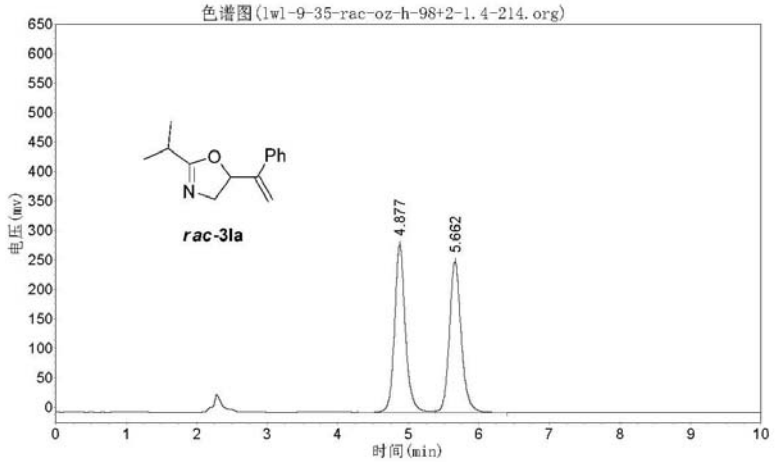
分析结果表

峰号	峰名	保留时间	峰高	峰面积	含量
1		4.850	623545.000	6268123.500	97.3602
2		5.637	14384.115	169953.422	2.6398
总计			637929.115	6438076.922	100.0000

lwl-9-35-rac

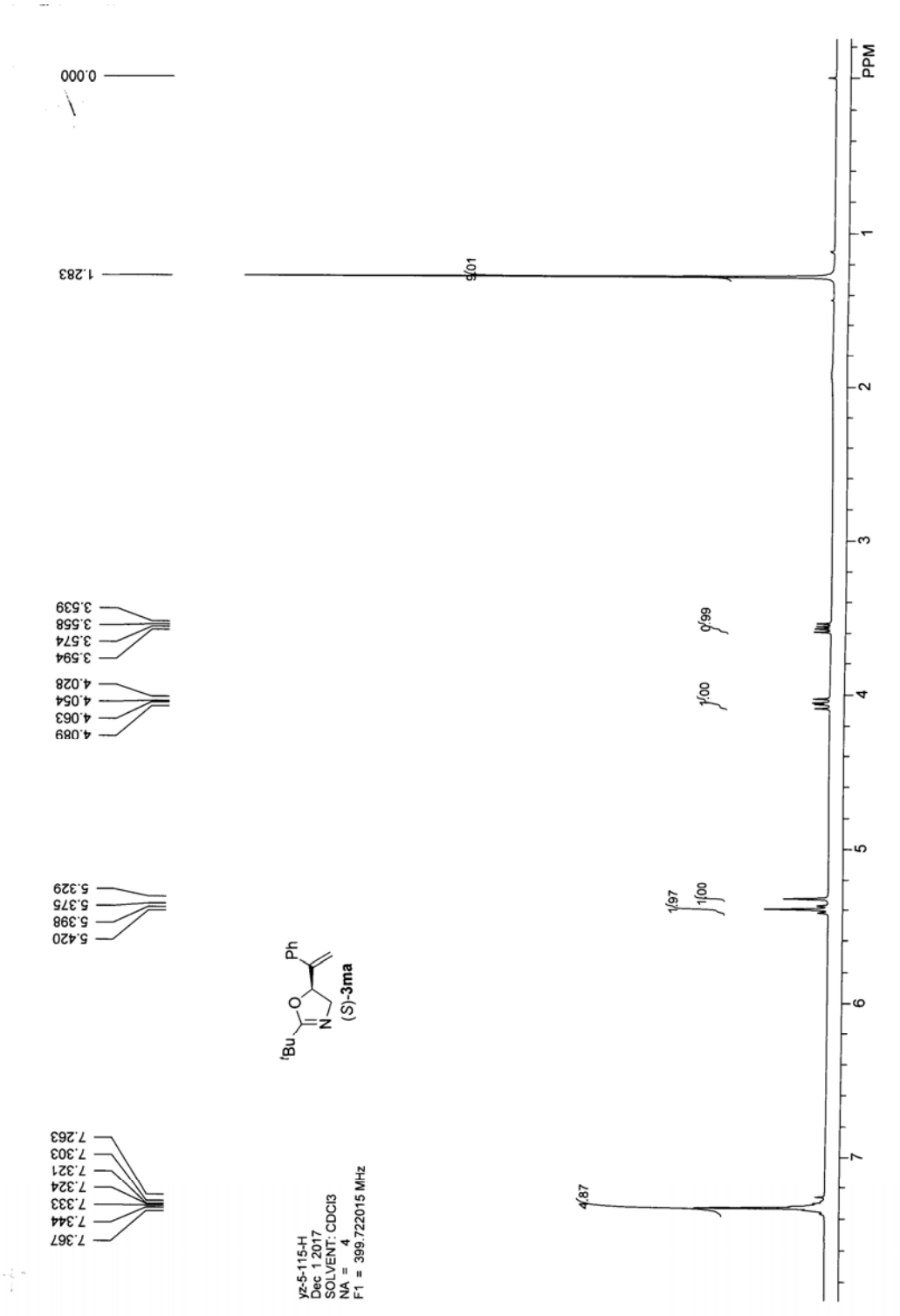
实验时间：2017-04-05,11:09:34　　报告时间：2017-04-05,11:12:18
谱图文件:F:\slf\lwl\2017-04-05\lwl-9-36-rac\lwl-9-35-rac-oz-h-98+2-1.4-214.org

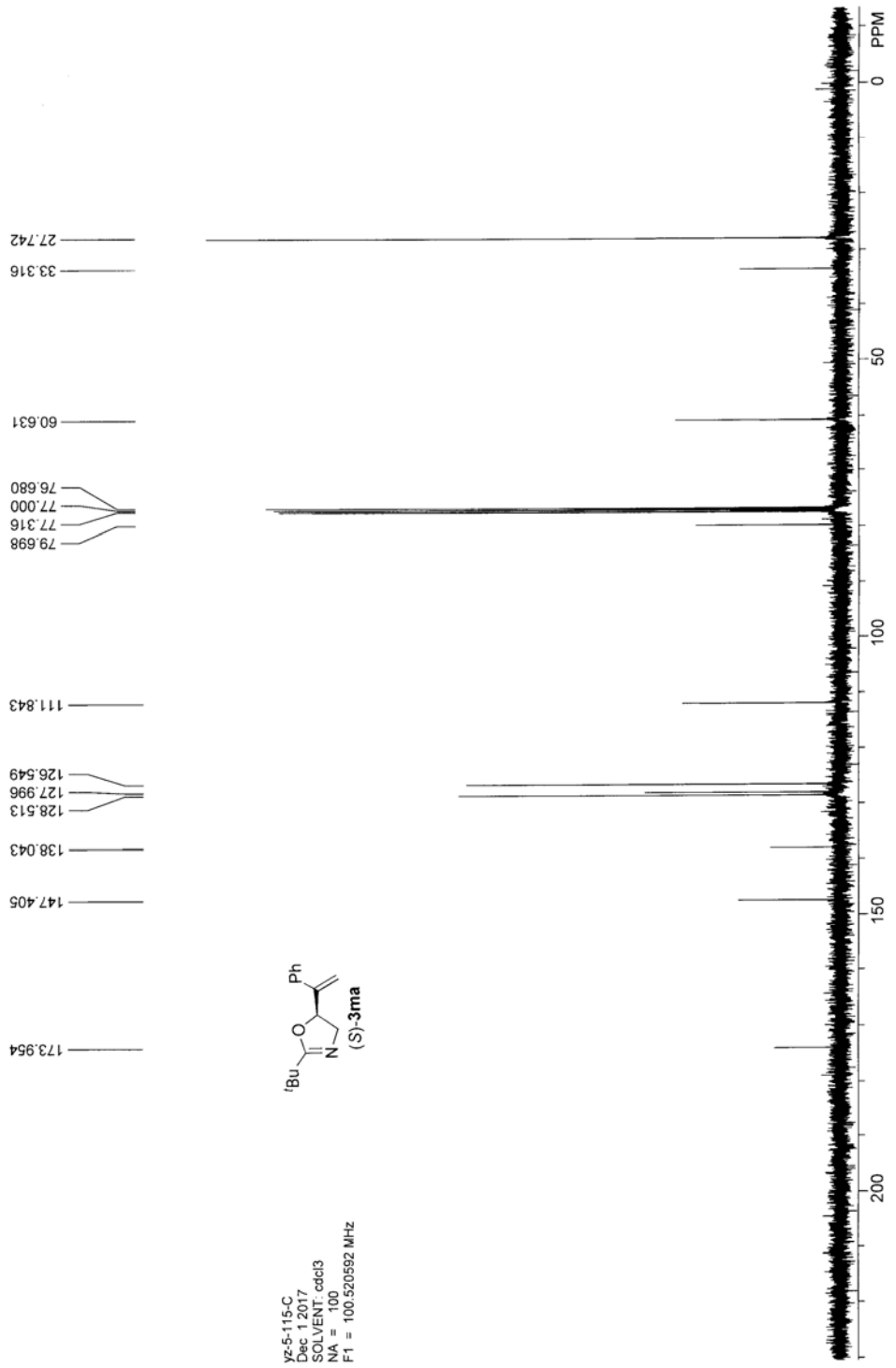
实验内容简介：
OZ-H　98:2
214nm　1.0ml/min



分析结果表

峰号	峰名	保留时间	峰高	峰面积	含量
1		4.877	284761.500	3058894.250	50.3683
2		5.662	255918.828	3014158.500	49.6317
总计			540680.328	6073052.750	100.0000


0.000
1.283
3.539
3.558
3.574
3.594
4.028
4.054
4.063
4.089
5.329
5.375
5.398
5.420
7.263
7.303
7.321
7.324
7.333
7.344
7.367
9.01
1.00
0.99
1.97
1.00
4.87
PPM
1 2 3 4 5 6 7
Ph
O
N
tBu
(S)-3ma
yz-5-115-H
Dec 1 2017
SOLVENT: CDCl3
NA = 4
F1 = 399.722015 MHz


27.742
33.316
60.631
76.680
77.000
77.316
79.698
111.843
126.549
127.996
128.513
138.043
147.405
173.954
PPM
0
50
100
150
200
Ph
O
N
tBu
(S)-3ma
yz-5-115-C
Dec 1 2017
SOLVENT: cdcl3
NA = 100
F1 = 100.520592 MHz

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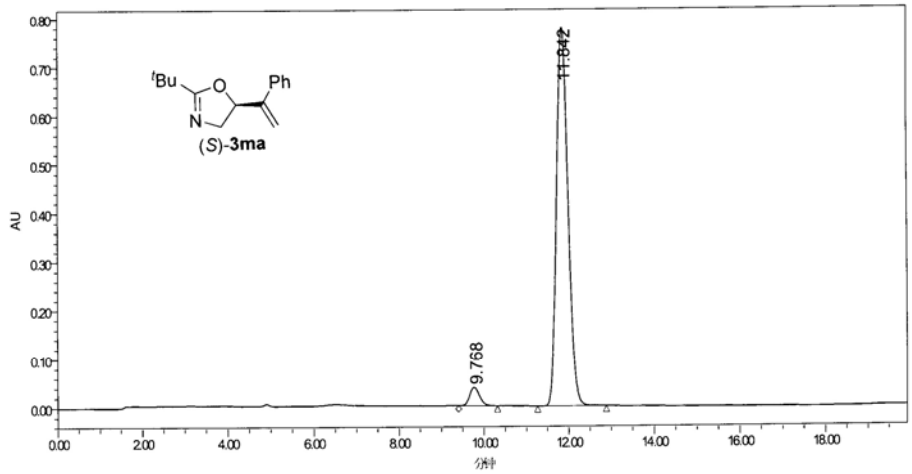
Project Name: defaults for copy

Reported by User: Breeze user (Breeze)

Breeze 2 HPLC System

SAMPLE INFORMATION

Sample Name:	yz-5-115-adh-100-1-1-214	Acquired By:	Breeze
Sample Type:	未知	Date Acquired:	2017/11/30 15:04:35 CST
Vial:	999	Acq. Method:	zgj1001
Injection #:	91	Date Processed:	2017/12/1 16:17:03 CST
Injection Volume:	10.00 ul	Channel Name:	W2489 ChA
Run Time:	25.00 Minutes	Channel Desc.:	W2489 ChA 214nm
Column Type:		Sample Set Name:	



	RT (min)	Area (微sec)	%Area	Height (微)	% Height
1	9.76[illegible]	614789	4.04	37666[illegible]	4.62
2	11.84[illegible]	14587240	95.9[illegible]	77826[illegible]	95.3[illegible]

Report Method: Individual Report ASC

Page: 1 (共计 1)

Printed: 2017/12/1 16:20:02 PRC

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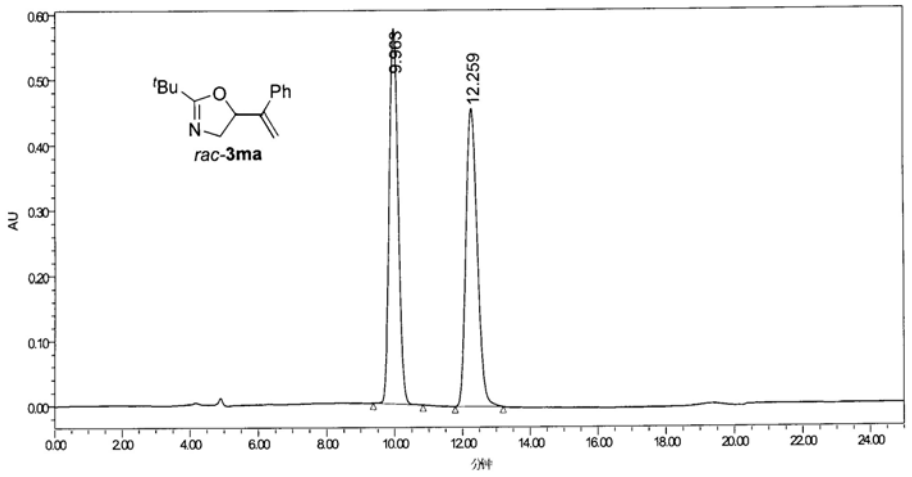
Project Name: defaults for copy

Reported by User: Breeze user (Breeze)

Breeze 2 HPLC System

SAMPLE INFORMATION

Sample Name:	yz-5-123-adh-100-1-1-214	Acquired By:	Breeze
Sample Type:	未知	Date Acquired:	2017/11/30 15:25:07 CST
Vial:	999	Acq. Method:	zgj1001
Injection #:	92	Date Processed:	2017/12/1 16:16:15 CST
Injection Volume:	10.00 ul	Channel Name:	W2489 ChA
Run Time:	25.00 Minutes	Channel Desc.:	W2489 ChA 214nm
Column Type:		Sample Set Name:	

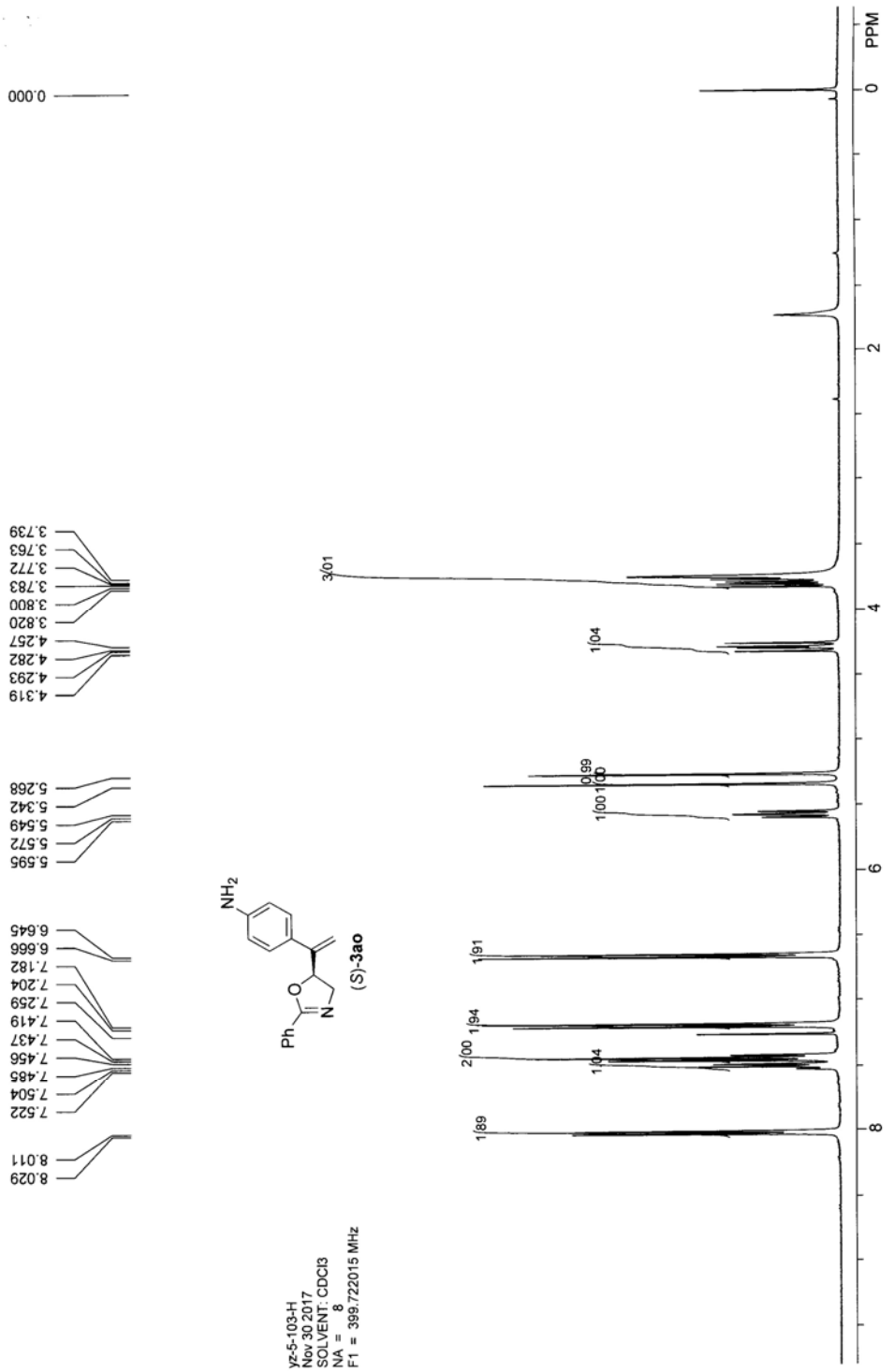


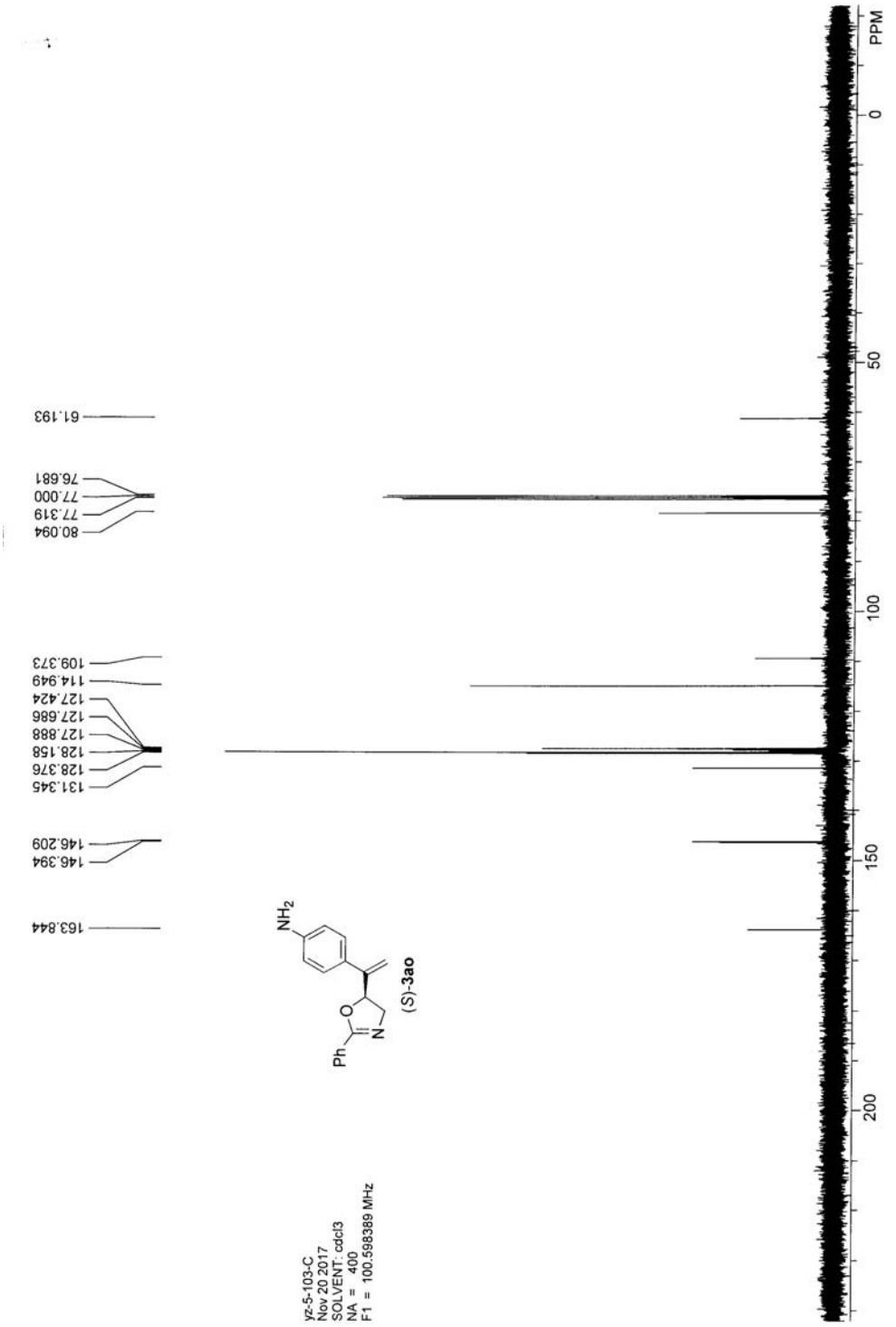
	RT (min)	Area (微伏*sec)	% Area	Height (微伏)	% Height
1	9.963	10609472	49.68	574233	55.69
2	12.259	10643546	50.32	456919	44.31

Report Method: Individual Report ASC

Page: 1 (共计 1)

Printed: 2017/12/1 16:19:19 PRC


0.000
3.739
3.763
3.772
3.783
3.800
3.820
4.257
4.282
4.293
4.319
5.268
5.342
5.549
5.572
5.595
6.645
6.666
7.182
7.204
7.259
7.419
7.437
7.456
7.485
7.504
7.522
8.011
8.029
3.01
1.04
0.99
1.00
1.00
1.91
1.94
2.00
1.04
1.89
NH2
O
N
Ph
(S)-3ao
yz-5-103-H
Nov 30 2017
SOLVENT: CDCl3
NA = 8
F1 = 399.722015 MHz
PPM
0
2
4
6
8

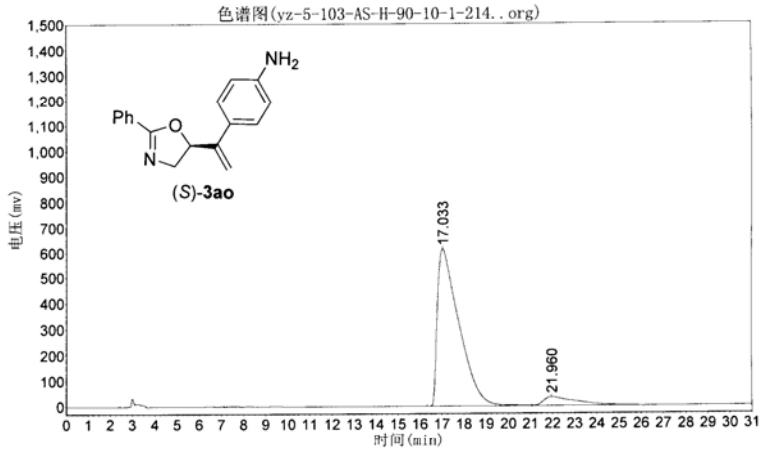

61.193
76.681
77.000
77.319
80.094
109.373
114.949
127.424
127.686
127.888
128.158
128.376
131.345
146.209
146.394
163.844
NH2
O
N
Ph
(S)-3ao
yz-5-103-C
Nov 20 2017
SOLVENT: cdcl3
NA = 400
F1 = 100.598389 MHz
PPM
0
50
100
150
200

yz-5-103-as-h-90-10-1-214

实验时间：2017-11-24,12:55:18
谱图文件:D:\zhuguangjiong\yz\20171123\yz-5-103-AS-H-90-10-1-214..org

报告时间：2017-11-24,19:05:11

实验内容简介：



分析结果表

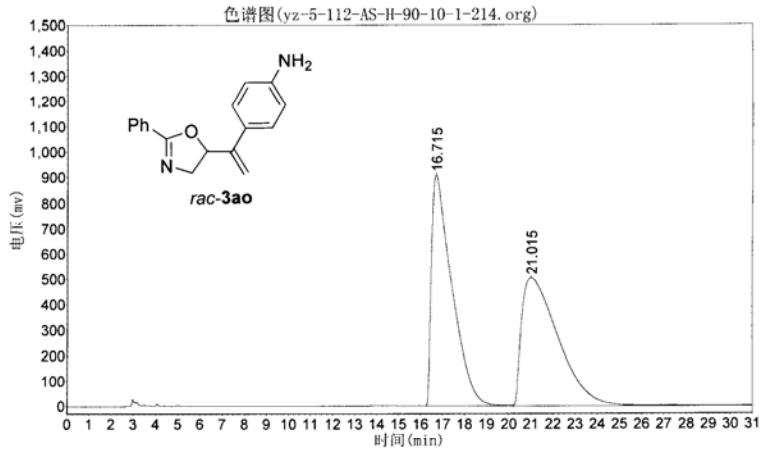
峰号	峰名	保留时间	峰高	峰面积	含量
1		17.033	614375.188	41527680.000	92.6101
2		21.960	33489.531	3313727.500	7.3899
总计			647864.719	44841407.500	100.0000

yz-5-112-as-h-90-10-1-214

实验时间：2017-11-24,11:45:54
谱图文件:D:\zhuguangjiong\yz\20171123\yz-5-112-AS-H-90-10-1-214.org

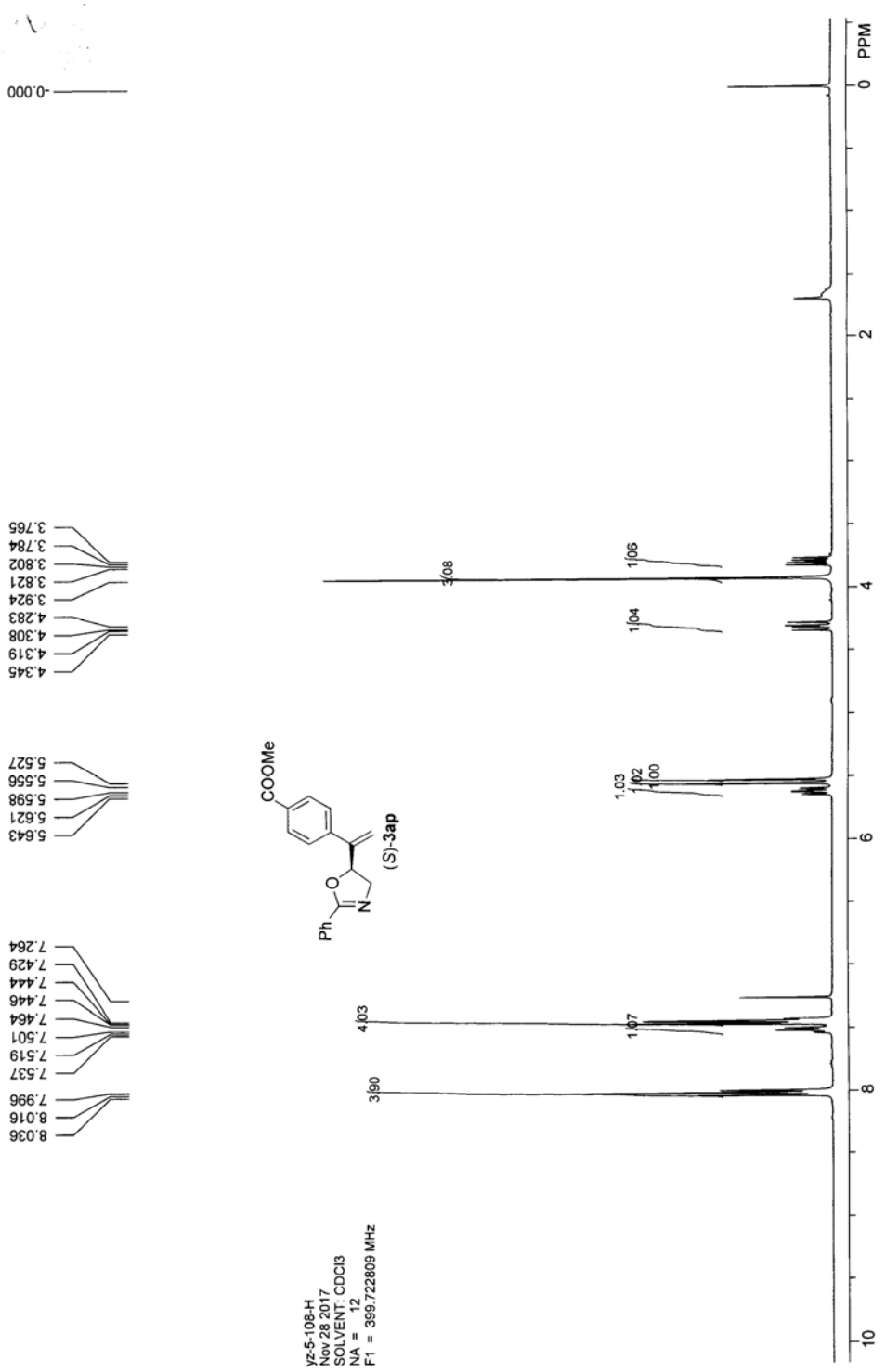
报告时间：2017-11-24,19:04:20

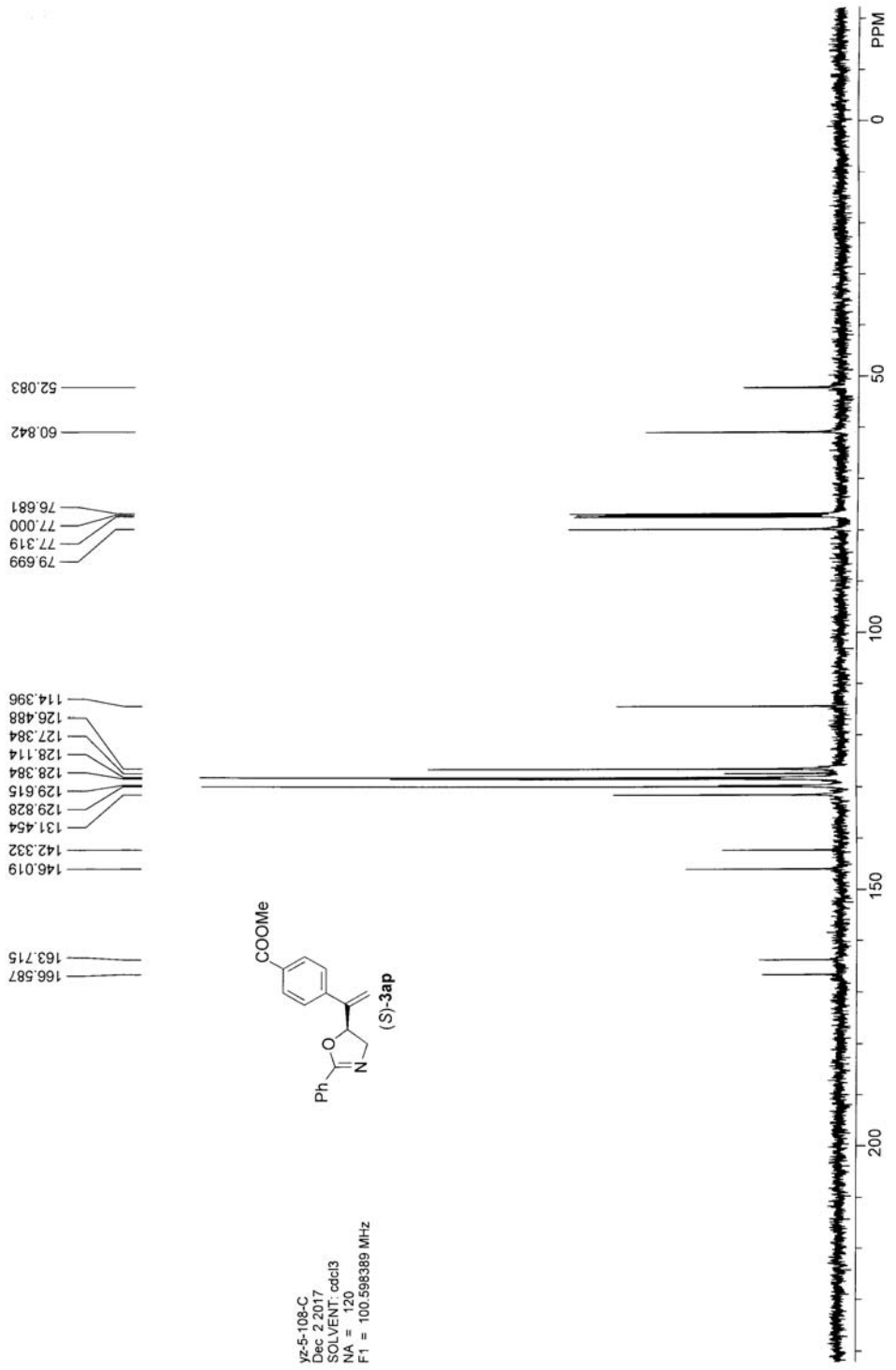
实验内容简介：



分析结果表

峰号	峰名	保留时间	峰高	峰面积	含量
1		16.715	908055.938	58841112.000	50.2756
2		21.015	503830.813	58195948.000	49.7244
总计			1411886.750	117037060.000	100.0000


0.000
3.765
3.784
3.802
3.821
3.924
4.283
4.308
4.319
4.345
5.527
5.556
5.598
5.621
5.643
7.264
7.429
7.444
7.446
7.464
7.501
7.519
7.537
7.996
8.016
8.036
COOMe
Ph
(S)-3ap
yz-5-108-H
Nov 28 2017
SOLVENT: CDCl3
NA = 12
F1 = 399.722809 MHz
PPM


52.083
60.842
76.681
77.000
77.319
79.699
114.396
126.488
127.384
128.114
128.384
129.615
129.828
131.454
142.332
146.019
163.715
166.587
COOMe
Ph
O
N
(S)-3ap
yz-5-108-C
Dec 2 2017
SOLVENT: cdcl3
NA = 120
F1 = 100.598389 MHz
PPM
0
50
100
150
200

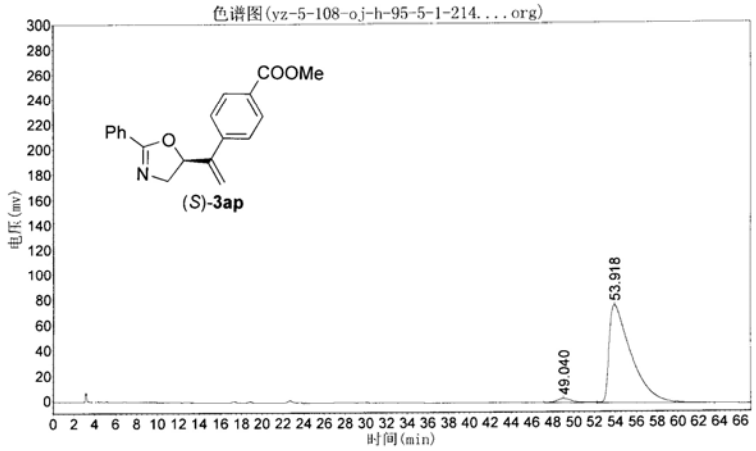
yz-5-108-oj-h-95-5-1-214

实验时间：2017-11-30,9:36:27
谱图文件:D:\zhuguangjiong\yz\20171129\yz-5-108-oj-h-95-5-1-214....org

报告时间：2017-11-30,14:18:54

实验内容简介：

色谱图(yz-5-108-oj-h-95-5-1-214....org)



分析结果表

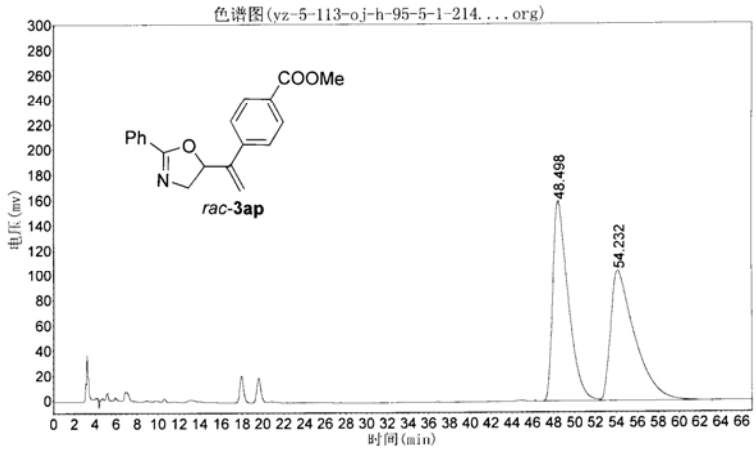
峰号	峰名	保留时间	峰高	峰面积	含量
1		49.040	3293.111	322342.250	2.7802
2		53.918	77049.086	11271889.000	97.2198
总计			80342.197	11594231.250	100.0000

yz-5-113-oj-h-95-5-1-214

实验时间：2017-11-30,10:45:35
谱图文件:D:\zhuguangjiong\yz\20171129\yz-5-113-oj-h-95-5-1-214....org

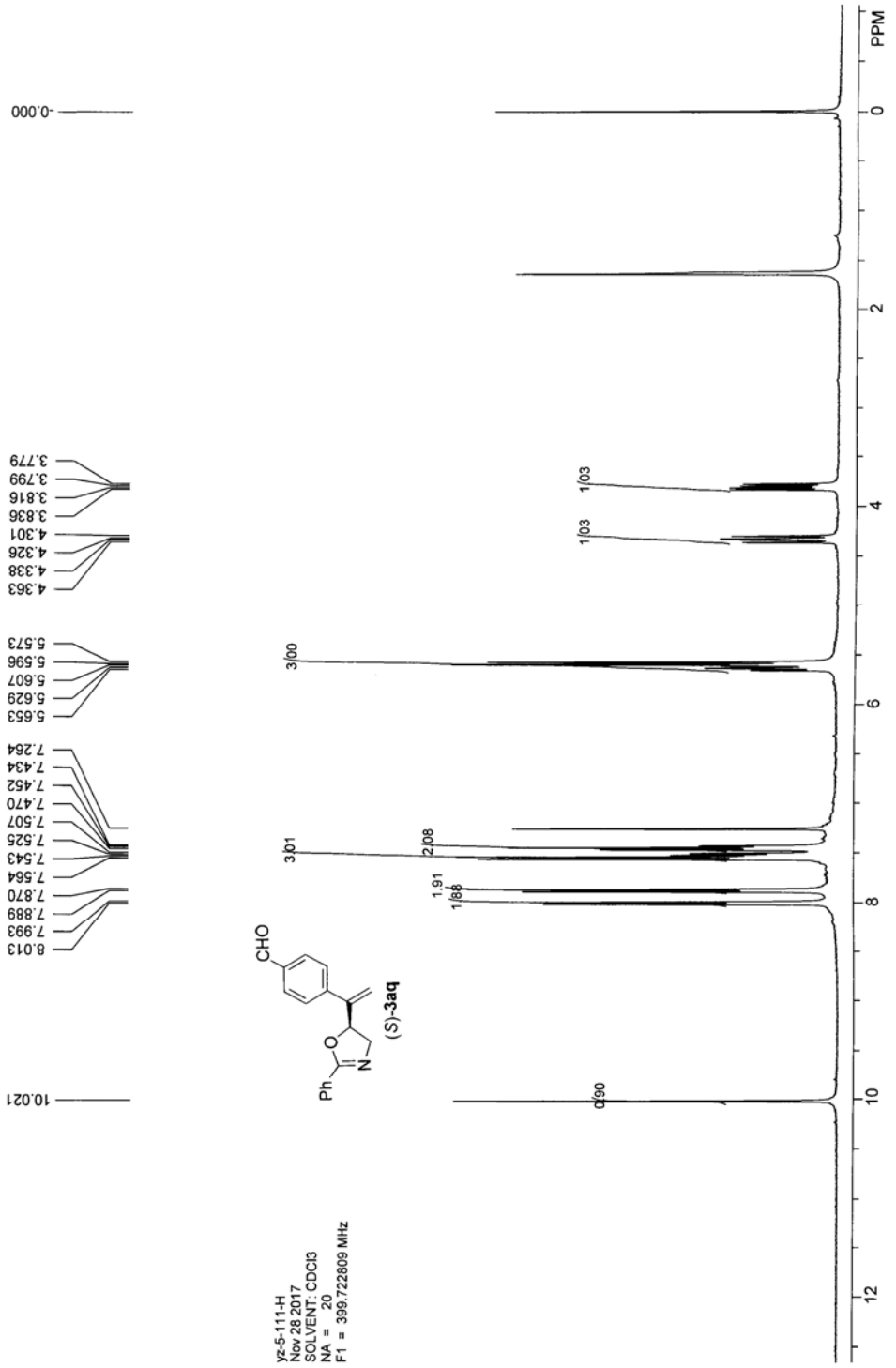
报告时间：2017-11-30,14:19:38

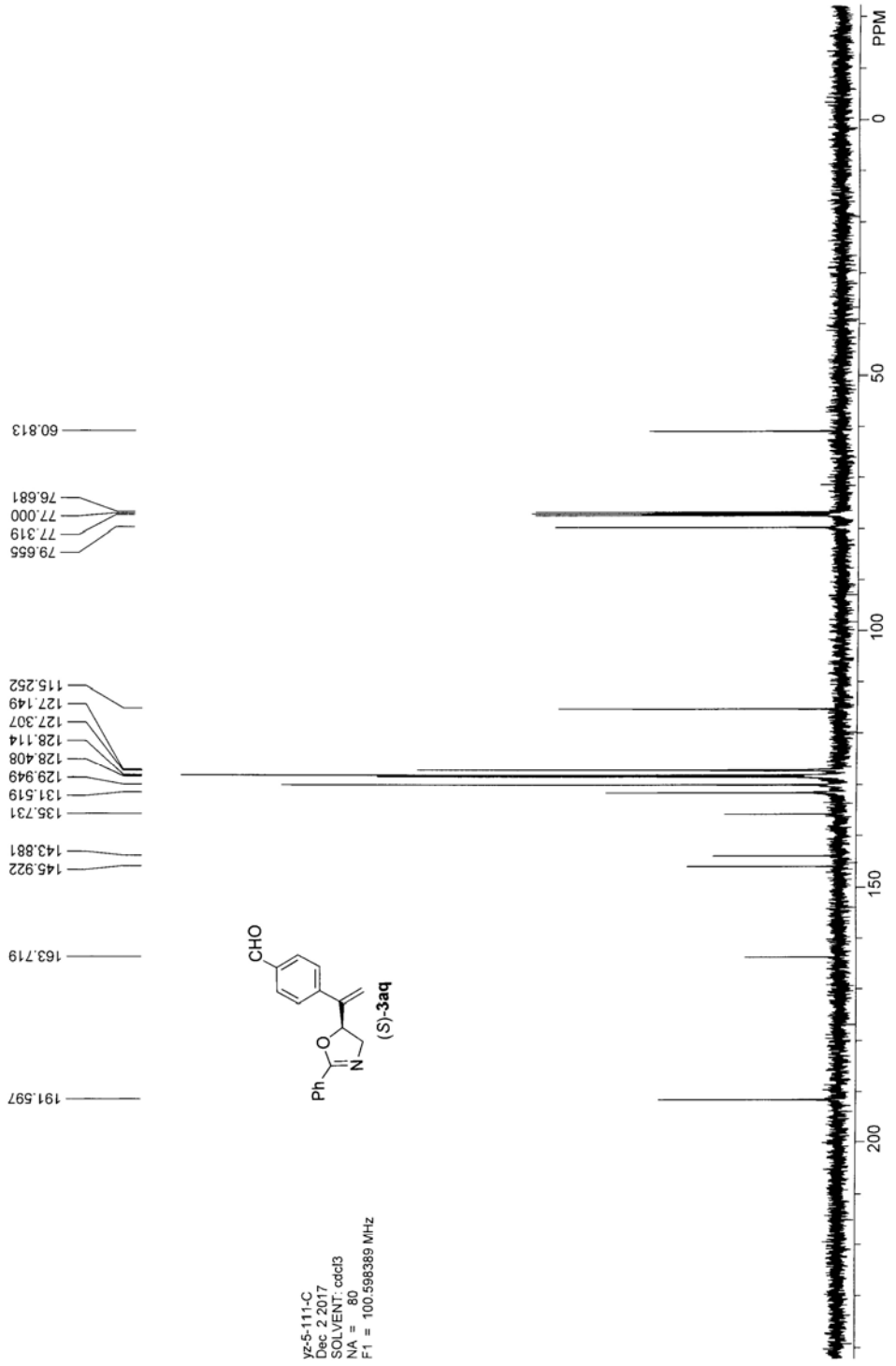
实验内容简介：



分析结果表

峰号	峰名	保留时间	峰高	峰面积	含量
1		48.498	159271.984	16445641.000	49.7091
2		54.232	103260.820	16638109.000	50.2909
总计			262532.805	33083750.000	100.0000


-0.000
3.779
3.799
3.816
3.836
4.301
4.326
4.338
4.363
5.573
5.596
5.607
5.629
5.653
7.264
7.434
7.452
7.470
7.507
7.525
7.543
7.564
7.870
7.889
7.993
8.013
10.021
3.00
3.01
2.08
1.91
1.88
1.03
1.03
0.90
PPM
0
2
4
6
8
10
12
CHO
Ph
O
N
(S)-3aq
yz-5-111-H
Nov 28 2017
SOLVENT: CDCl3
NA = 20
F1 = 399.722809 MHz


191.597
163.719
145.922
143.881
135.731
131.519
129.949
128.408
128.114
127.307
127.149
115.252
79.655
77.319
77.000
76.681
60.813
CHO
O
N
Ph
(S)-3aq
yz-5-111-C
Dec 2 2017
SOLVENT: cdcl3
NA = 80
F1 = 100.598389 MHz
PPM
0
50
100
150
200

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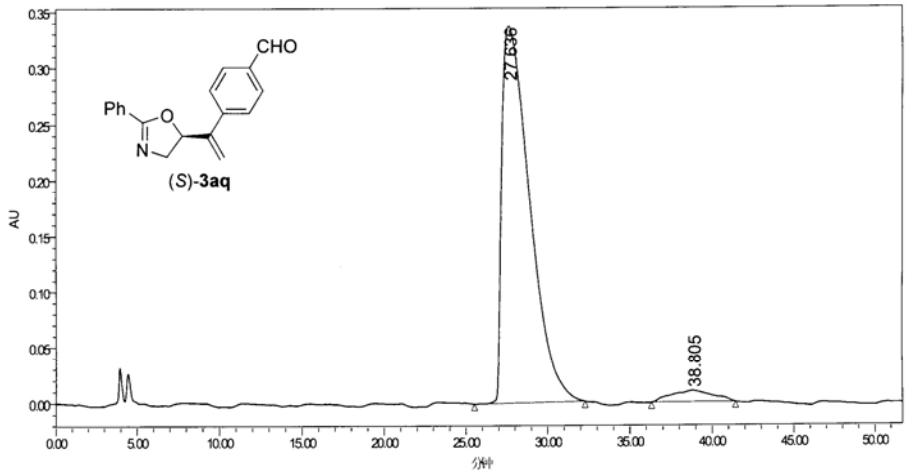
Project Name: defaults for copy

Reported by User: Breeze user (Breeze)

Breeze 2 HPLC System

SAMPLE INFORMATION

Sample Name:	yz-5-111-as-h-95-5-1-214	Acquired By:	Breeze
Sample Type:	标品	Date Acquired:	2017/11/30 18:18:44 CST
Vial:	999	Acq. Method:	zgj95
Injection #:	96	Date Processed:	2017/12/1 16:15:10 CST
Injection Volume:	10.00 ul	Channel Name:	W2489 ChA
Run Time:	200.00 Minutes	Channel Desc.:	W2489 ChA 214nm
Column Type:		Sample Set Name:	



	RT (min)	Area (碘sec)	%Area	Height (碘)	% Height
1	27.63E	39866221	95.78	336447	97.1C
2	38.80E	1757080	4.22	10066	2.9C

Report Method: Individual Report ASC

Page: 1 (共计 1)

Printed: 2017/12/1 16:17:46 PRC

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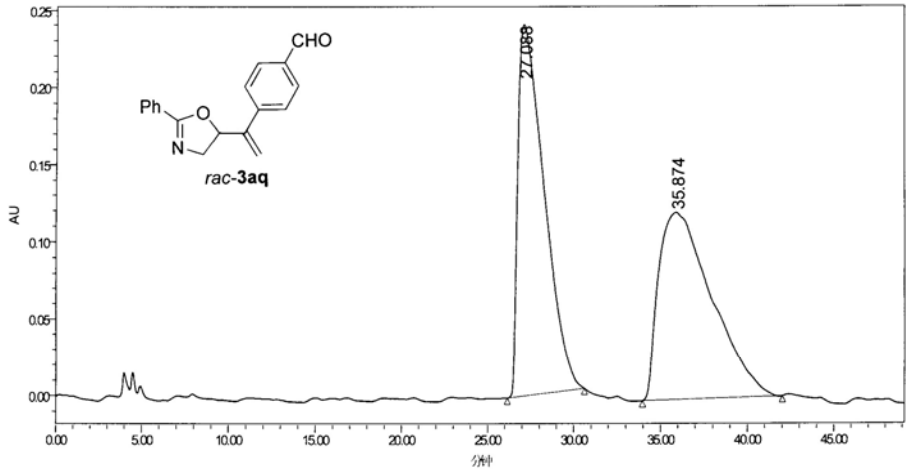
Project Name: defaults for copy

Reported by User: Breeze user (Breeze)

Breeze 2 HPLC System

SAMPLE INFORMATION

Sample Name:	yz-5-119-as-h-95-5-1-214	Acquired By:	Breeze
Sample Type:	标样	Date Acquired:	2017/11/30 17:24:13 CST
Vial:	999	Acq. Method:	zgj95
Injection #:	95	Date Processed:	2017/12/1 16:15:35 CST
Injection Volume:	10.00 ul	Channel Name:	W2489 ChA
Run Time:	200.00 Minutes	Channel Desc.:	W2489 ChA 214nm
Column Type:		Sample Set Name:	

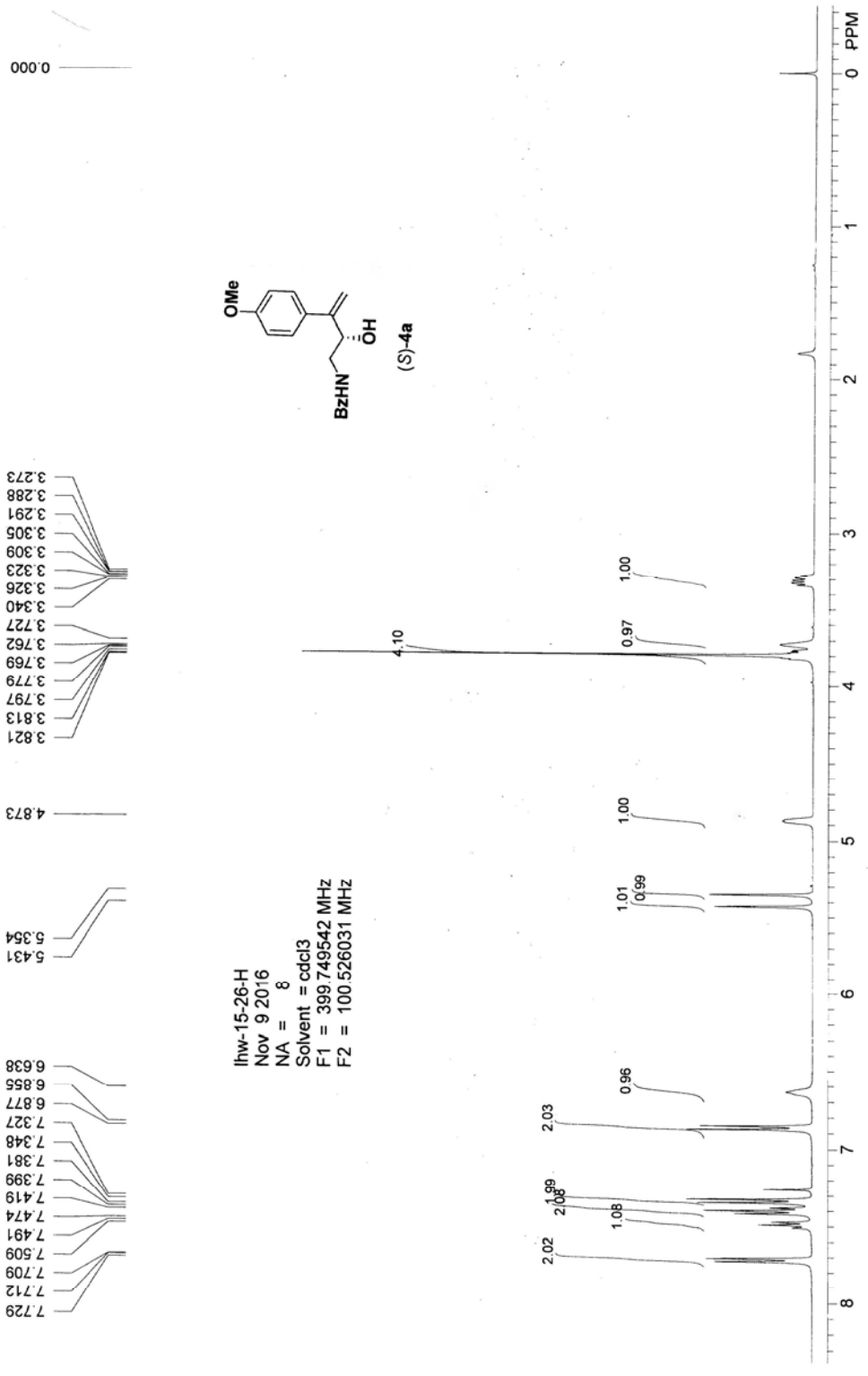


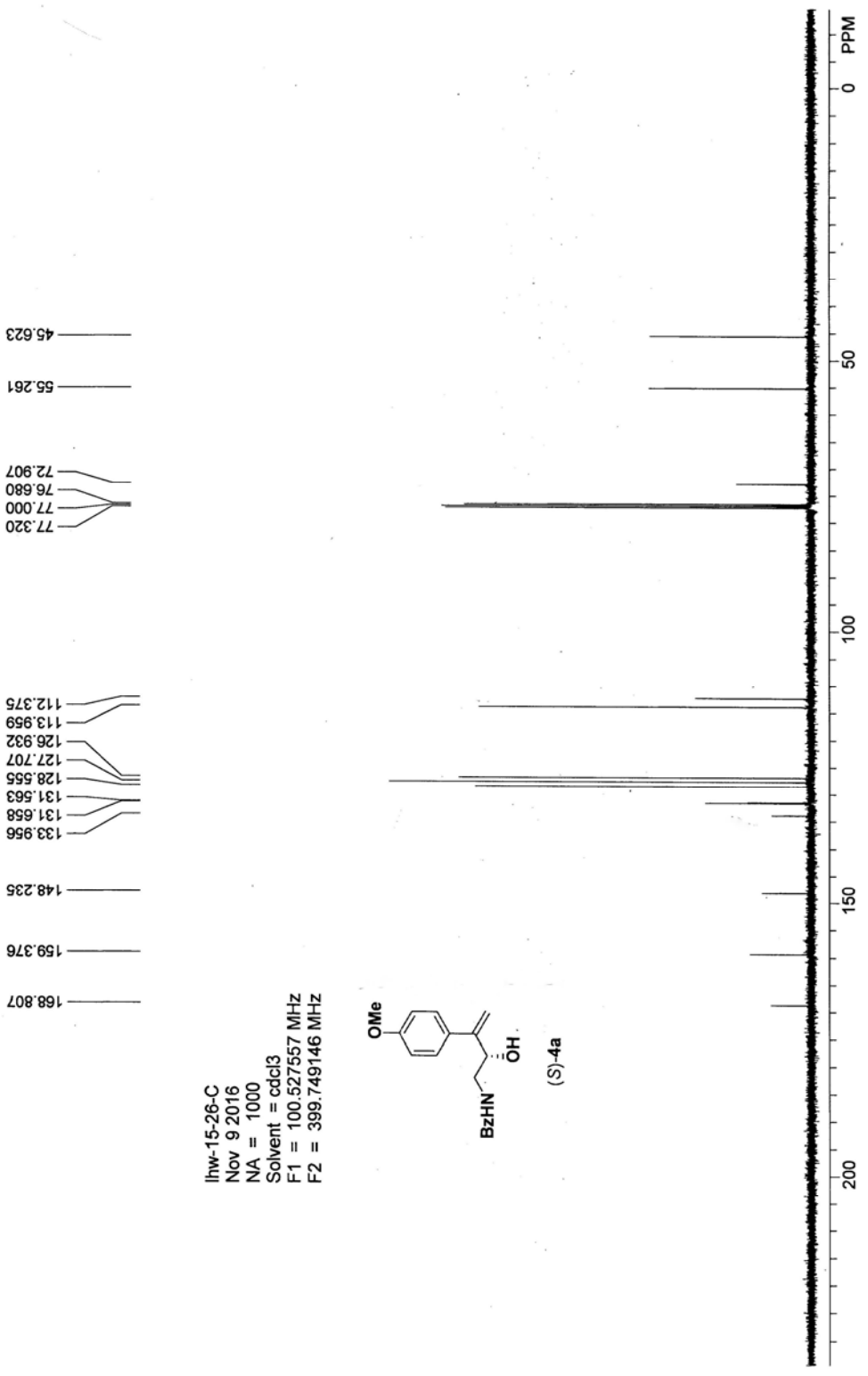
	RT (min)	Area (峰sec)	%Area	Height (峰)	% Height
1	27.088	2551403E	49.6E	240561C	66.4E
2	35.874	2587314C	50.3E	121443C	33.5E

Report Method: Individual Report ASC

Page: 1 (共计 1)

Printed: 2017/12/1 16:18:46 PRC

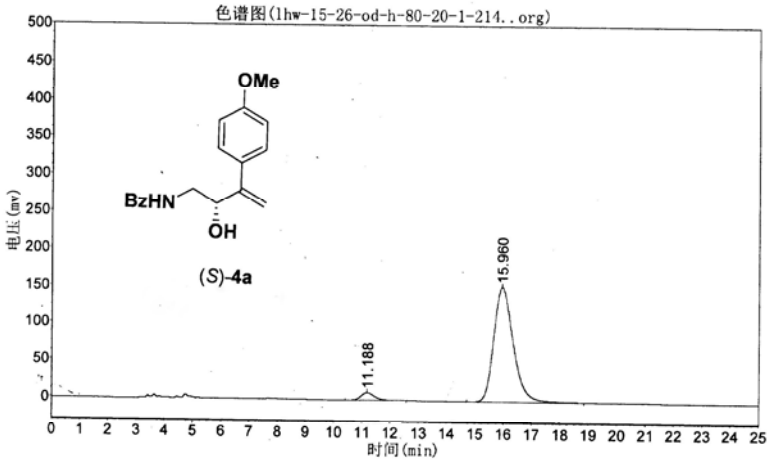

lhw-15-26-H
Nov 9 2016
NA = 8
Solvent = cdcl3
F1 = 399.749542 MHz
F2 = 100.526031 MHz
OMe
OH
BzHN
(S)-4a
PPM
0.000
3.273
3.288
3.291
3.305
3.309
3.323
3.326
3.340
3.727
3.762
3.769
3.779
3.797
3.813
3.821
4.873
5.354
5.431
6.638
6.855
6.877
7.327
7.348
7.381
7.399
7.419
7.474
7.491
7.509
7.709
7.712
7.729
4.10
0.97
1.00
1.00
1.01
0.99
0.96
2.03
1.99
2.08
1.08
2.02


lhw-15-26-C
Nov 9 2016
NA = 1000
Solvent = cdcl3
F1 = 100.527557 MHz
F2 = 399.749146 MHz
OMe
OH
BzHN
(S)-4a
168.807
159.376
148.235
133.956
131.658
131.563
128.555
127.707
126.932
113.959
112.375
77.320
77.000
76.680
72.907
55.261
45.623
PPM
0
50
100
150
200

lhw-15-26-od-h-80-20-1-214

实验时间：2016-11-09,14:29:29　　报告时间：2016-11-09,15:24:46
谱图文件:D:\zhuguangjiong\lhw\20161109\lhw-15-26-od-h-80-20-1-214..org

实验内容简介：



分析结果表

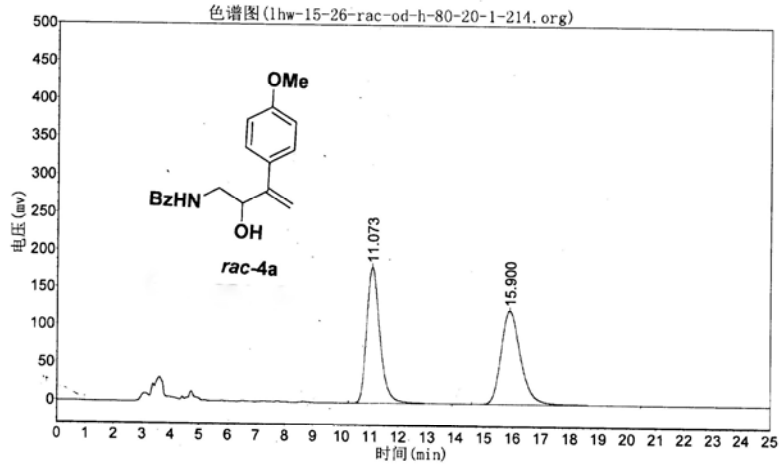
峰号	峰名	保留时间	峰高	峰面积	含量
1		11.188	10292.053	340667.031	4.4610
2		15.960	154216.375	7295846.000	95.5390
总计			164508.428	7636513.031	100.0000

lhw-15-26-rac-od-h-80-20-1-214

实验时间：2016-11-09,14:55:13
谱图文件:D:\zhuguangjiong\lhw\20161109\lhw-15-26-rac-od-h-80-20-1-214.org

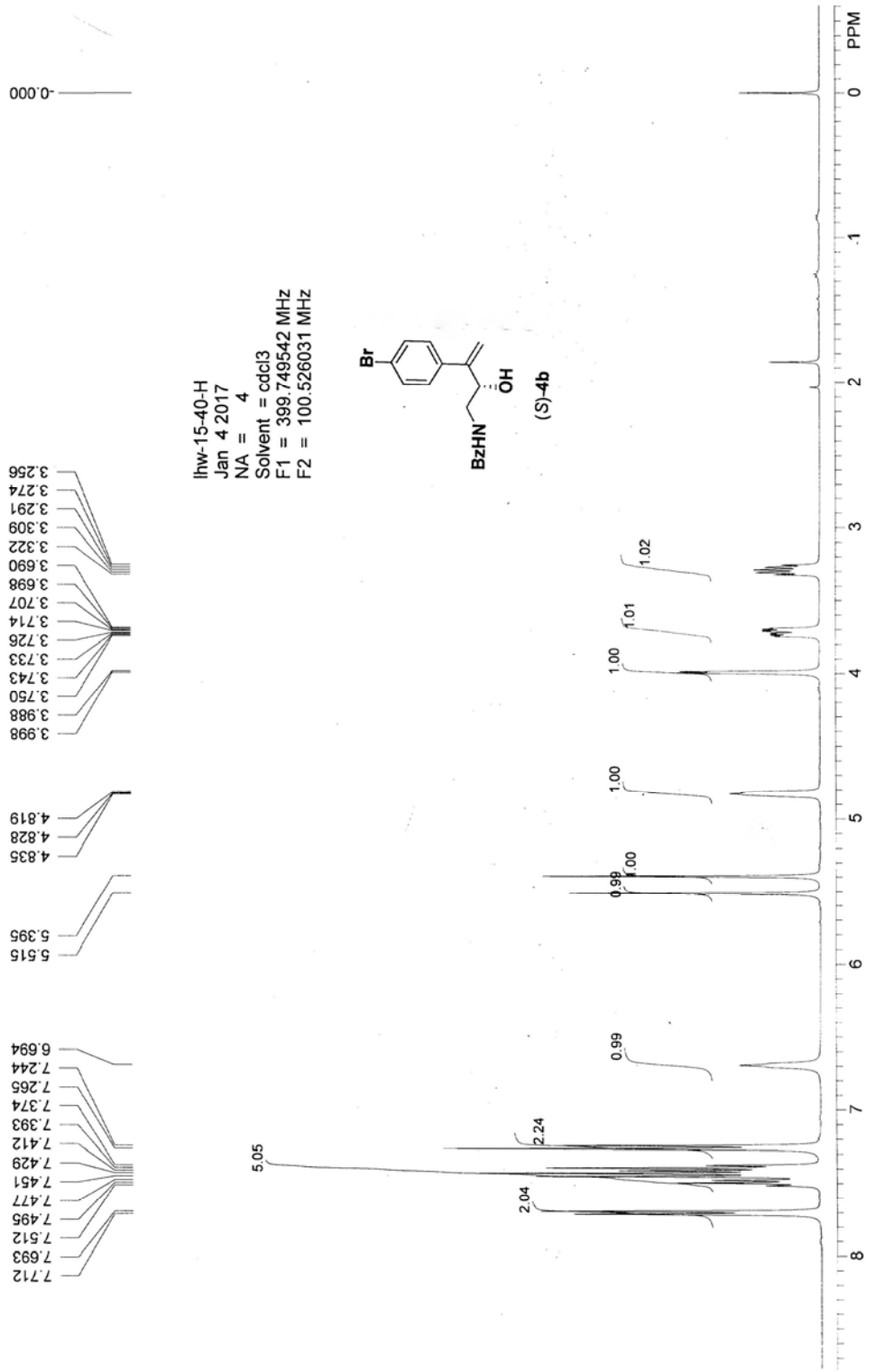
报告时间：2016-11-09,15:23:56

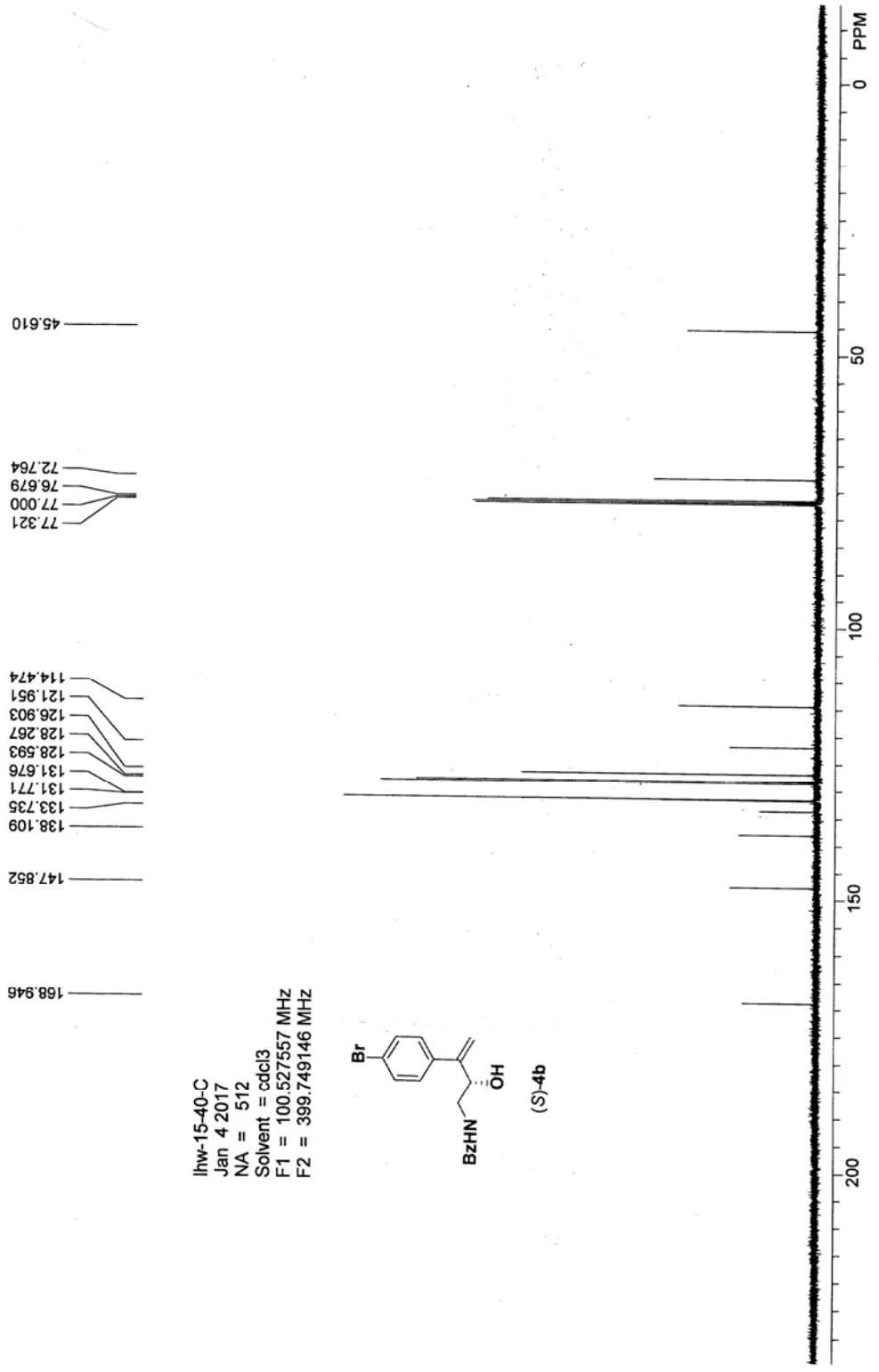
实验内容简介：



分析结果表

峰号	峰名	保留时间	峰高	峰面积	含量
1		11.073	180476.375	5830138.500	49.7798
2		15.900	123526.859	5881722.500	50.2202
总计			304003.234	11711861.000	100.0000

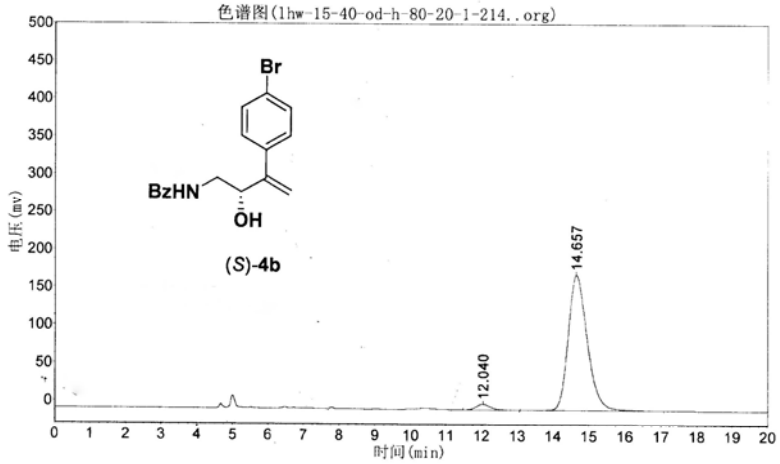

lhw-15-40-H
Jan 4 2017
NA = 4
Solvent = cdcl3
F1 = 399.749542 MHz
F2 = 100.526031 MHz
Br
OH
BzHN
(S)-4b
PPM
0
1
2
3
4
5
6
7
8
5.05
2.24
2.04
1.02
1.01
1.00
1.00
0.99
1.00
0.99
-0.000
3.256
3.274
3.291
3.309
3.322
3.690
3.698
3.707
3.714
3.726
3.733
3.743
3.750
3.988
3.998
4.819
4.828
4.835
5.395
5.515
6.694
7.244
7.265
7.374
7.393
7.412
7.429
7.451
7.477
7.495
7.512
7.693
7.712


lhw-15-40-C
Jan 4 2017
NA = 512
Solvent = cdcl3
F1 = 100.527557 MHz
F2 = 399.749146 MHz
Br
OH
BzHN
(S)-4b
168.946
147.852
138.109
133.735
131.771
131.676
128.593
128.267
126.903
121.951
114.474
77.321
77.000
76.679
72.764
45.610
PPM
0
50
100
150
200

1hw-15-40-od-h-80-20-1-214

实验时间：2016-12-30,13:59:22　　报告时间：2016-12-30,18:01:36
谱图文件:F:\zhuguangjiong\lhw\20161230\1hw-15-40-od-h-80-20-1-214..org

实验内容简介：



分析结果表

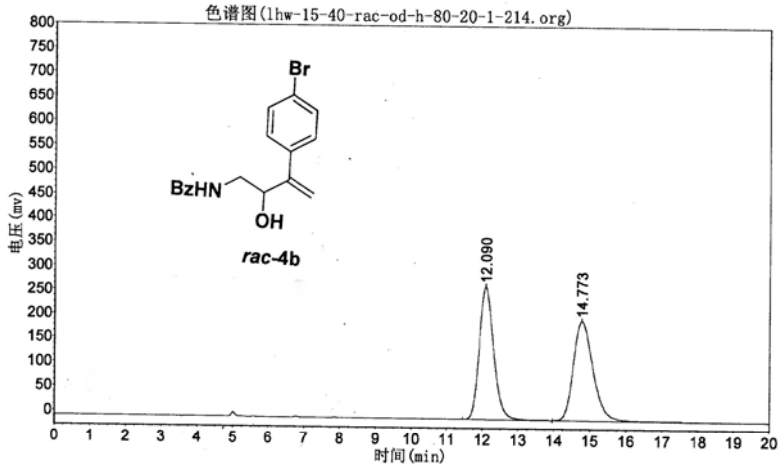
峰号	峰名	保留时间	峰高	峰面积	含量
1		12.040	7751.575	220743.609	3.2162
2		14.657	178547.641	6642765.000	96.7838
总计			186299.216	6863508.609	100.0000

lhw-15-40-rac-od-h-80-20-1-214

实验时间：2016-12-30,13:04:15
谱图文件:F:\zhuguangjiong\lhw\20161230\lhw-15-40-rac-od-h-80-20-1-214.org

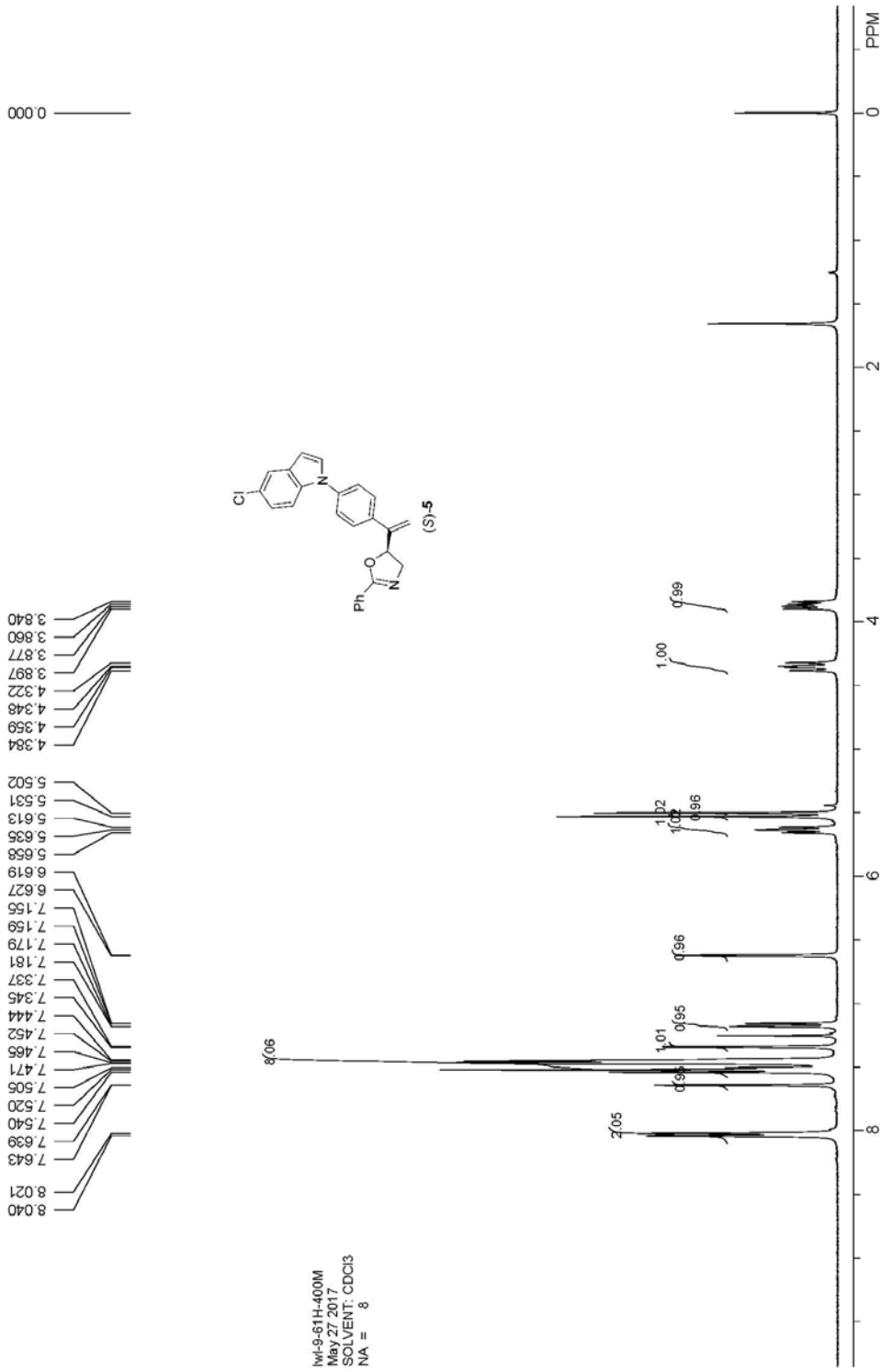
报告时间：2016-12-30,17:59:43

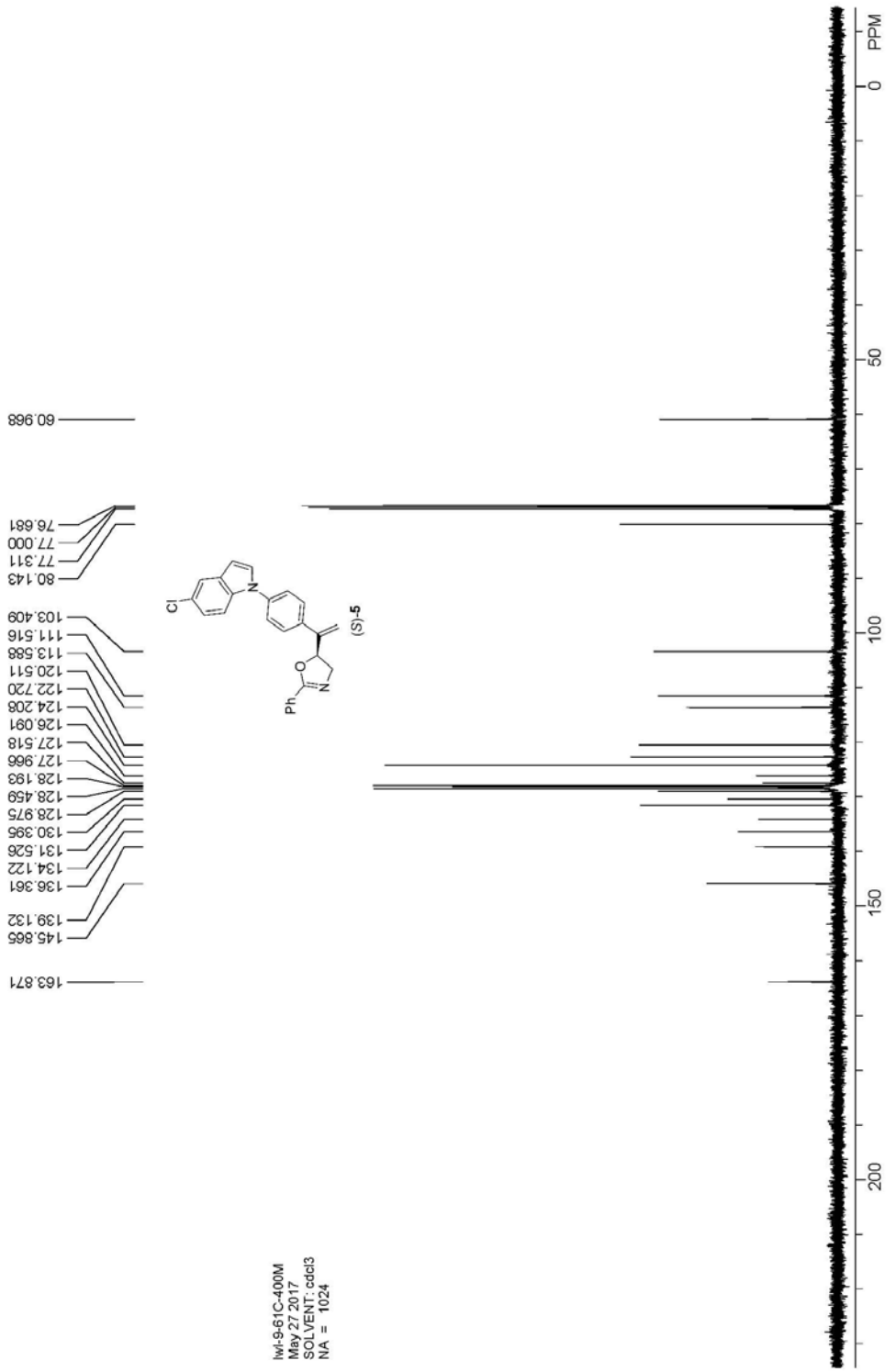
实验内容简介：



分析结果表

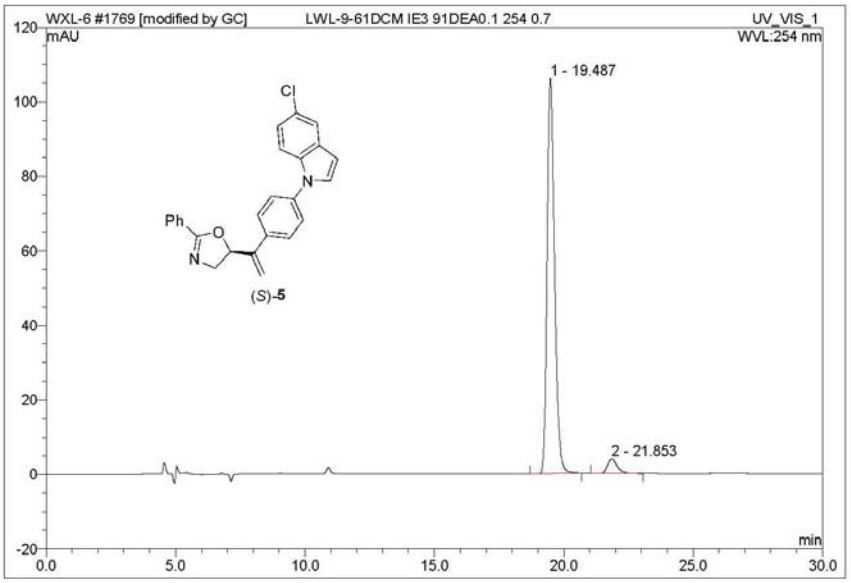
峰号	峰名	保留时间	峰高	峰面积	含量
1		12.090	273304.844	7748812.000	49.7928
2		14.773	203963.750	7813300.500	50.2072
总计			477268.594	15562112.500	100.0000


0.000
3.840
3.860
3.877
3.897
4.322
4.348
4.359
4.384
5.502
5.531
5.613
5.635
5.658
6.619
6.627
7.155
7.159
7.179
7.181
7.337
7.345
7.444
7.452
7.465
7.471
7.505
7.520
7.540
7.639
7.643
8.021
8.040
Cl
N
Ph
O
N
(S)-5
8.06
2.05
1.01
0.95
0.96
1.00
0.99
1.02
1.02
0.96
0.96
lwl-9-61H-400M
May 27 2017
SOLVENT: CDCl3
NA = 8
PPM
0
2
4
6
8


60.968
76.681
77.000
77.311
80.143
103.409
111.516
113.588
120.511
122.720
124.208
126.091
127.518
127.966
128.183
128.459
128.975
130.396
131.526
134.122
136.361
139.132
145.865
163.871
Cl
N
O
N
Ph
(S)-5
lwl-9-61C-400M
May 27 2017
SOLVENT: cdcl3
NA = 1024
PPM
0
50
100
150
200

1769 LWL-9-61DCM IE3 91DEA0.1 254 0.7

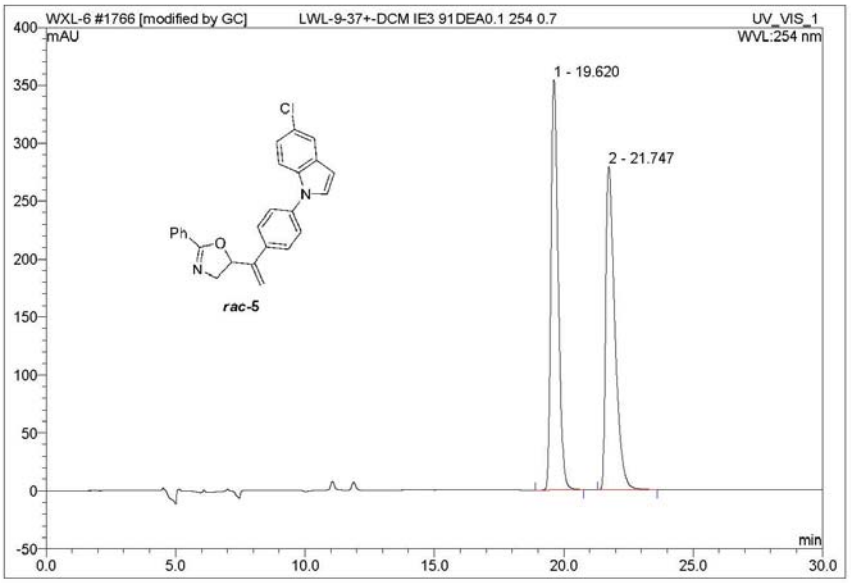
Sample Name:	**LWL-9-61DCM IE3 91DEA0.1 254 0.7**	*Injection Volume:*	**3.0**
Vial Number:	**RE4**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**254**
Control Program:	**201701-1**	*Bandwidth:*	**n.a.**
Quantif. Method:	**201701**	*Dilution Factor:*	**1.0000**
Recording Time:	**2017/5/24 19:38**	*Sample Weight:*	**1.0000**
Run Time (min):	**30.00**	*Sample Amount:*	**1.0000**



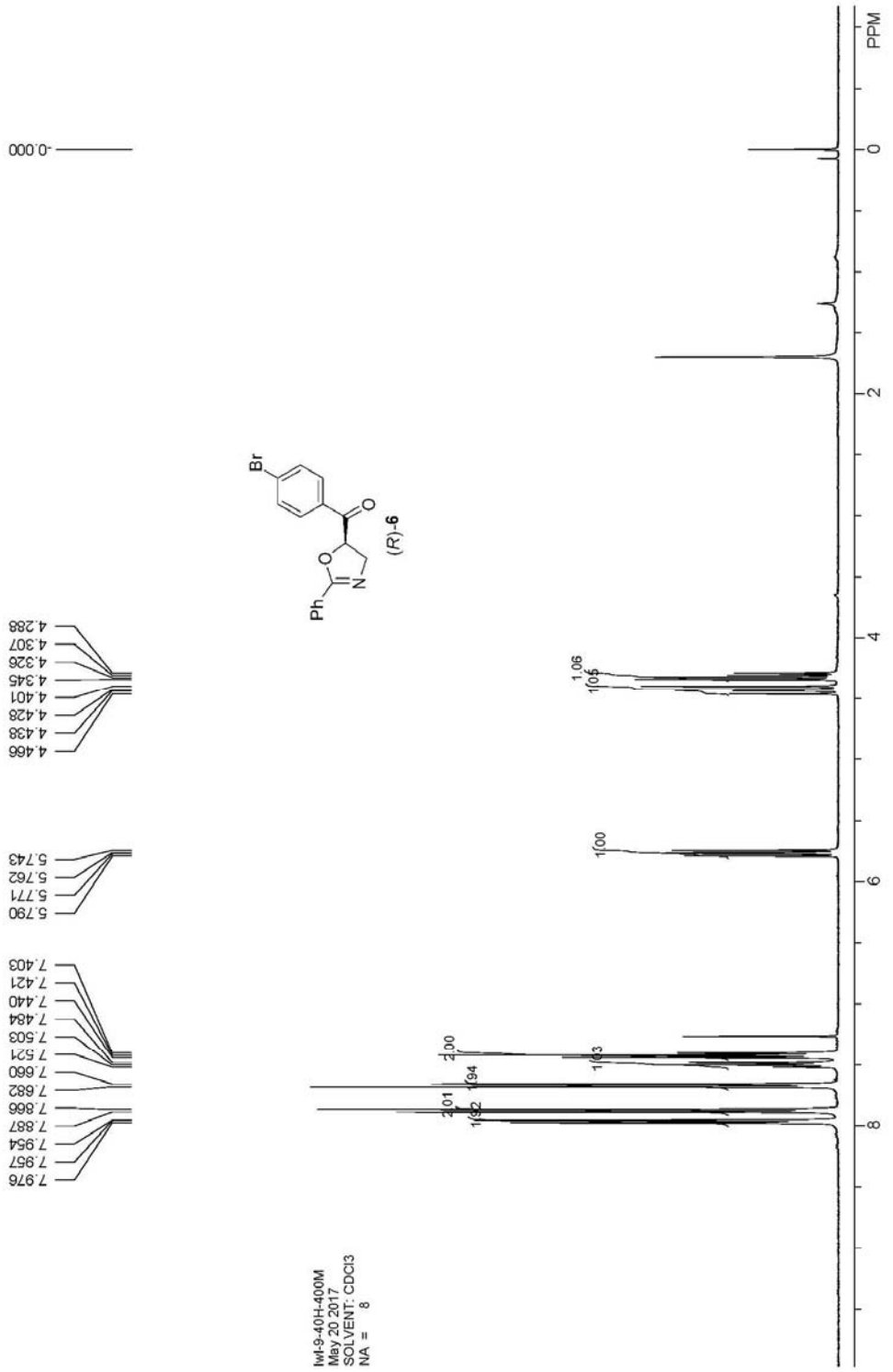
No.	Ret.Time min	Peak Name	Height mAU	Area mAU*min	Rel.Area %	Amount	Type
1	19.49	n.a.	106.050	35.059	95.49	n.a.	BMB*
2	21.85	n.a.	3.839	1.655	4.51	n.a.	BMB*
Total:			109.889	36.714	100.00	0.000	

1766 LWL-9-37+-DCM IE3 91DEA0.1 254 0.7

Sample Name:	**LWL-9-37+-DCM IE3 91DEA0.1 254 0.7**	*Injection Volume:*	**3.0**
Vial Number:	**RE1**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**254**
Control Program:	**201701-1**	*Bandwidth:*	**n.a.**
Quantif. Method:	**201701**	*Dilution Factor:*	**1.0000**
Recording Time:	**2017/5/24 18:04**	*Sample Weight:*	**1.0000**
Run Time (min):	**30.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height mAU	Area mAU*min	Rel.Area %	Amount	Type
1	19.62	n.a.	353.939	114.405	49.97	n.a.	BMB*
2	21.75	n.a.	279.219	114.521	50.03	n.a.	BMB
Total:			633.158	228.926	100.00	0.000	


Br
O
O
N
Ph
(R)-6
lwl-9-40H-400M
May 20 2017
SOLVENT: CDCl3
NA = 8
PPM
0
2
4
6
8
1.06
1.05
1.00
2.00
1.03
1.94
2.01
1.92
7.976
7.957
7.954
7.887
7.866
7.682
7.660
7.521
7.503
7.484
7.440
7.421
7.403
5.790
5.771
5.762
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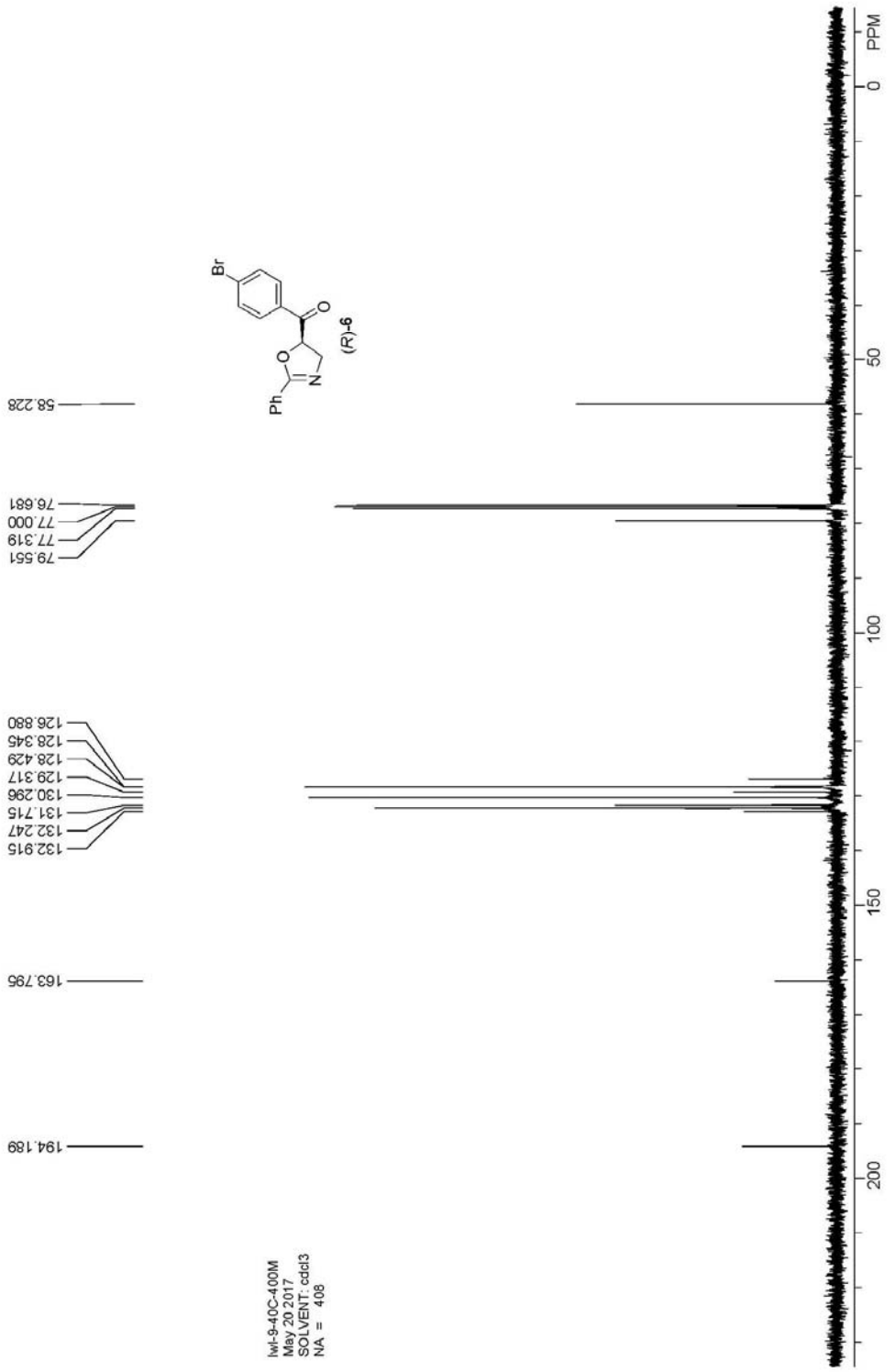
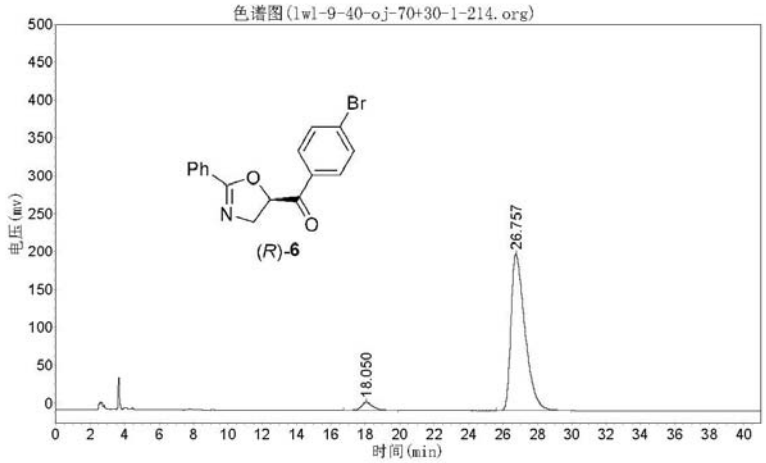
4.466
4.438
4.428
4.401
4.345
4.326
4.307
4.288
-0.000


Br
O
O
N
Ph
(R)-6
58.228
76.681
77.000
77.319
79.551
126.880
128.345
128.429
129.317
130.296
131.715
132.247
132.915
163.796
194.189
PPM
0
50
100
150
200
lwl-9-40C-400M
May 20 2017
SOLVENT: cdd3
NA = 408

lwl-9-40

实验时间：2017-4-10,12:02:06　　报告时间：2017-5-31,14:45:42
谱图文件:F:\slf\lwl\2017-4-10\lwl-9-40-oj-70+30-1-214.org

实验内容简介：
oj-h　　70:30
214nm　　1.0ml/min



分析结果表

峰号	峰名	保留时间	峰高	峰面积	含量
1		18.050	10396.275	503601.844	4.1432
2		26.757	206053.266	11651405.000	95.8568
总计			216449.541	12155006.844	100.0000

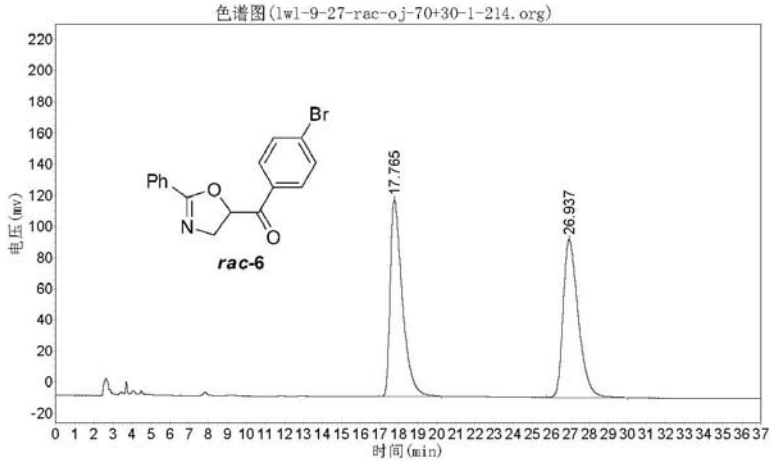
lwl-9-27-rac

实验时间：2017-04-10,11:15:58
谱图文件:F:\slf\lwl\2017-4-10\lwl-9-27-rac-oj-70+30-1-214.org

报告时间：2017-04-10,12:05:10

实验内容简介：
oj-h 70:30
214nm 1.0ml/min

色谱图(lwl-9-27-rac-oj-70+30-1-214.org)



分析结果表

峰号	峰名	保留时间	峰高	峰面积	含量
1		17.765	126566.875	5636427.000	50.0930
2		26.937	101688.938	5615507.000	49.9070
总计			228255.813	11251934.000	100.0000