

Supporting Information

K₃PO₄-Promoted Domino Reactions: Distereoselective Synthesis of *trans*-2,3-Dihydrobenzofurans from Salicyl *N*-*tert*-Butanesulfinyl imines and Sulfur Ylides

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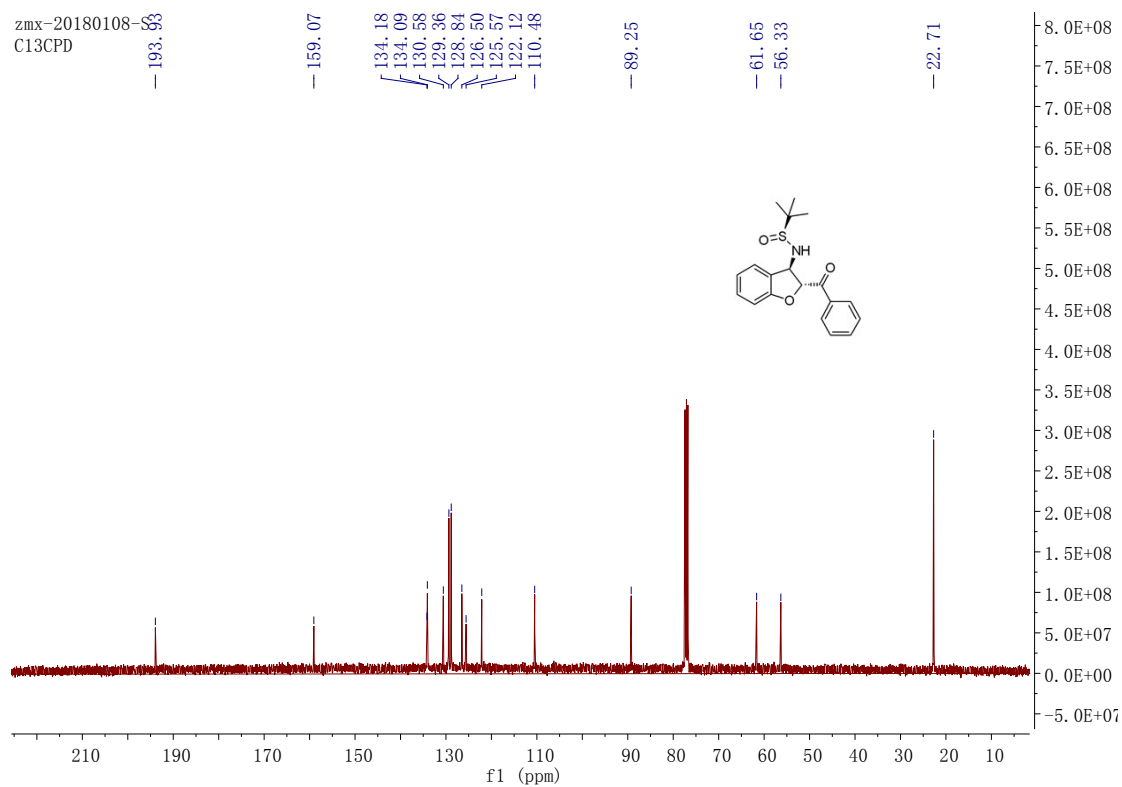
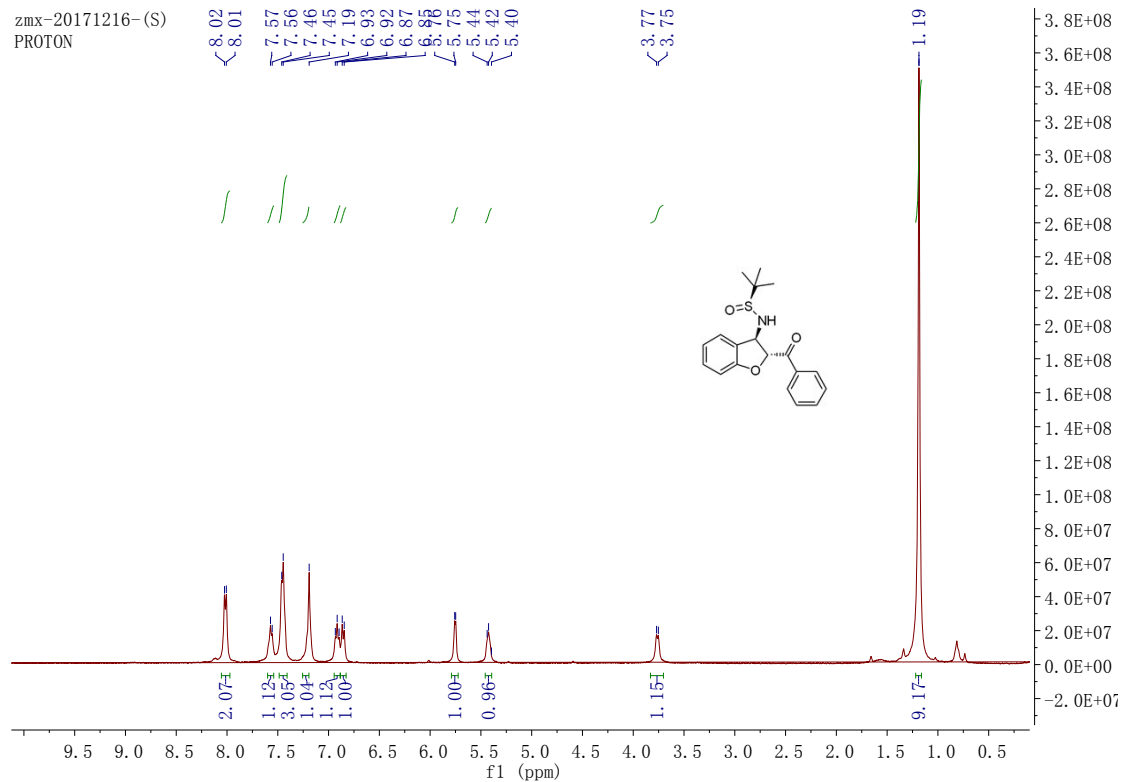
Table of Contents

Copies of ¹ H NMR and ¹³ C NMR spectra of <i>trans</i> -(<i>Ss</i> , <i>2R</i> , <i>3R</i>)- 3a-3l	S2
Copies of ¹ H NMR and ¹³ C NMR spectra of <i>trans</i> -(<i>Rs</i> , <i>2S</i> , <i>3S</i>)- 3a-3n	S14
Copies of ¹ H NMR and ¹³ C NMR spectra of <i>cis</i> -(<i>Ss</i> , <i>2R</i> , <i>3R</i>)- 3a	S26
Copy of ¹ H NMR and ¹³ C NMR spectra of 4a	S27
X-ray crystallographic data of compound <i>trans</i> - 3a	S28
X-ray crystallographic data of compound <i>trans</i> - 3d	S30

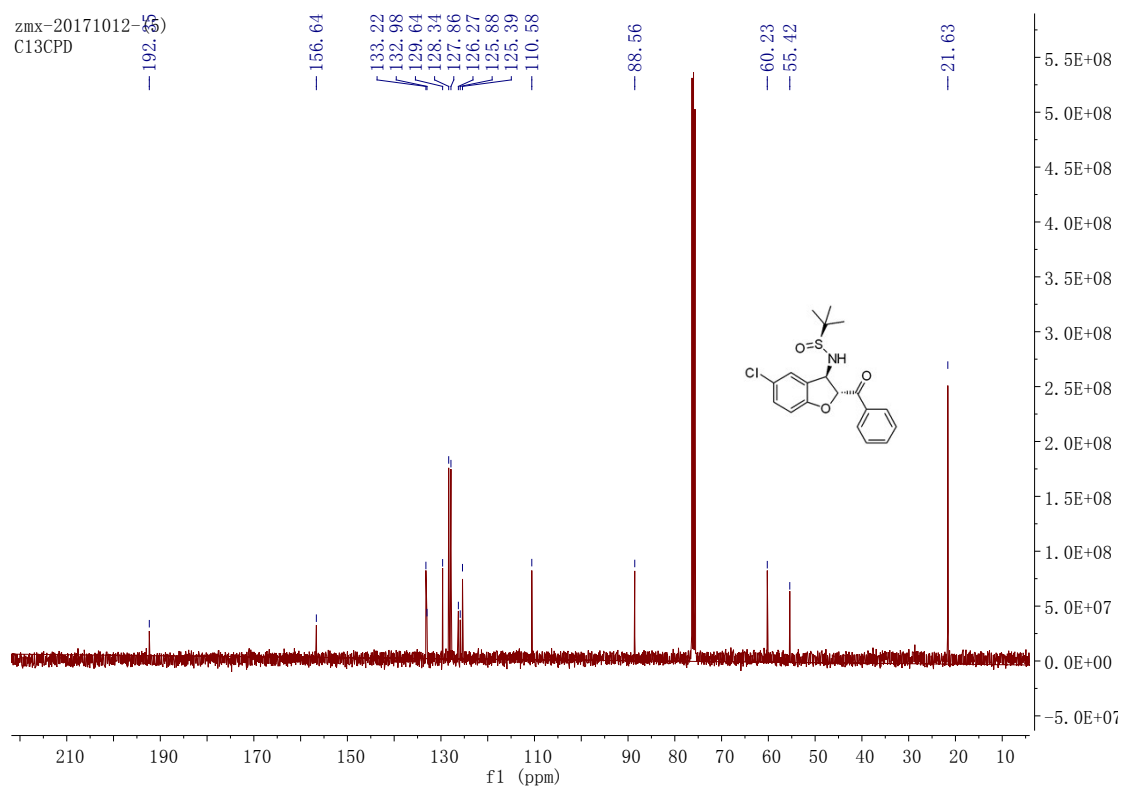
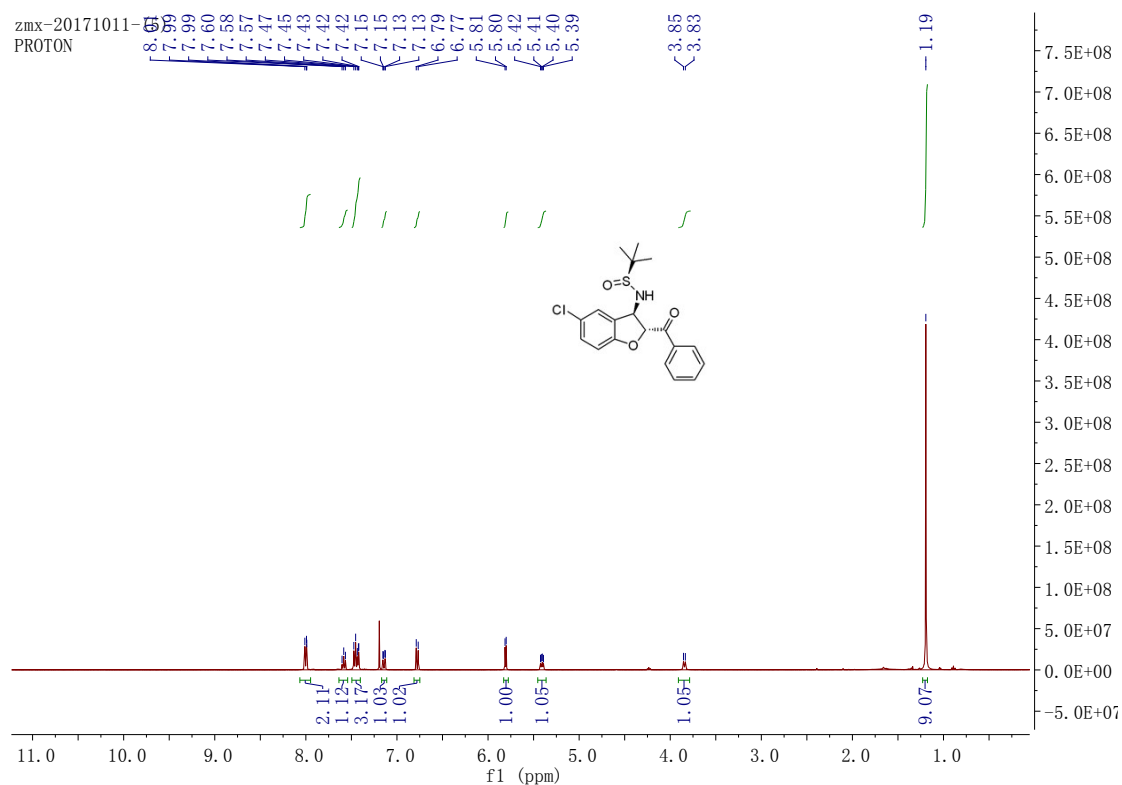
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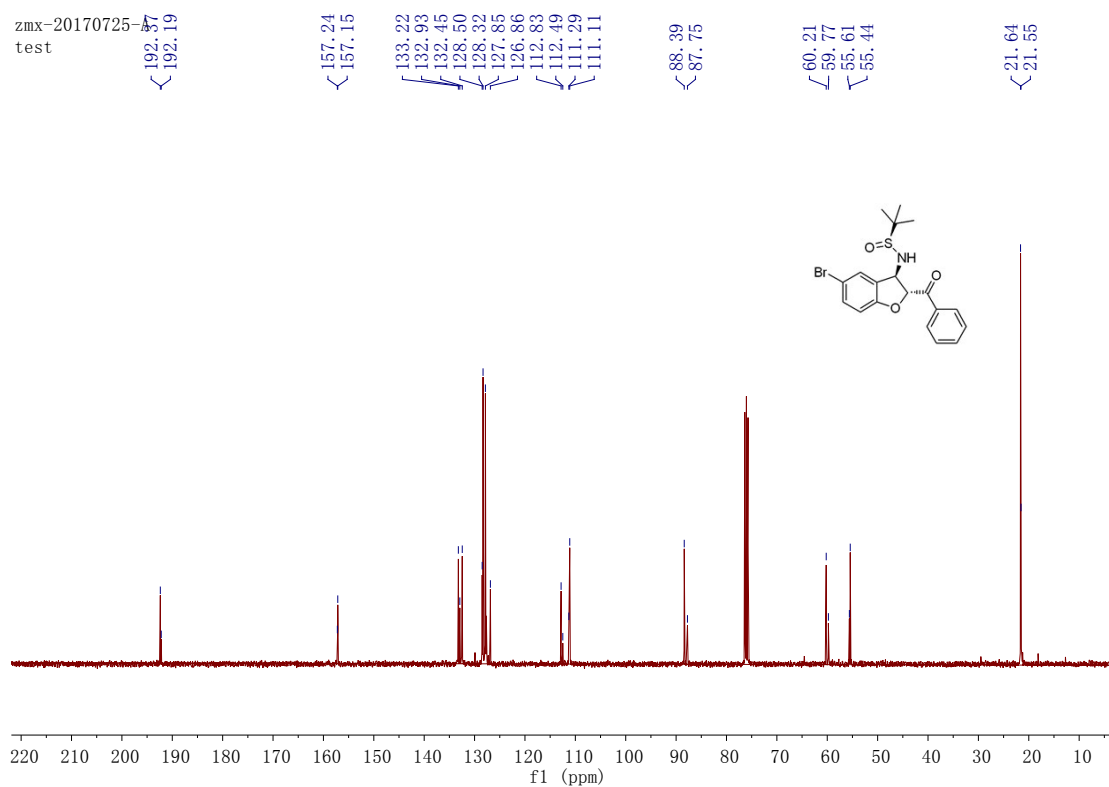
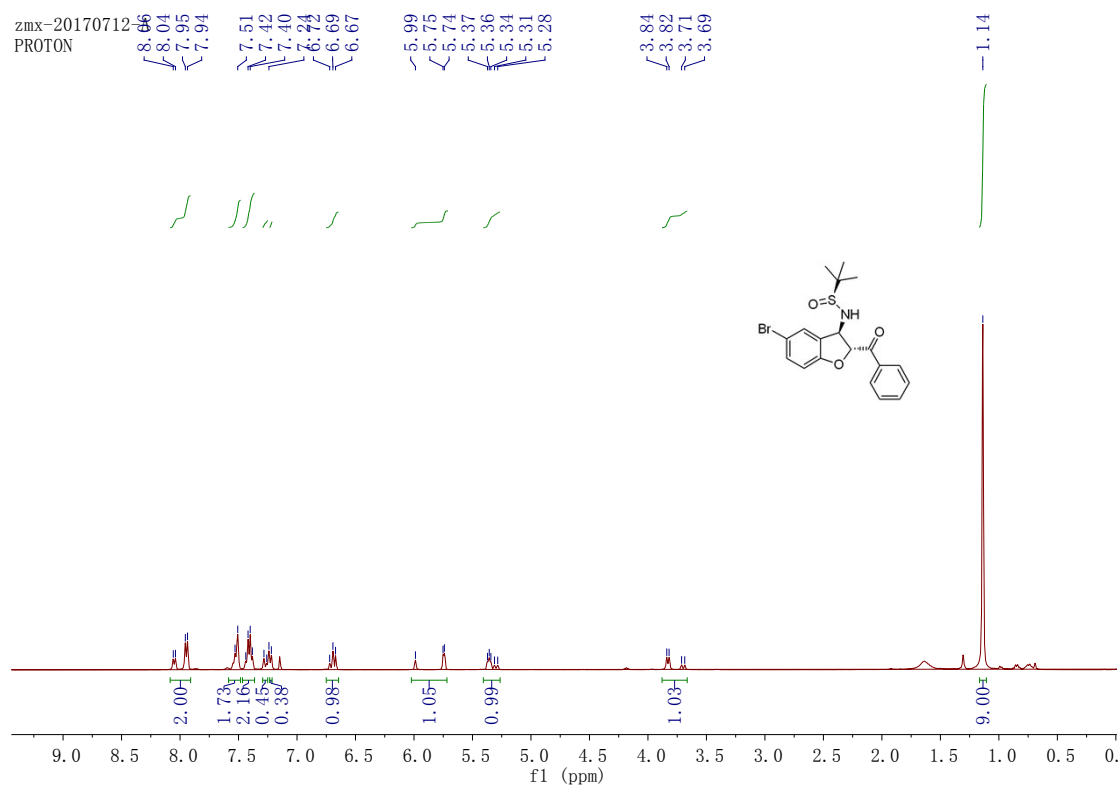
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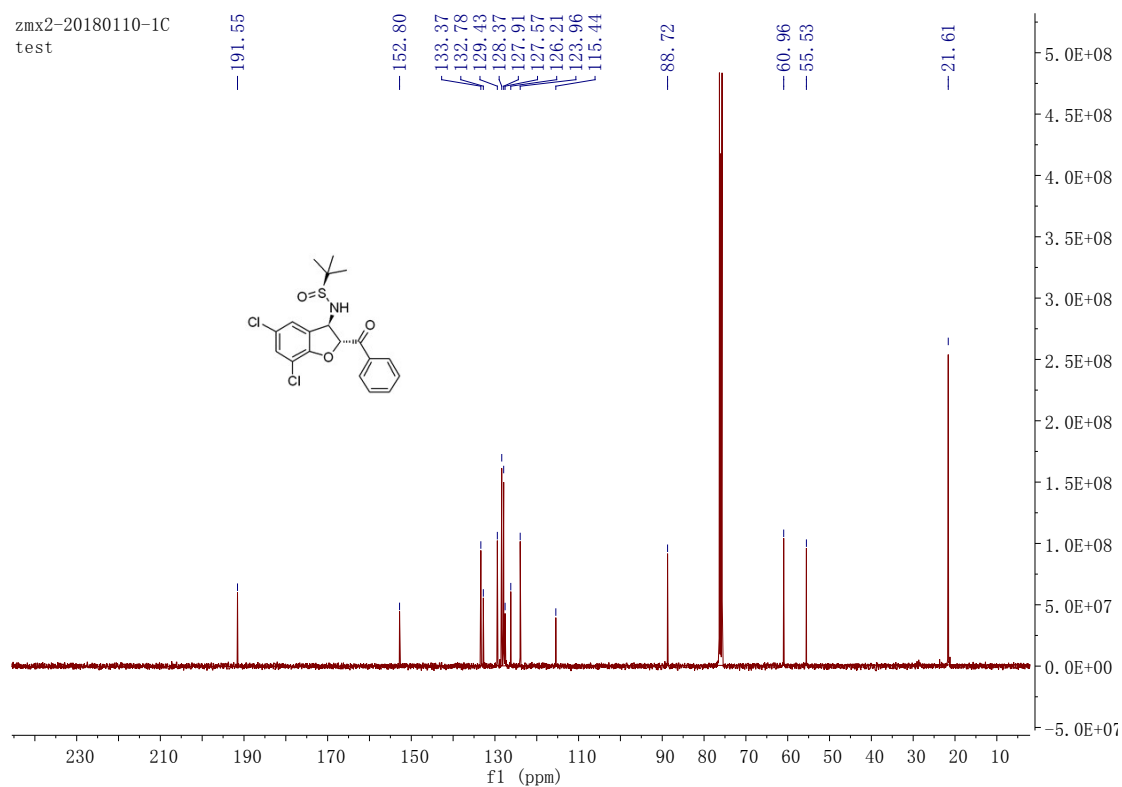
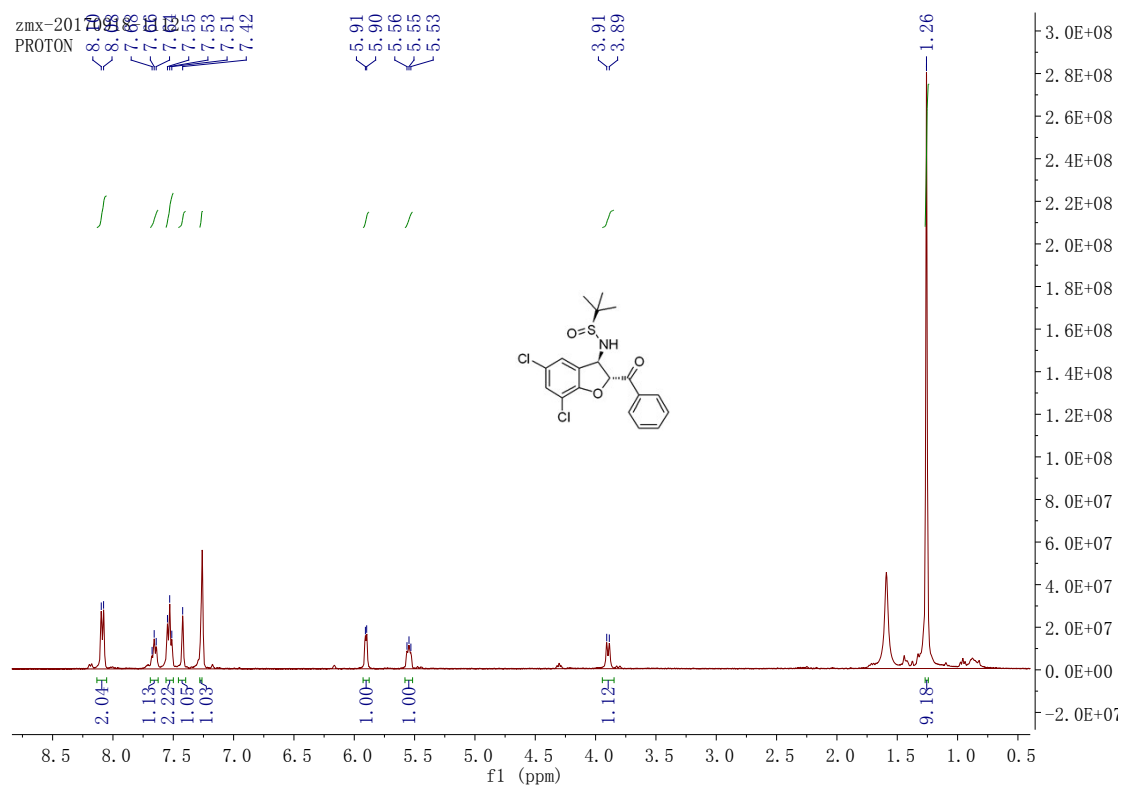
Trans-(S)-N-((2R,3R)-2-benzoyl-5-chloro-2,3-dihydrobenzofuran-3-yl)-2-methylpropane-2-sulfinamide (3b)



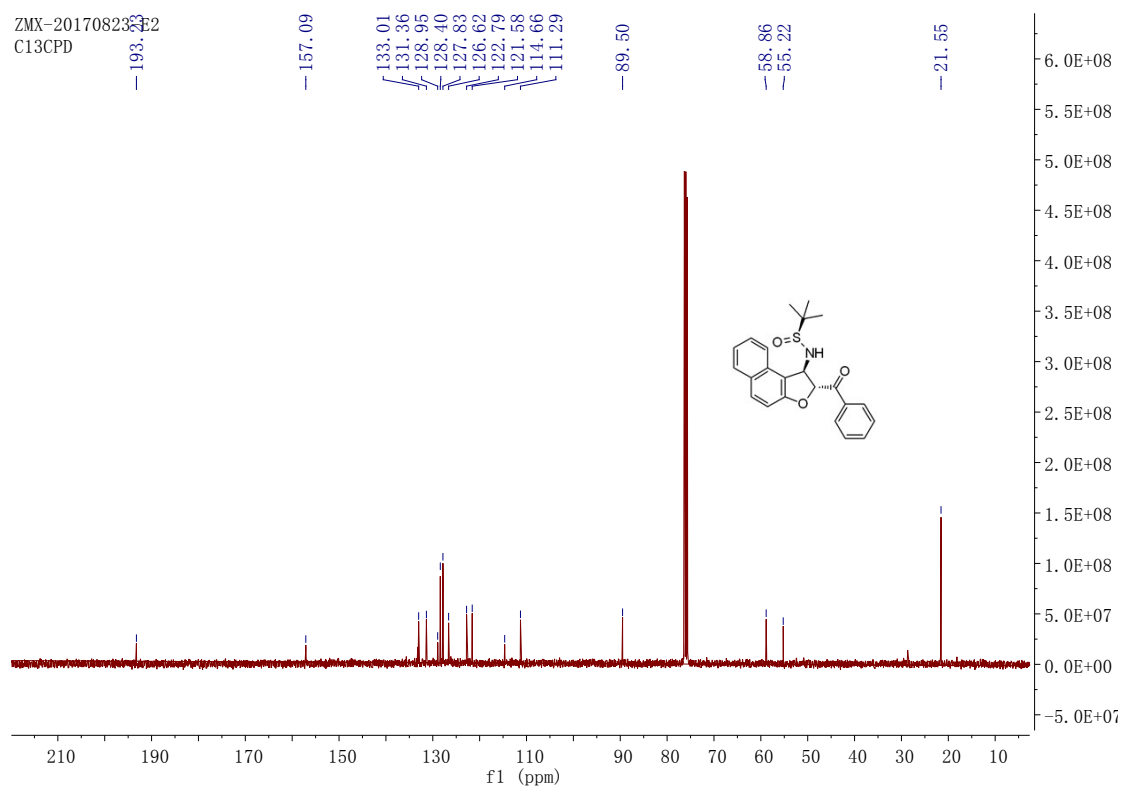
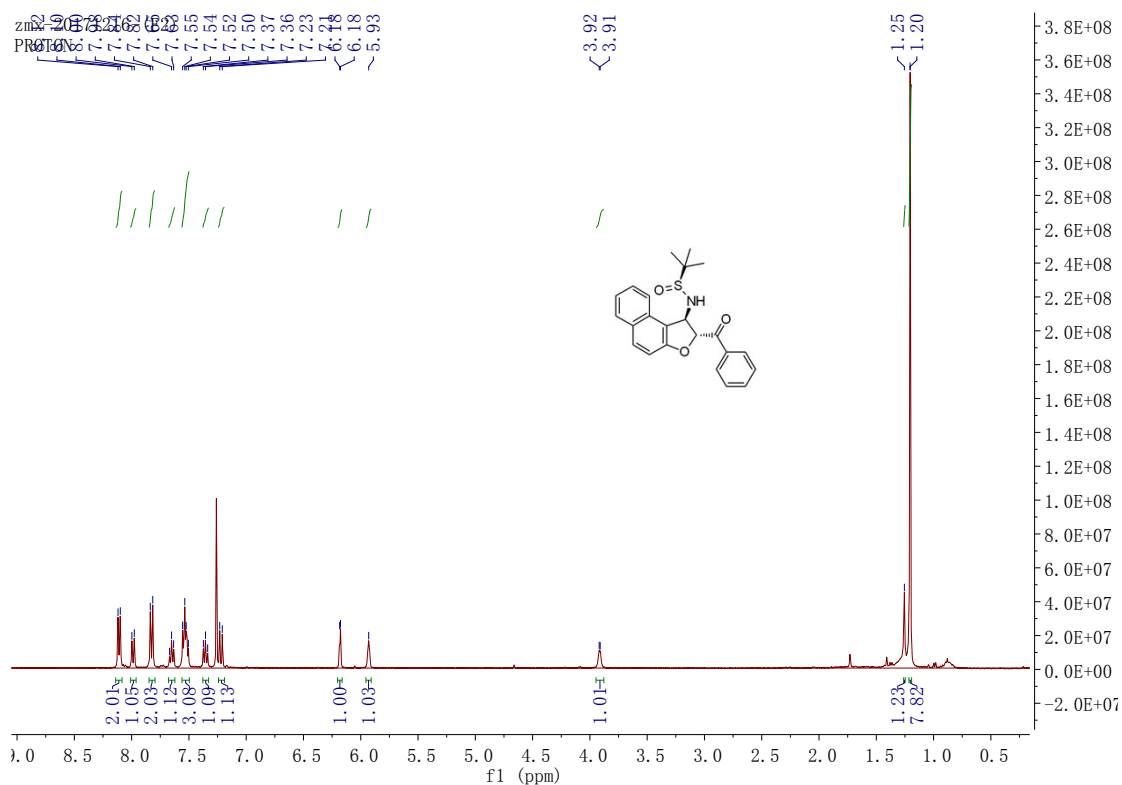
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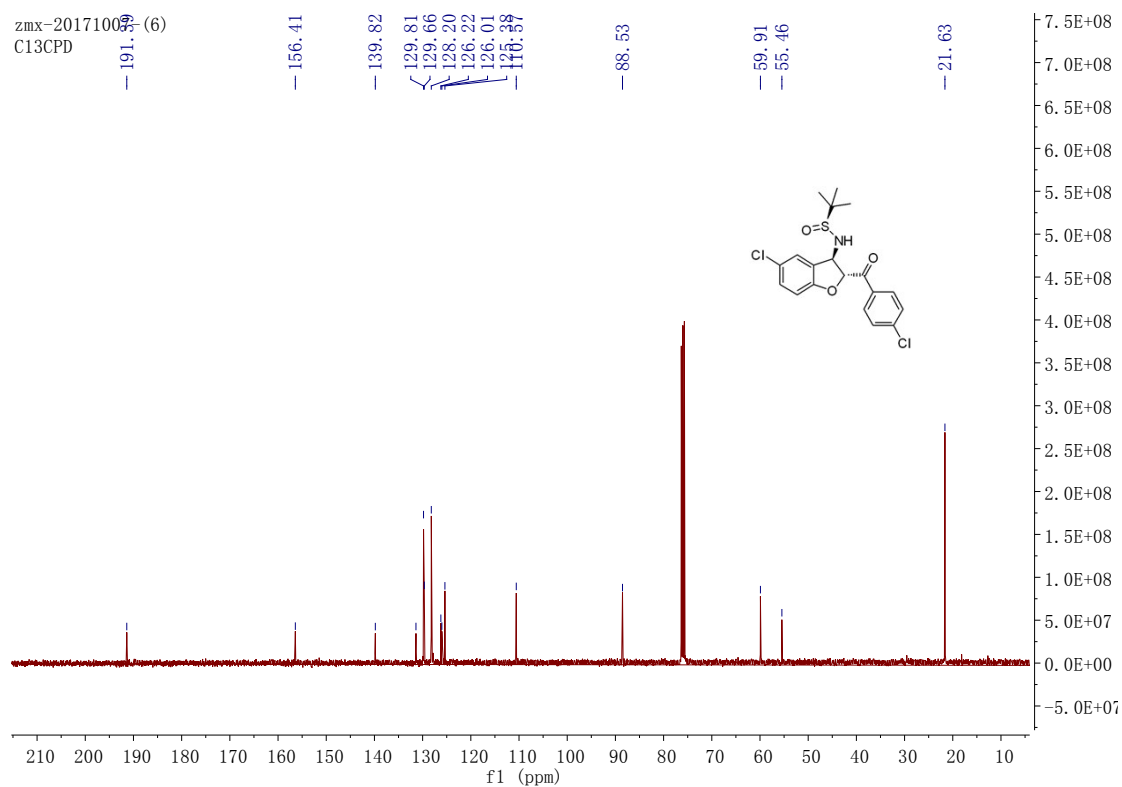
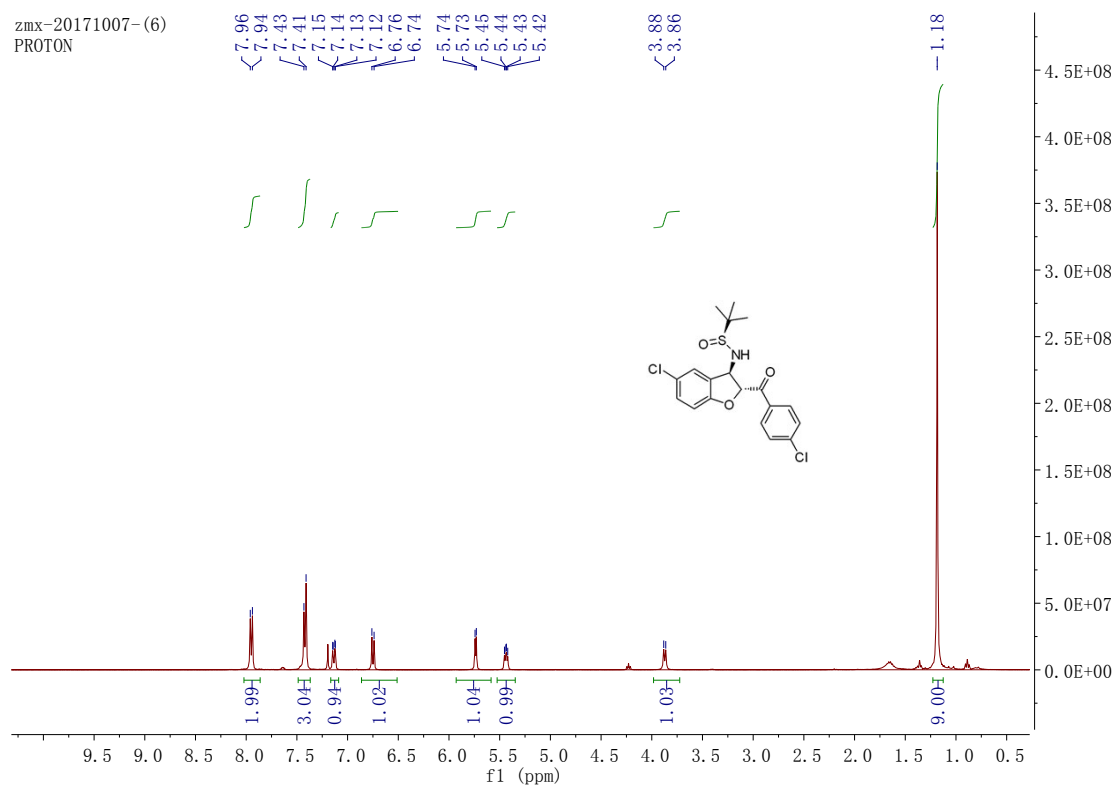
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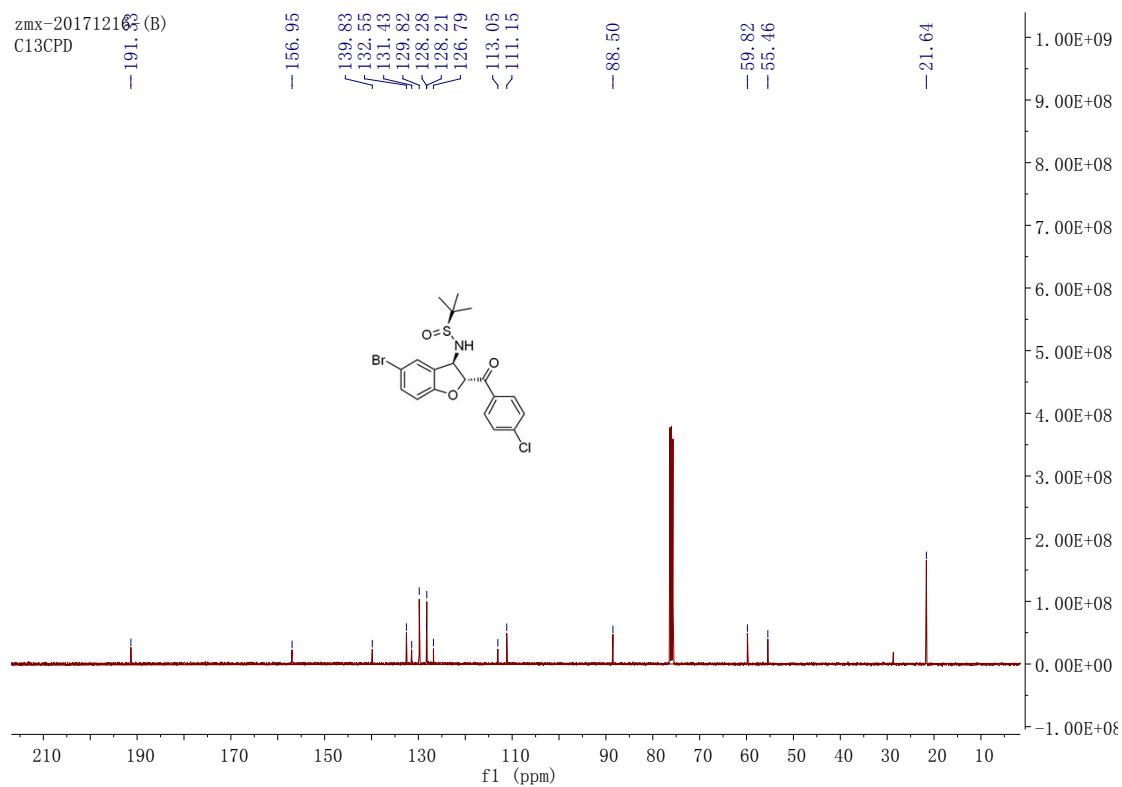
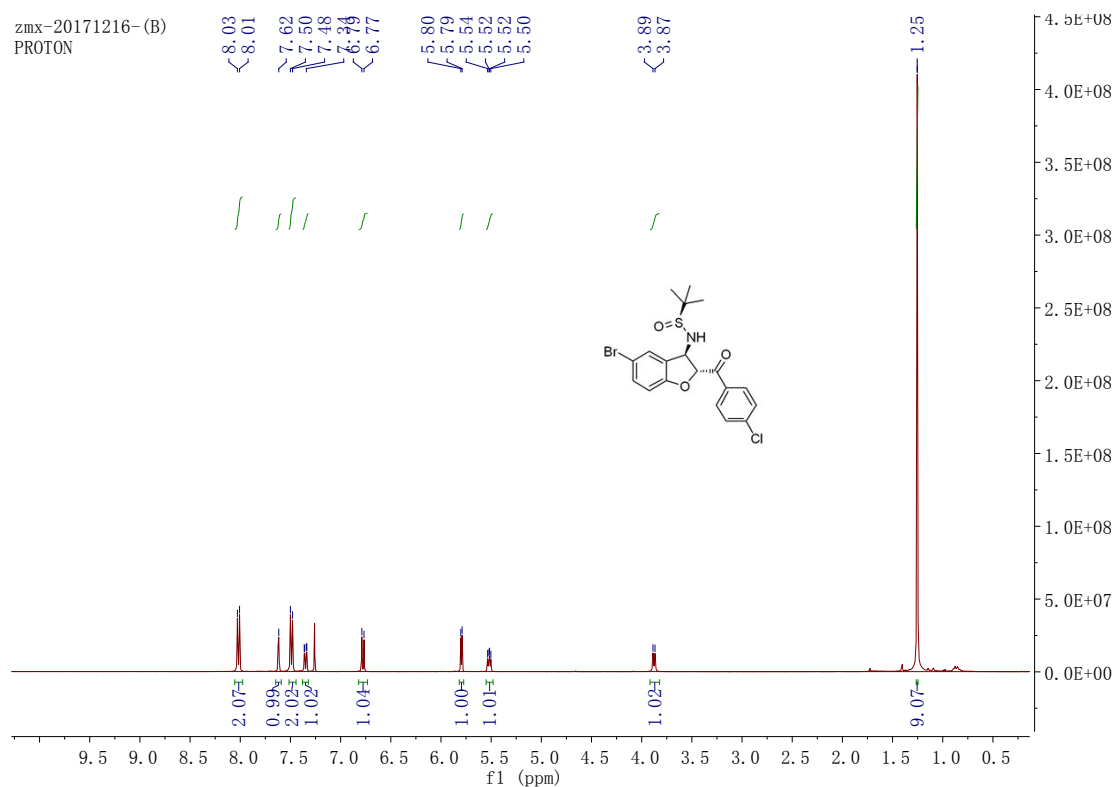
Trans-(S)-N-((1R,2R)-2-Benzoyl-1,2-dihydronaphtho[2,1-b]furan-1-yl)-2-methylpropane-2-sulfinamide (3e)



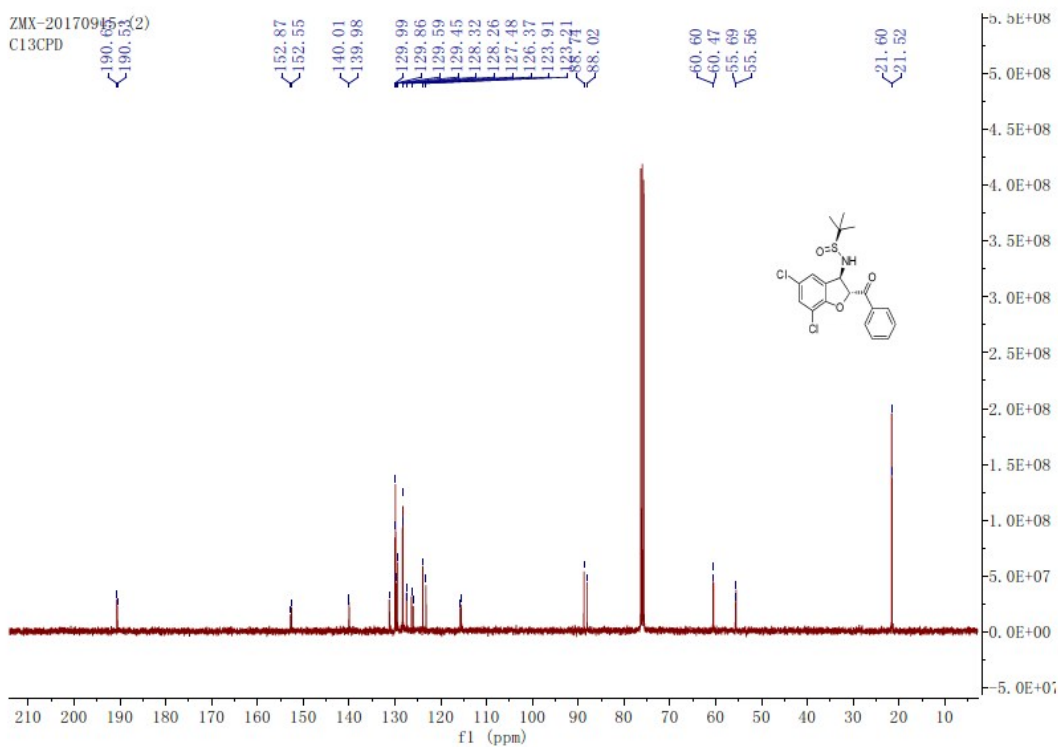
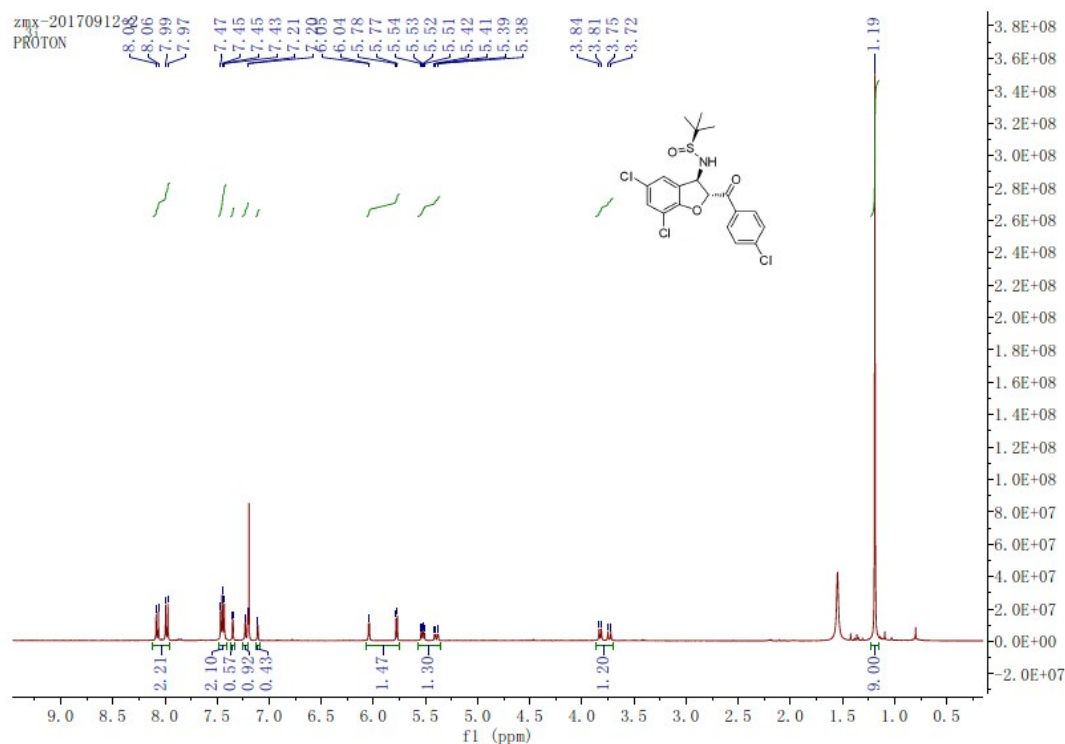
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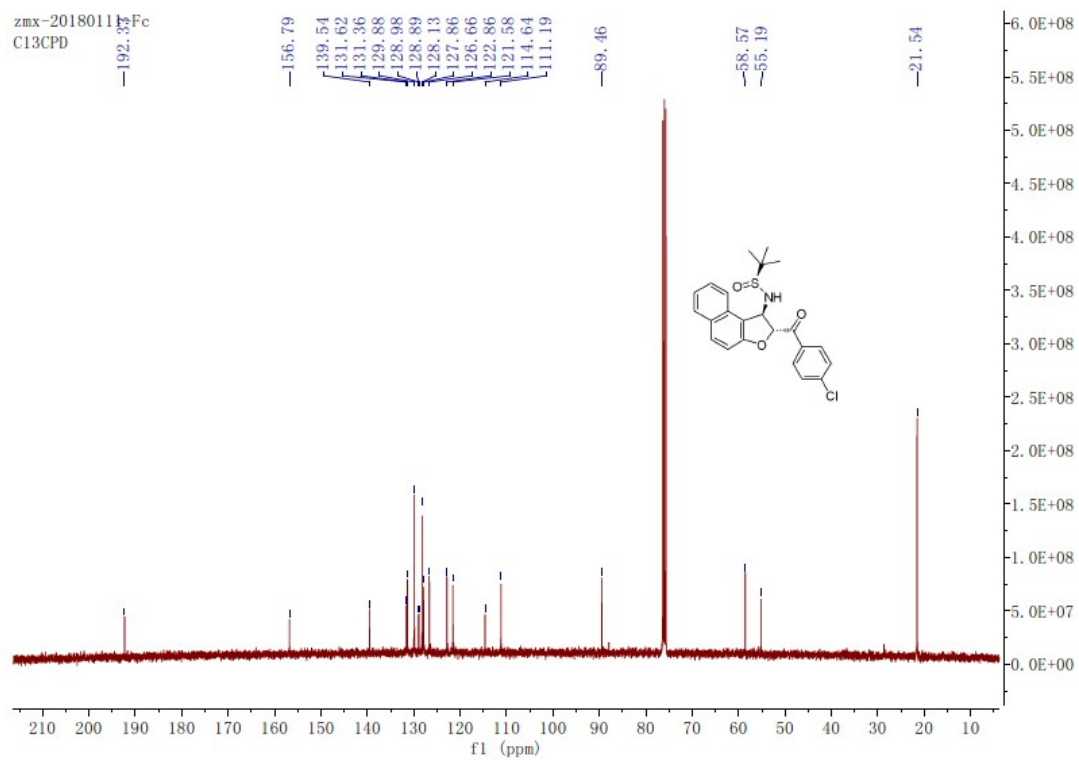
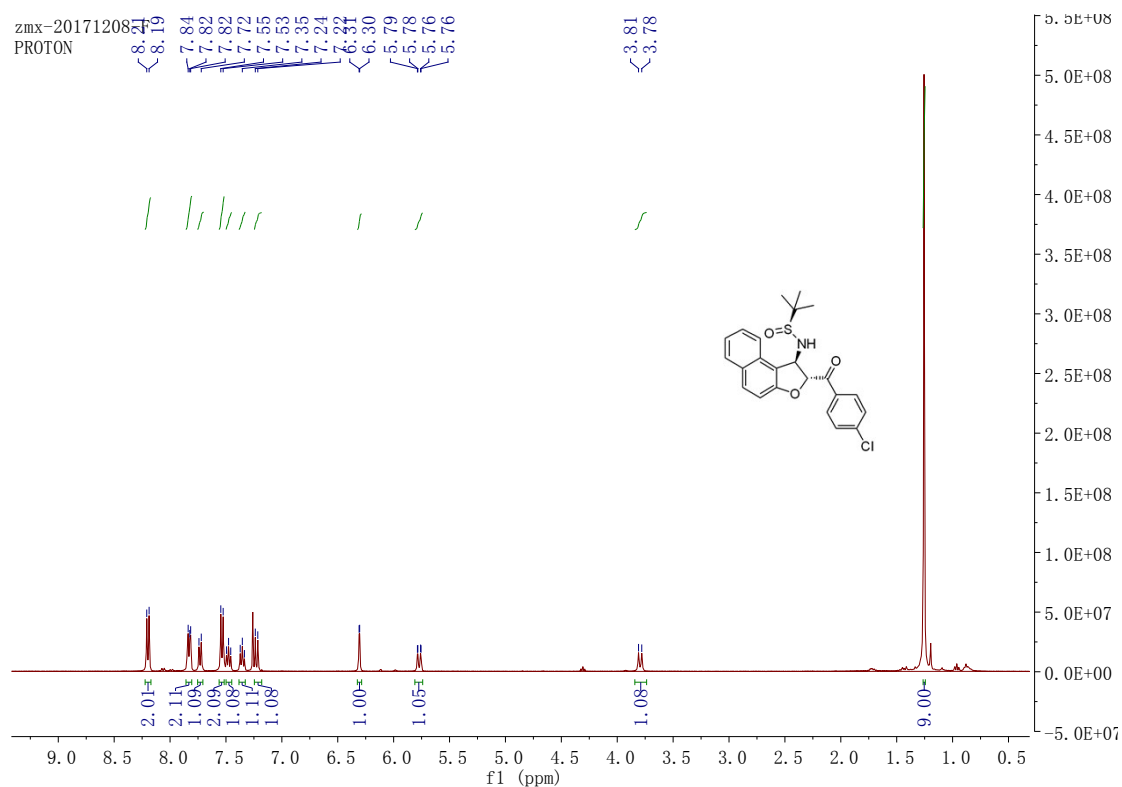
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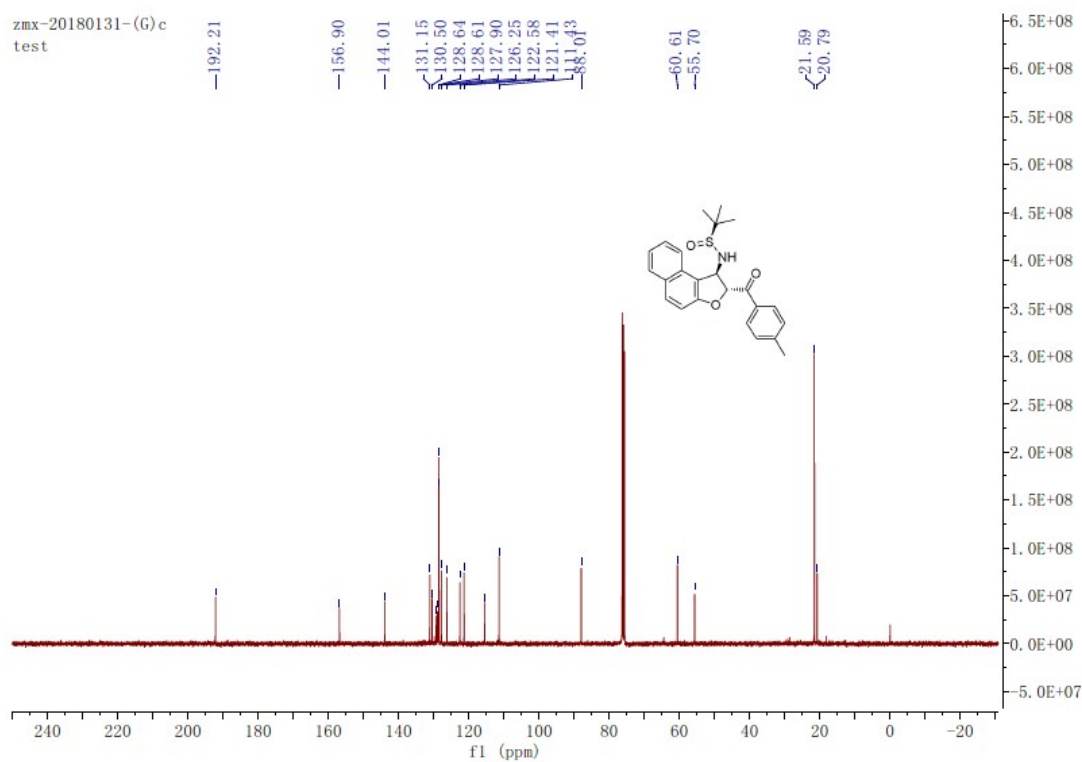
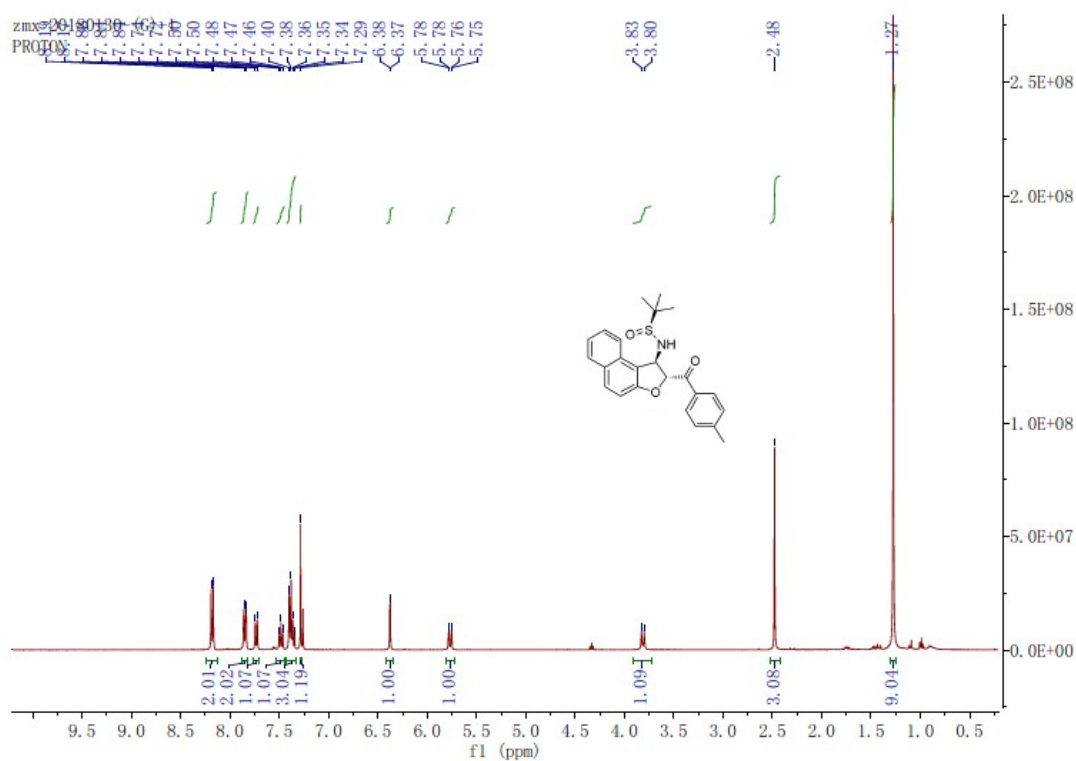
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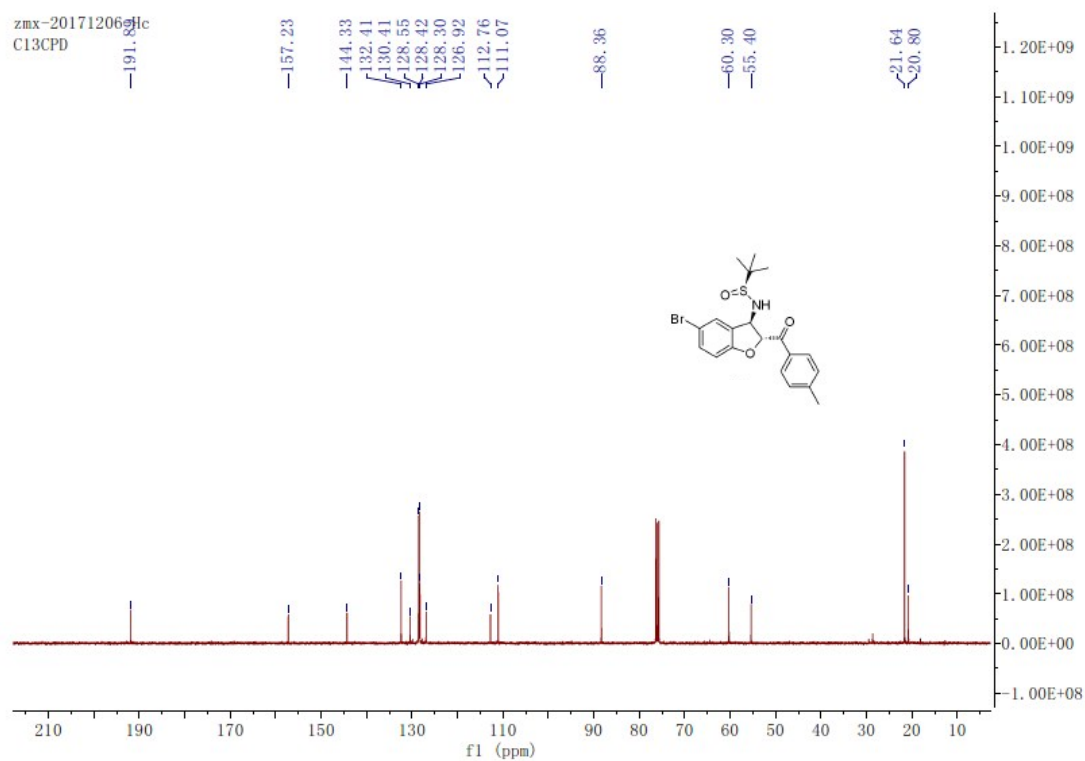
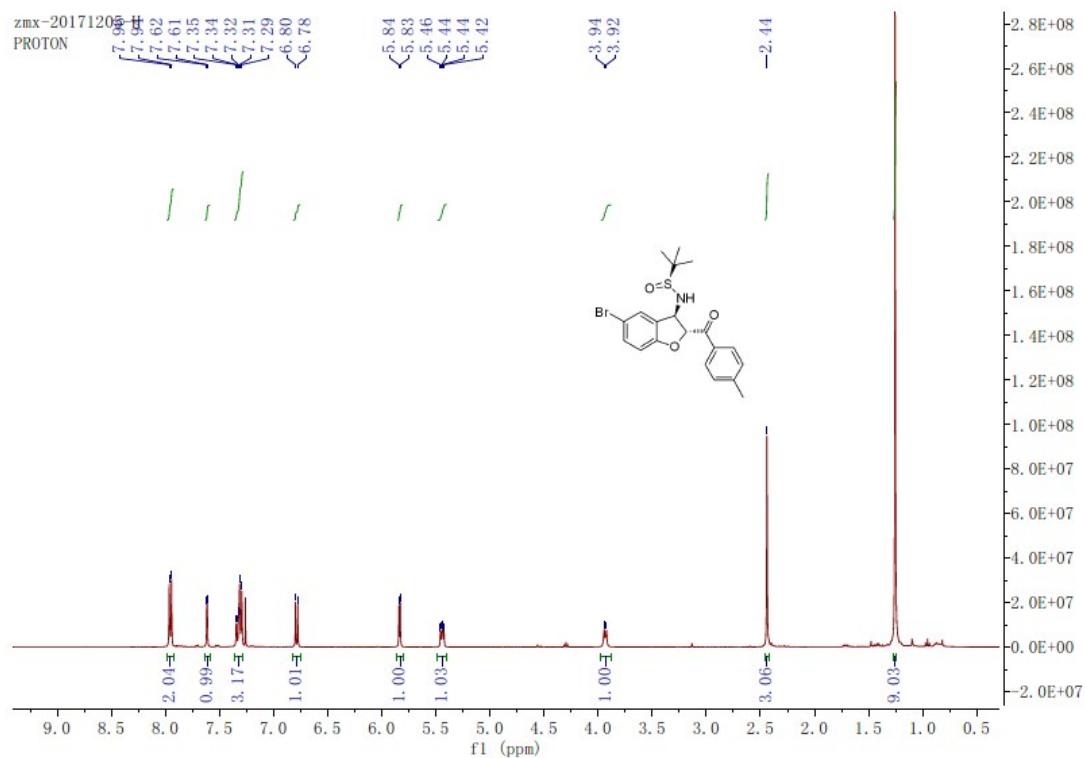
Trans-(S)-N-((1R,2R)-2-(4-Chlorobenzoyl)-1,2-dihydronaphtho[2,1-b]furan-1-yl)-2-methylpropane-2-sulfinamide (3i)



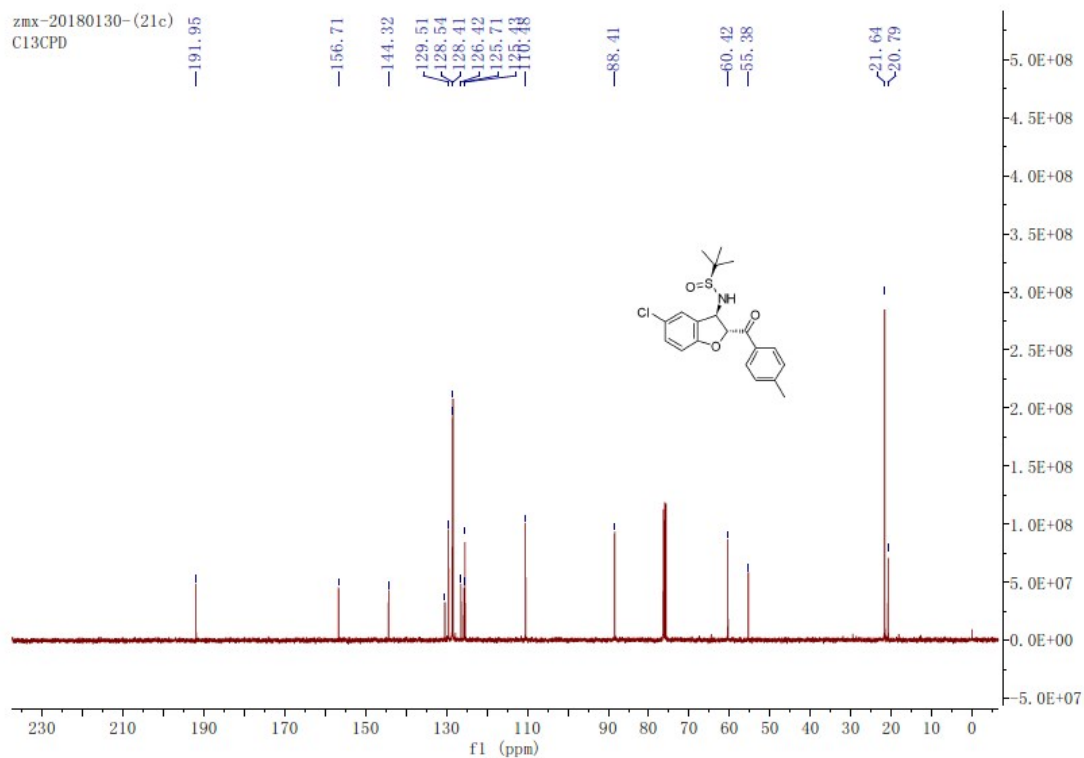
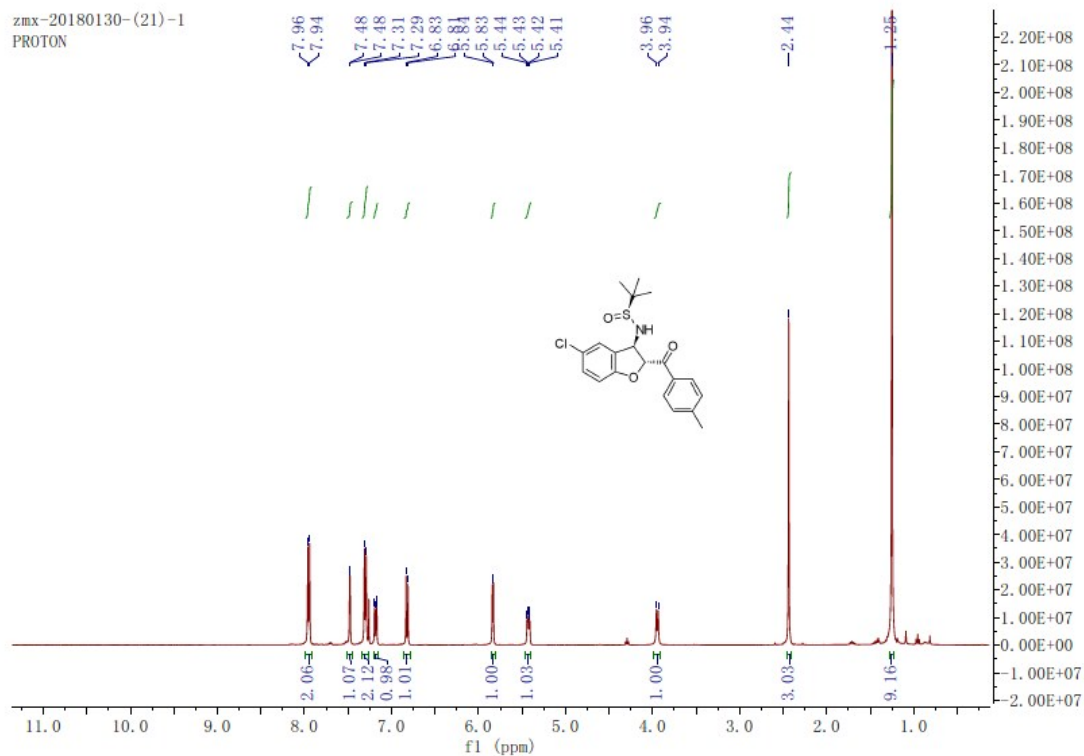
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Trans-(S)-N-((2R,3R)-5-Bromo-2-(4-methylbenzoyl)-2,3-dihydrobenzofuran-3-yl)-2-methylpropane-2-sulfinamide (3k)



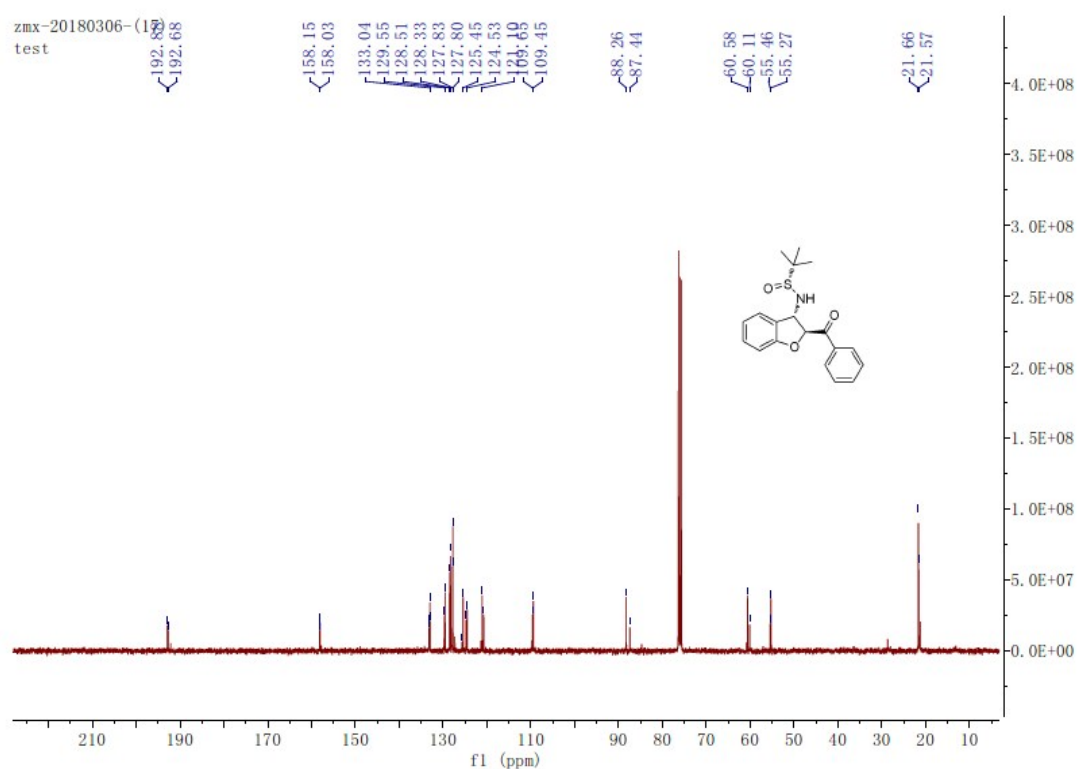
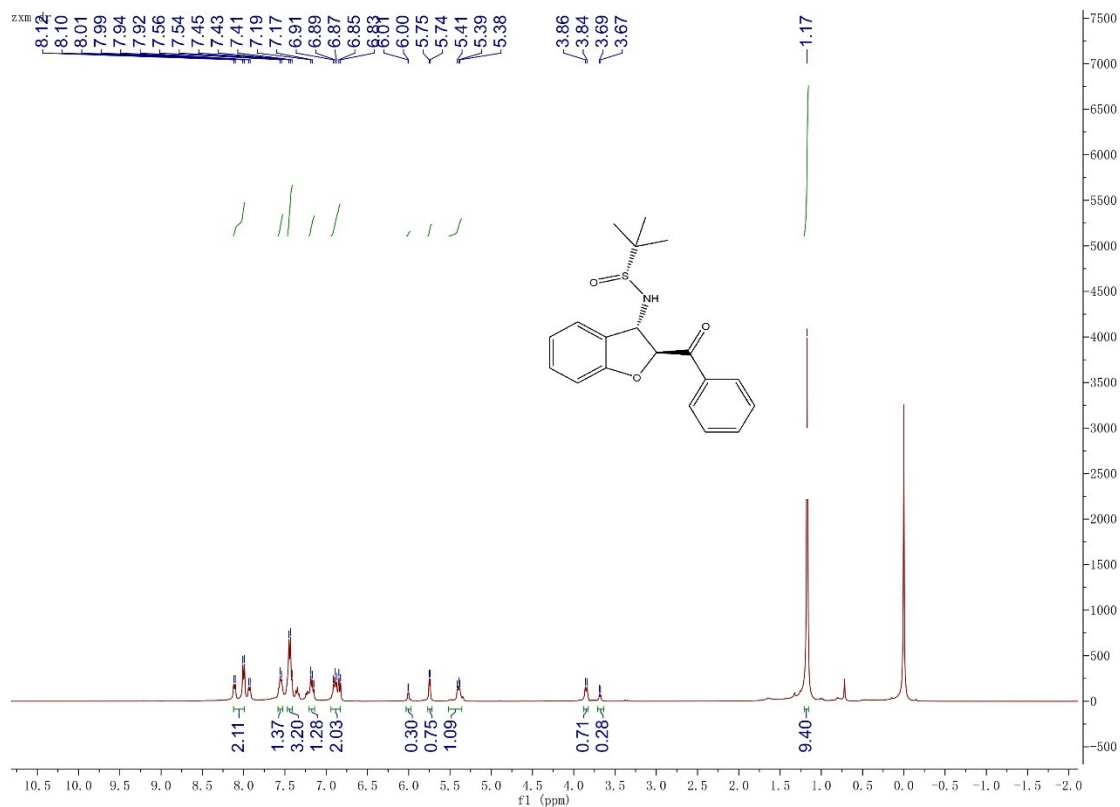
Trans-(S)-N-((2R,3R)-5-Chloro-2-(4-methylbenzoyl)-2,3-dihydrobenzofuran-3-yl)-2-methylpropane-2-sulfinamide (3l)



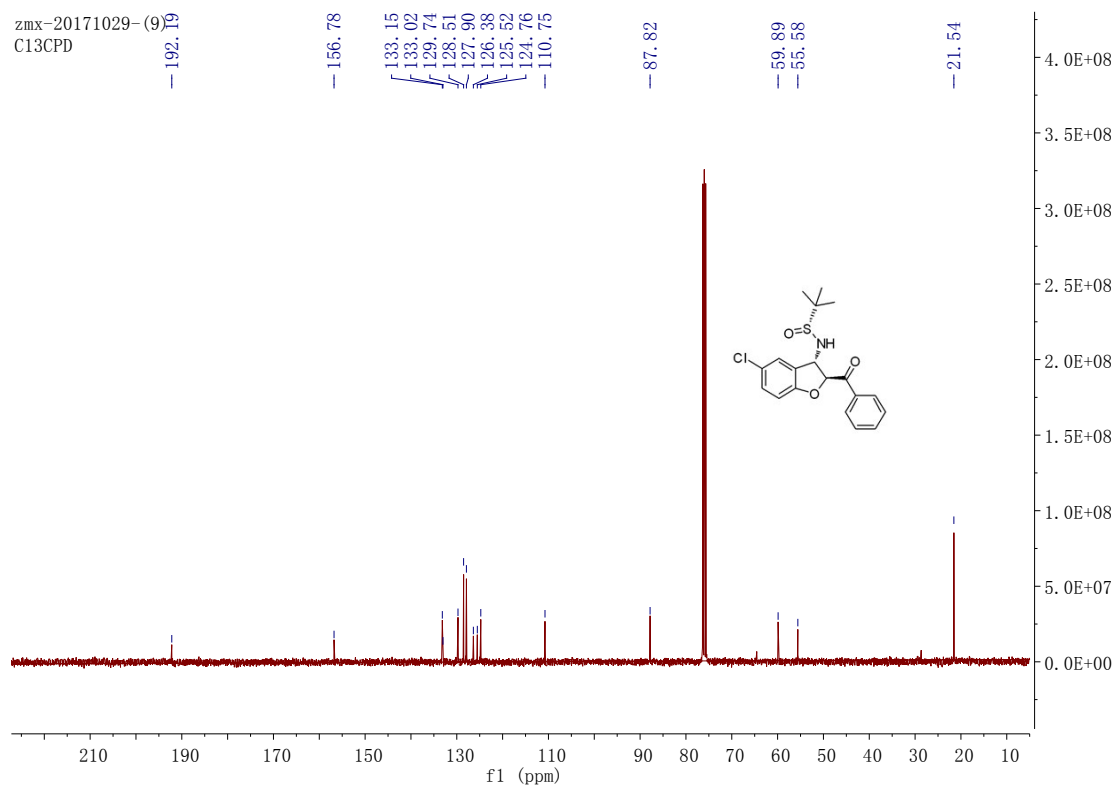
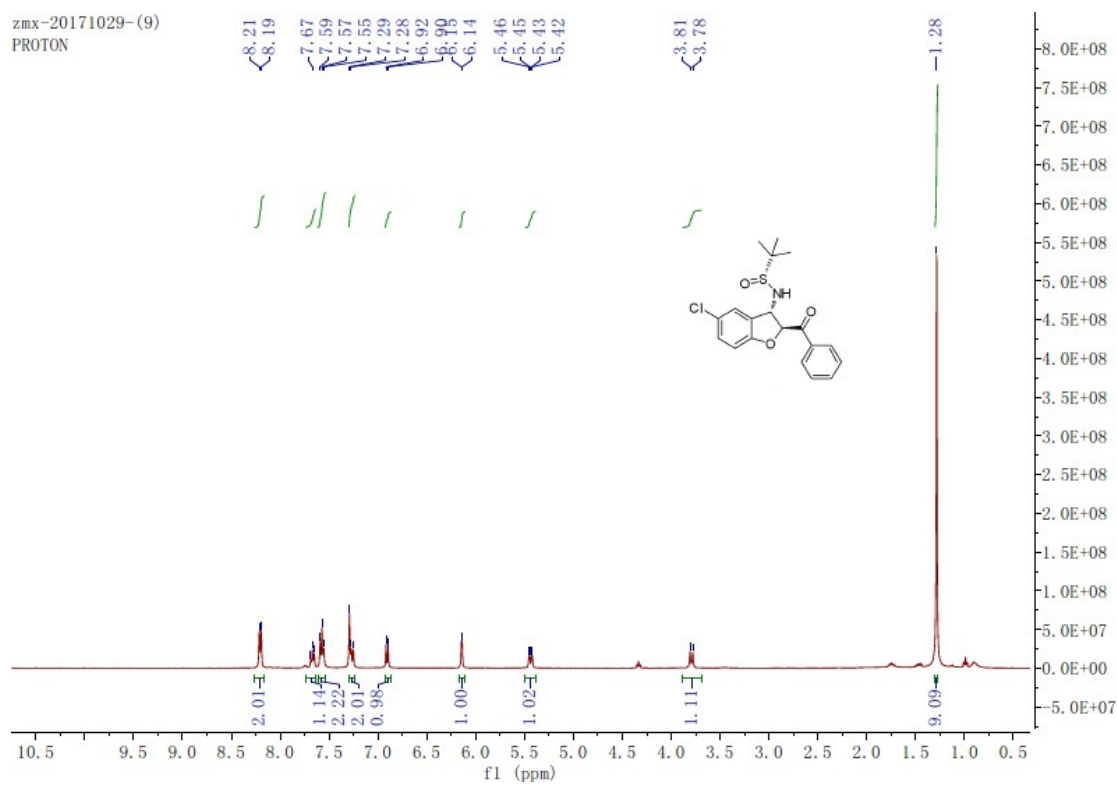
Copies of ^1H NMR and ^{13}C NMR spectra of *(R,S,2S,3S)*-*trans*-**3a-3n**:

Trans-*(R)*-*N*-*((2S,3S)*-2-Benzoyl-2,3-dihydrobenzofuran-3-yl)-2-methylpropane-2-sulfinamide

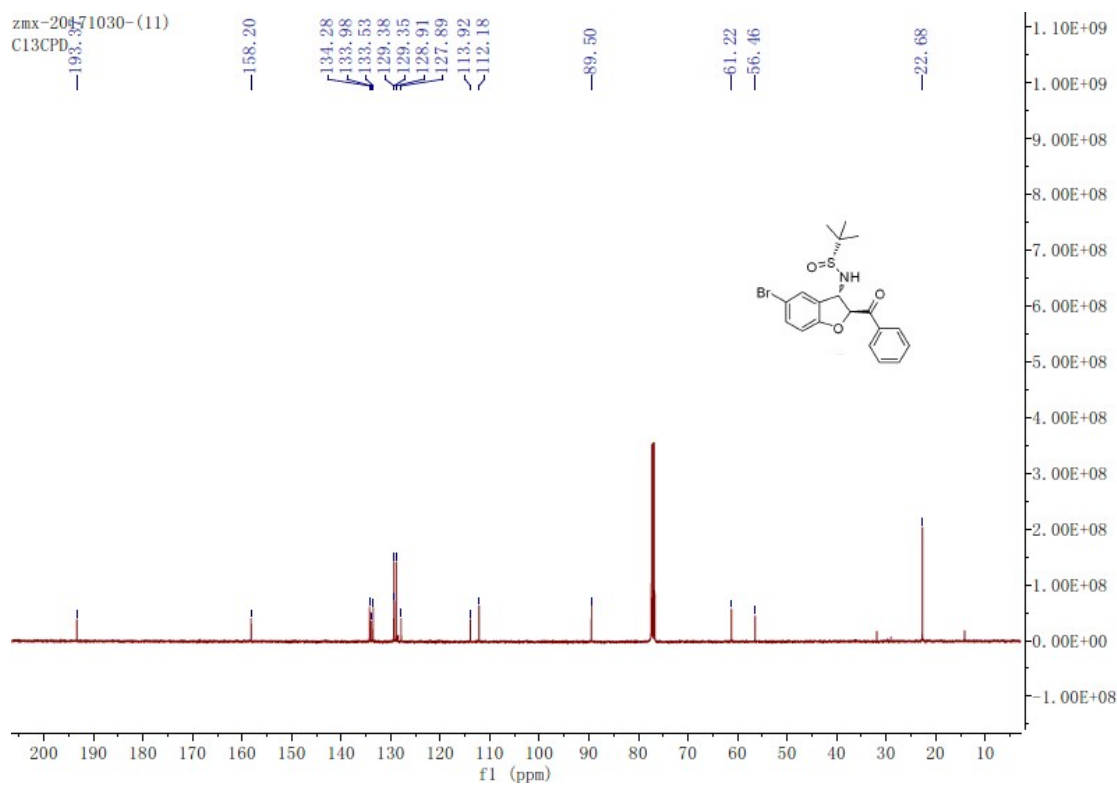
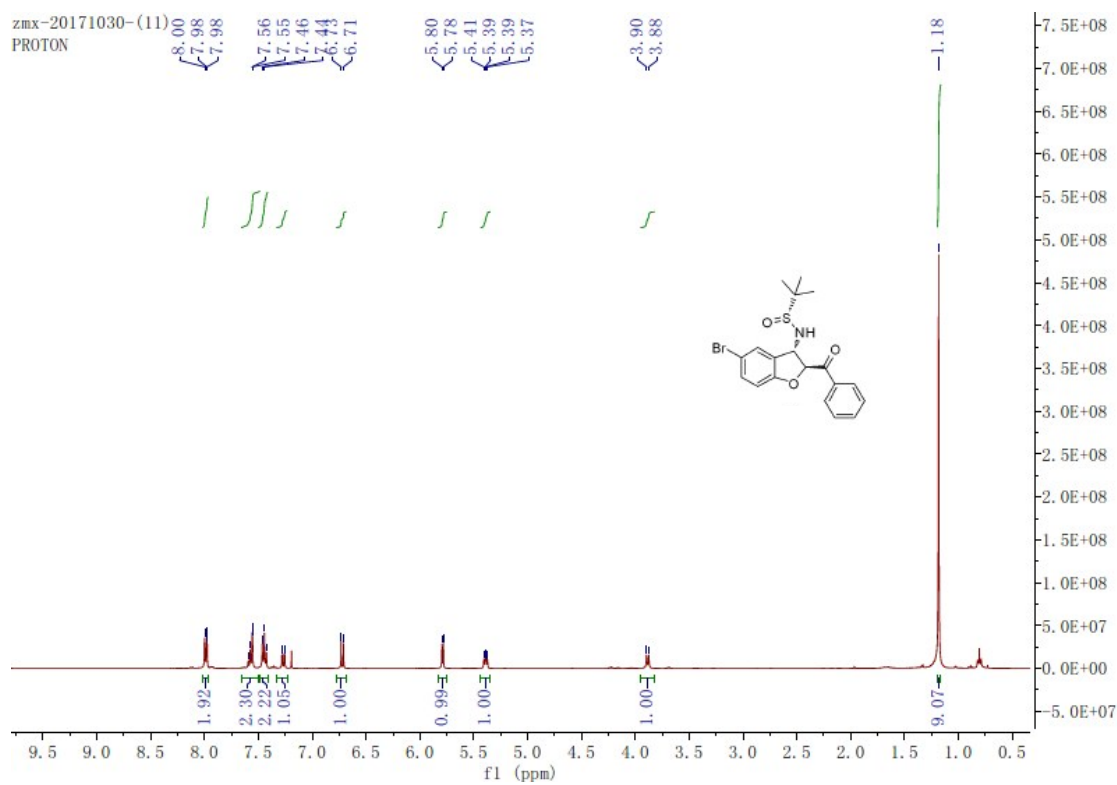
(3a)



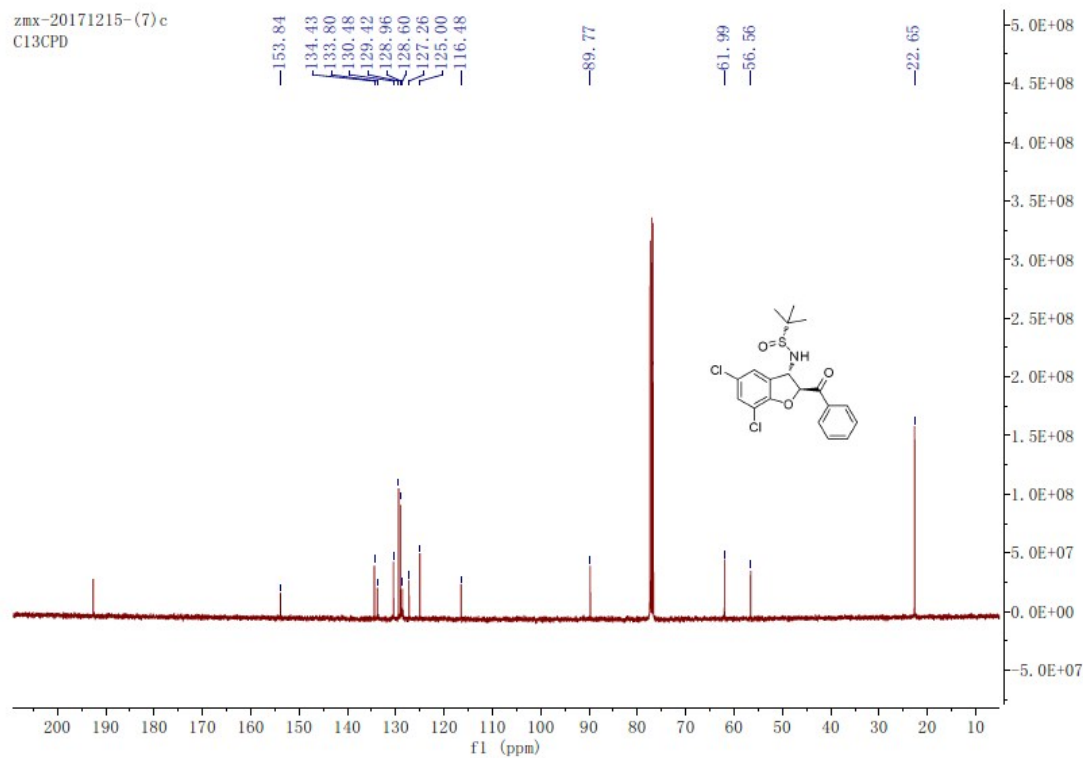
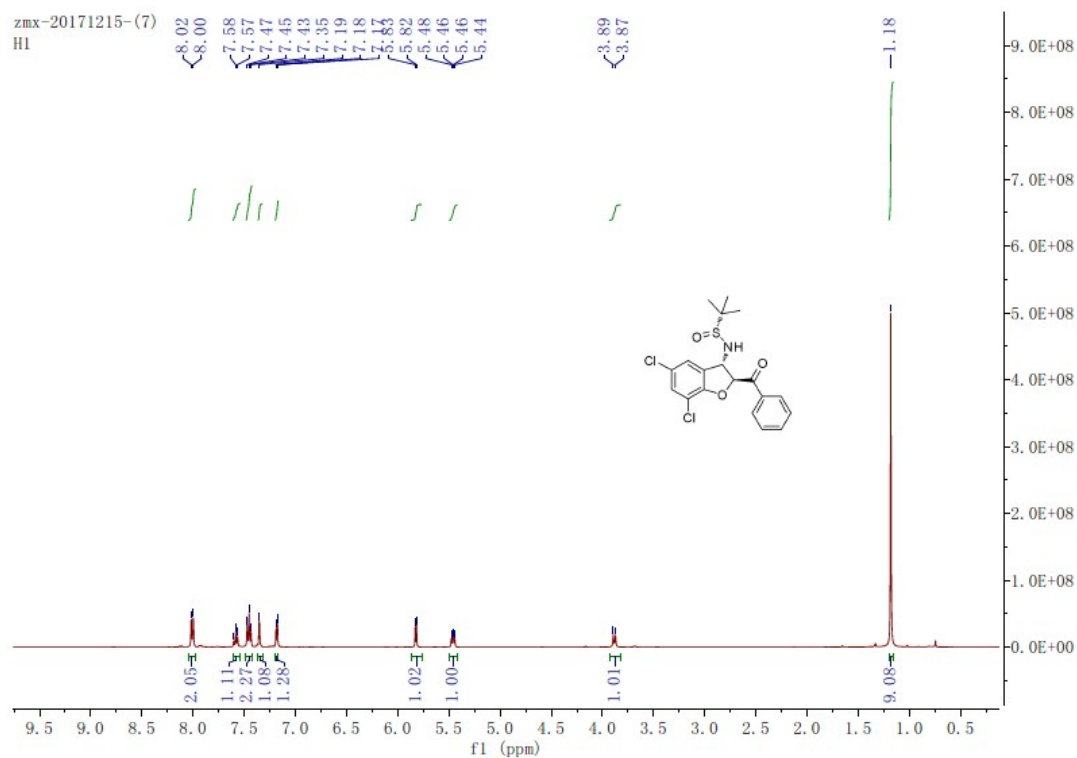
Trans-(R)-N-((2S,3S)-2-Benzoyl-5-chloro-2,3-dihydrobenzofuran-3-yl)-2-methylpropane-2-sulfinamide (3b)



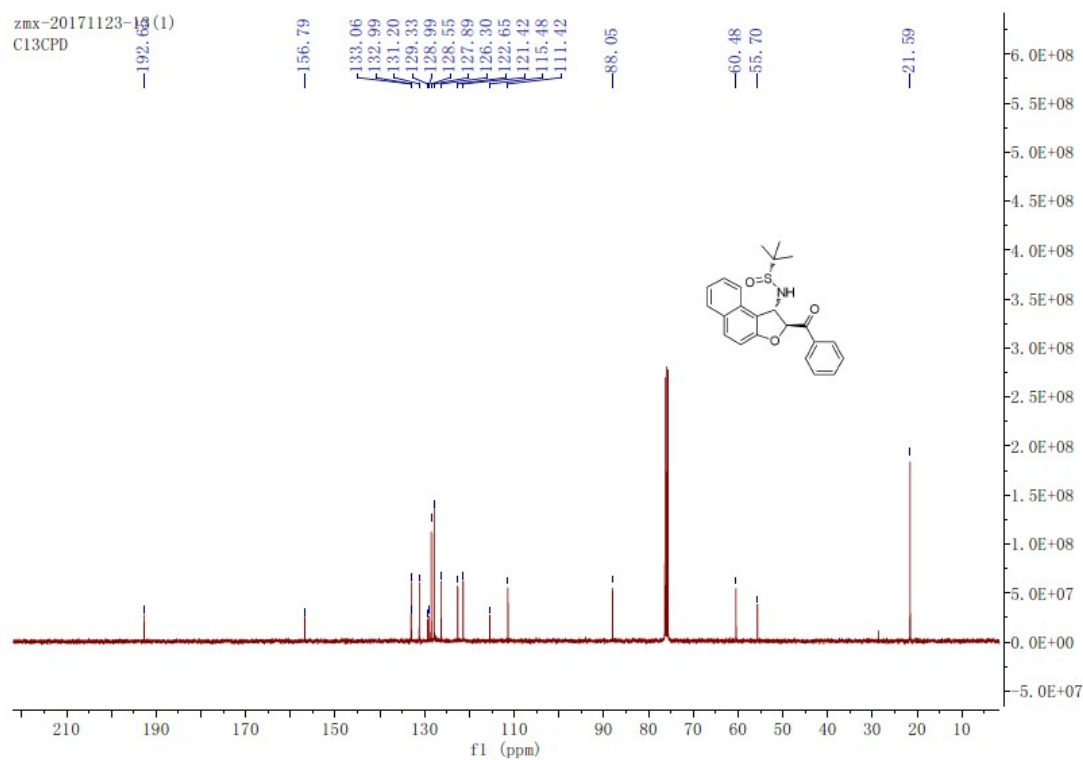
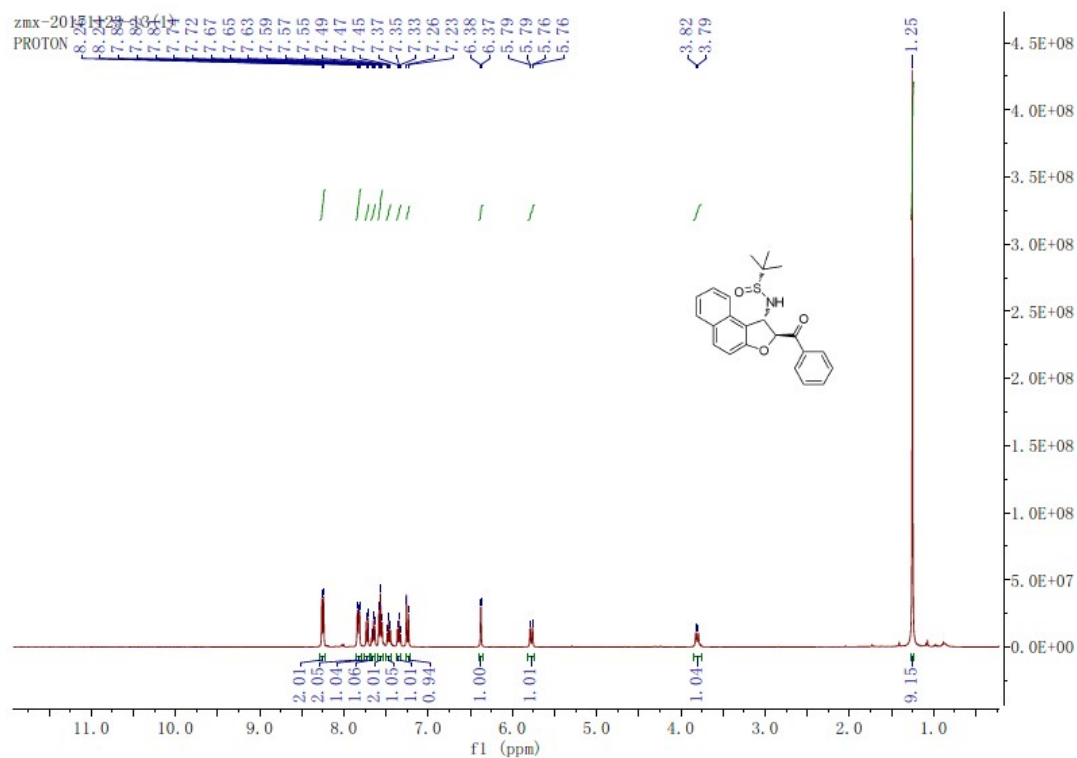
Trans-(R)-N-((2S,3S)-2-Benzoyl-5-bromo-2,3-dihydrobenzofuran-3-yl)-2-methylpropane-2-sulfinamide (3c)



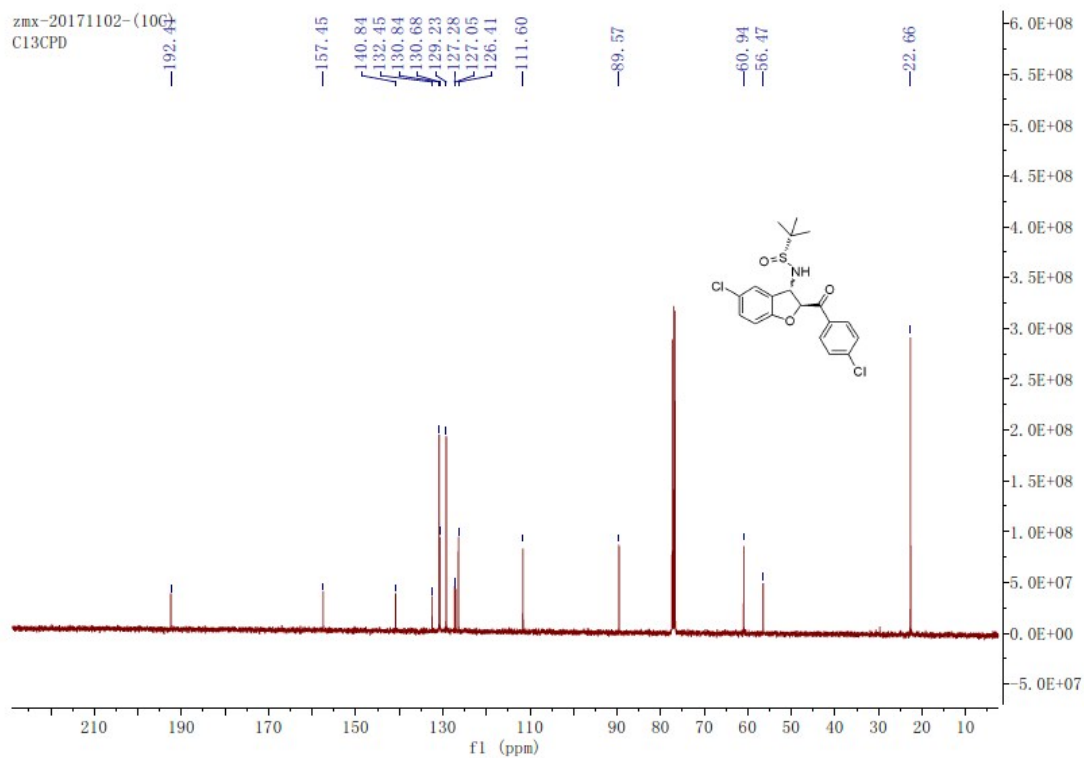
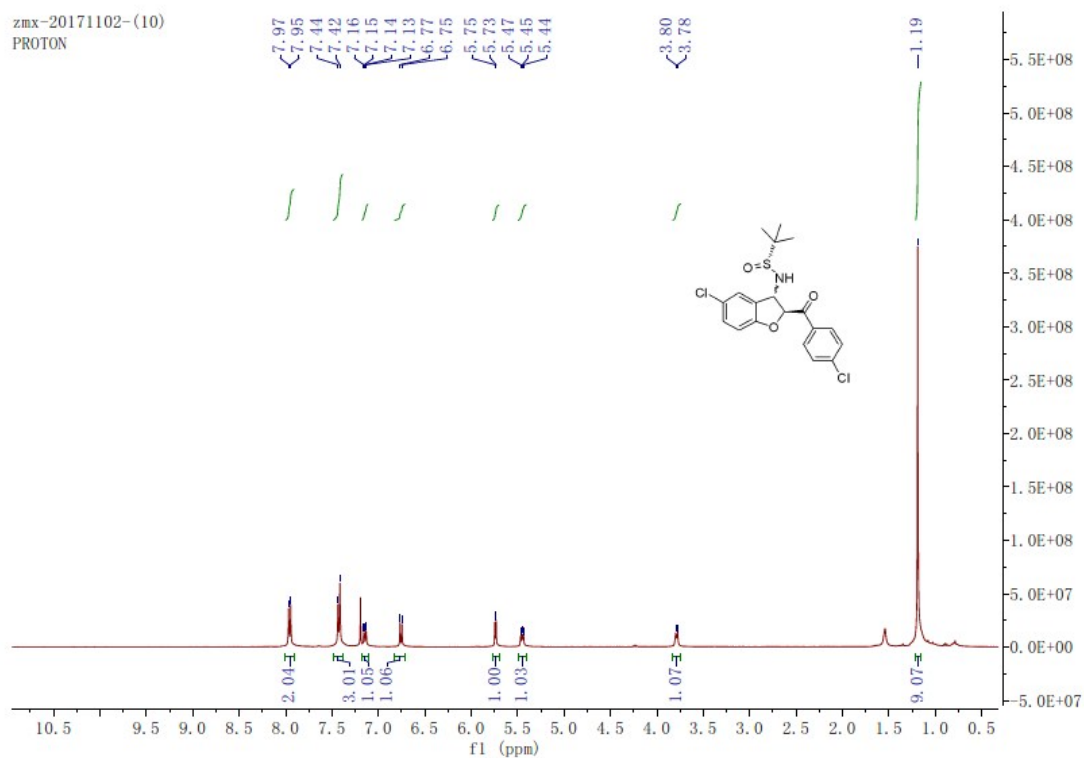
Trans-(R)-N-((2S,3S)-2-Benzoyl-5,7-dichloro-2,3-dihydrobenzofuran-3-yl)-2-methylpropane-2-sulfinamide (3d)



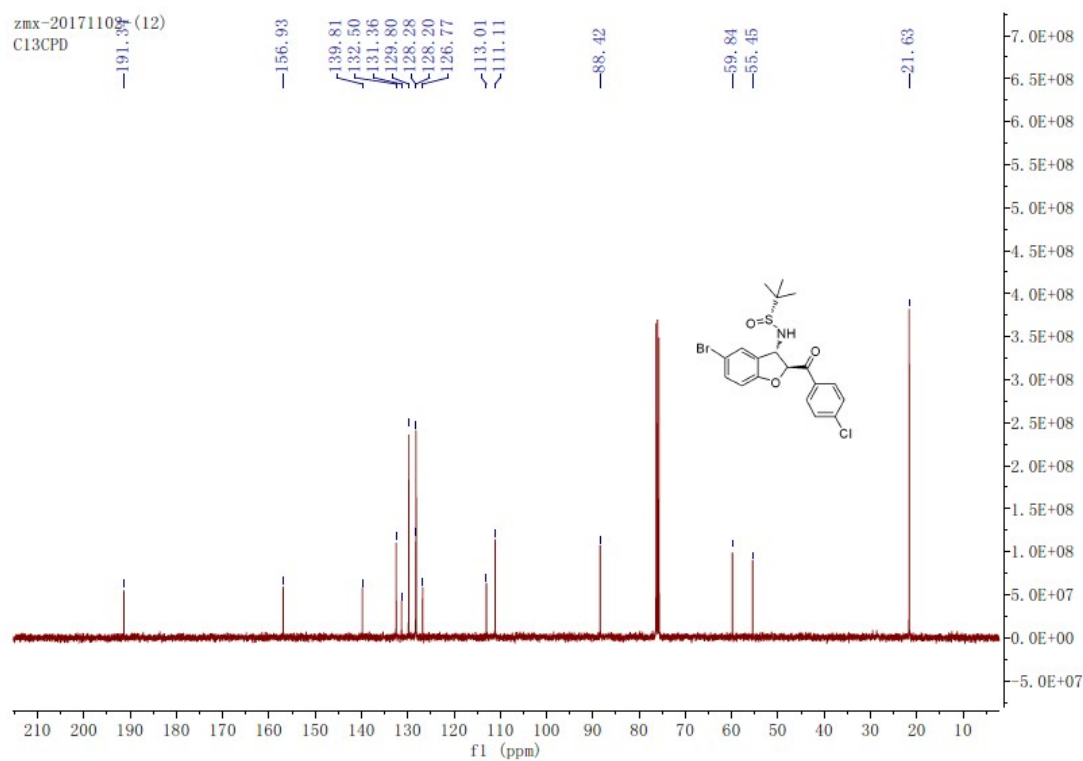
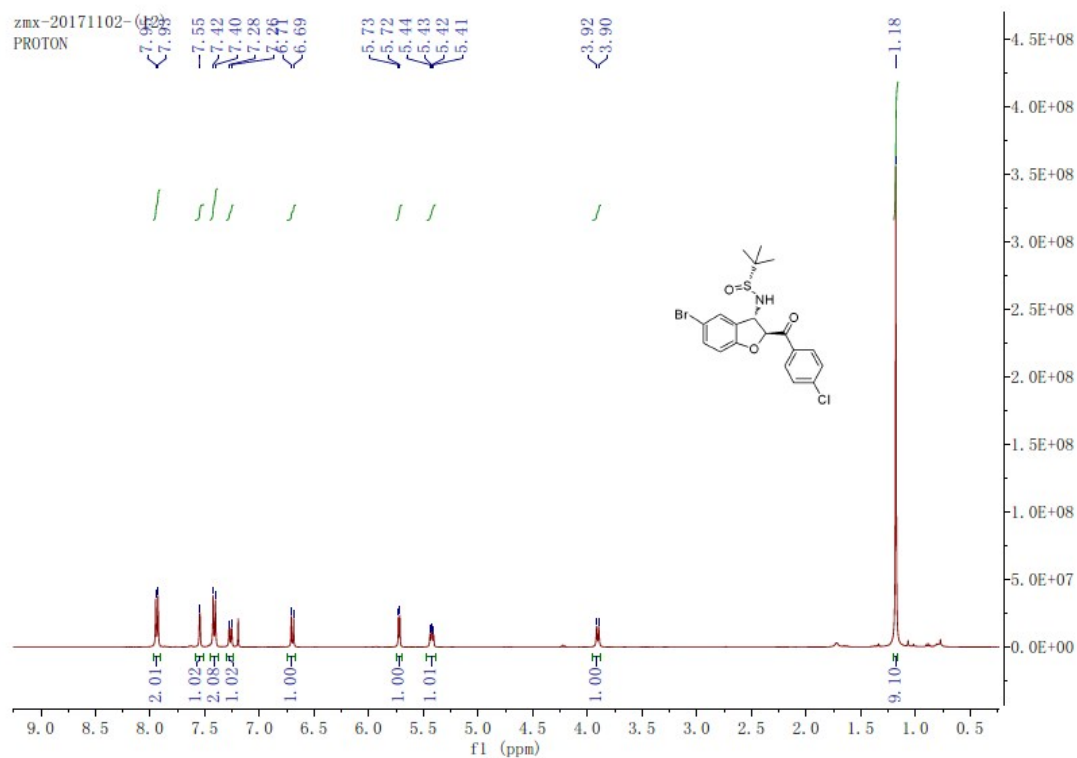
Trans-(R)-N-((1S,2S)-2-benzoyl-1,2-dihydronaphtho[2,1-b]furan-1-yl)-2-methylpropane-2-sulfinamide (3e)



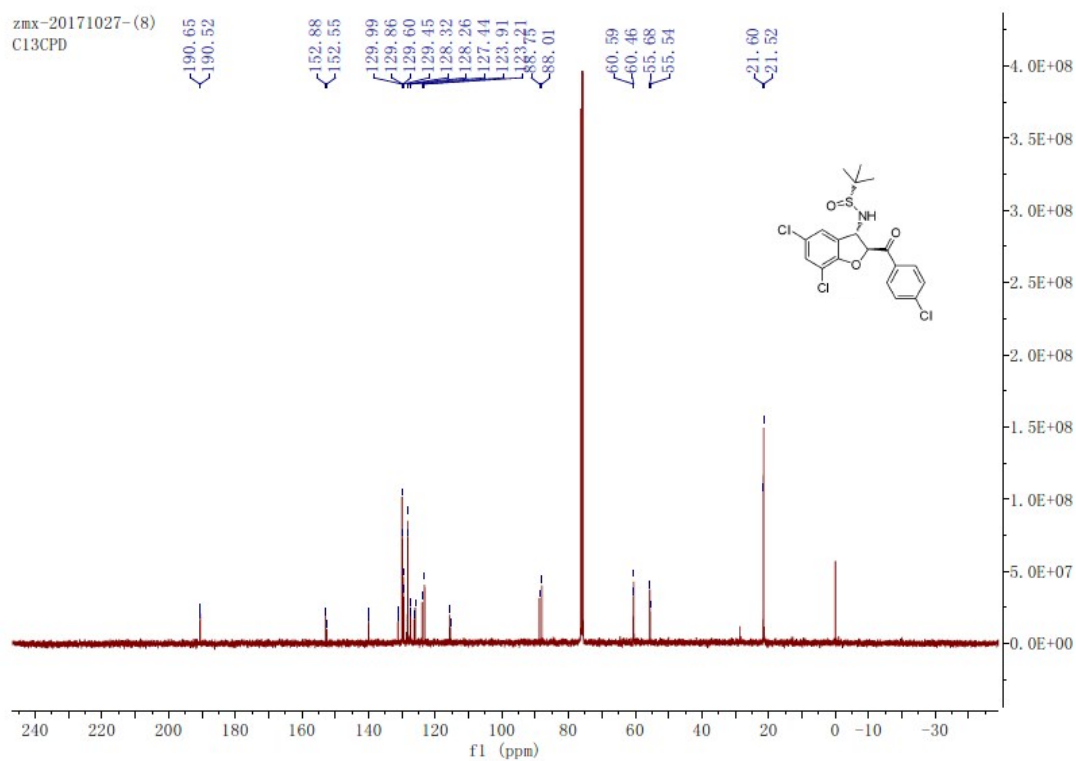
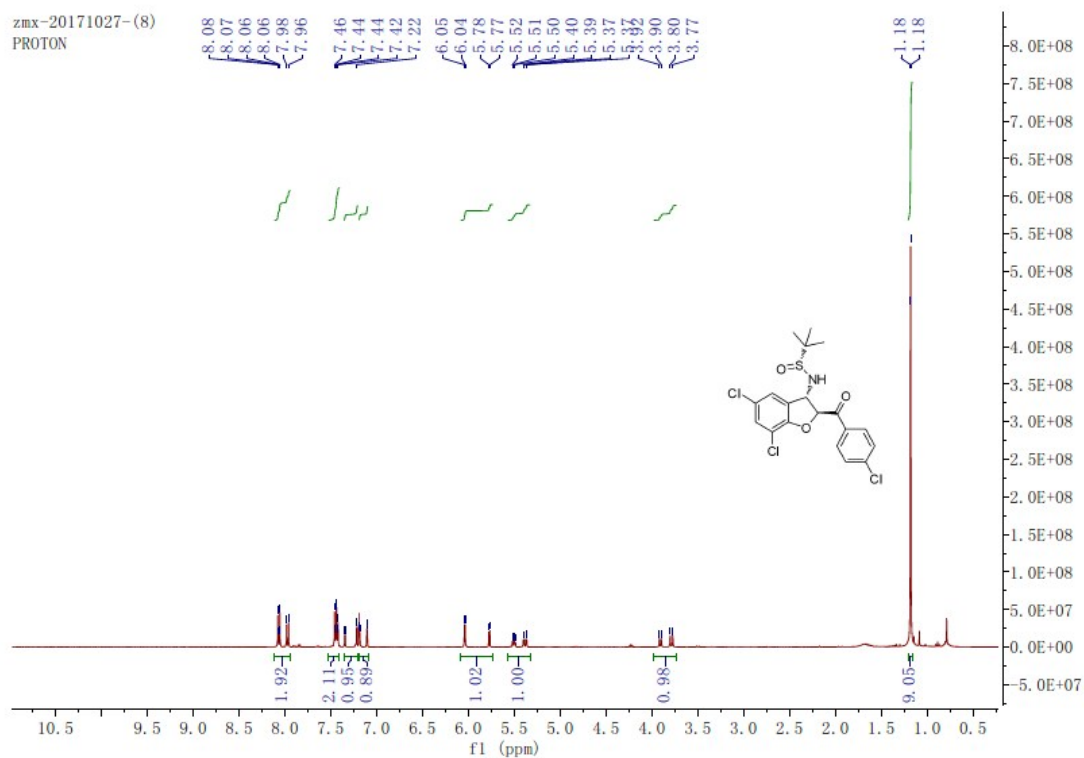
Trans-(R)-N-((2S,3S)-5-chloro-2-(4-chlorobenzoyl)-2,3-dihydrobenzofuran-3-yl)-2-methylpropane-2-sulfinamide (3f)



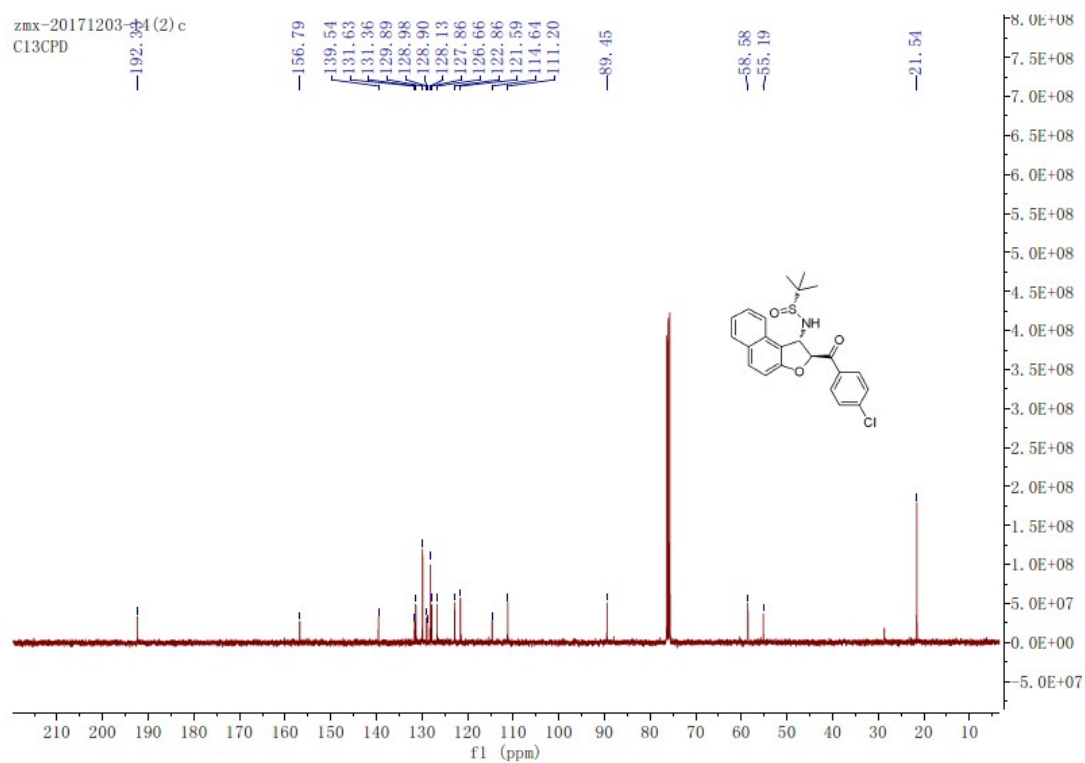
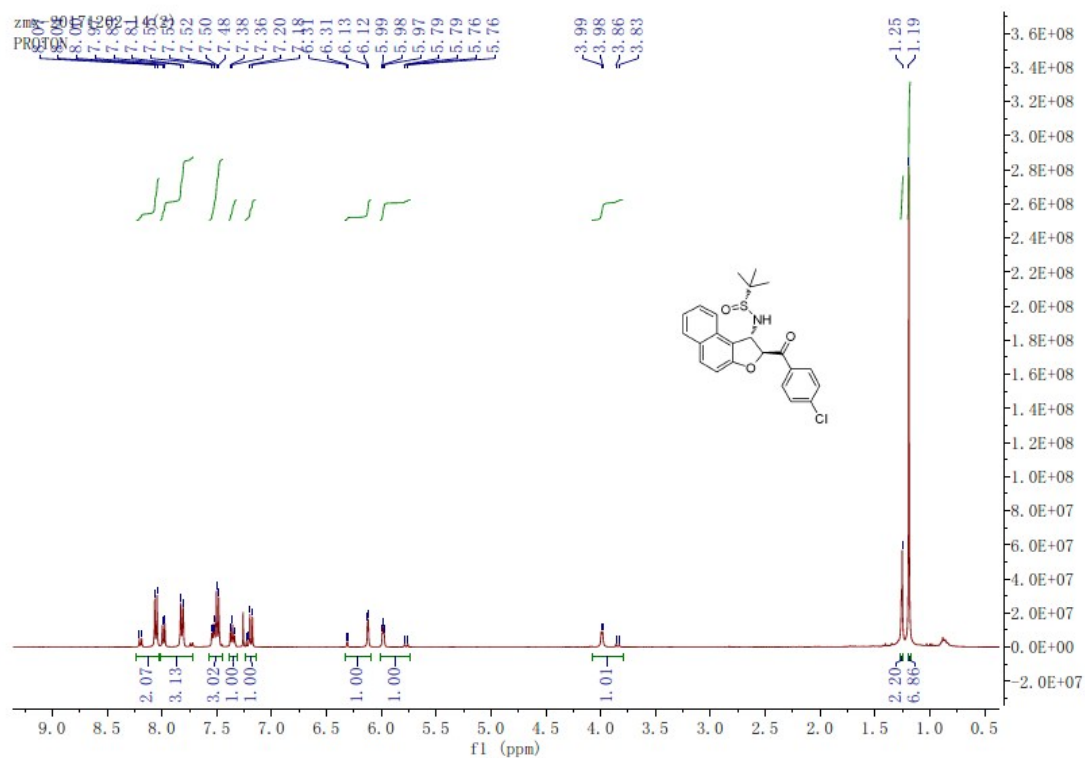
Trans-(R)-N-((2S,3S)-5-Bromo-2-(4-chlorobenzoyl)-2,3-dihydrobenzofuran-3-yl)-2-methylpropane-2-sulfinamide (3g)



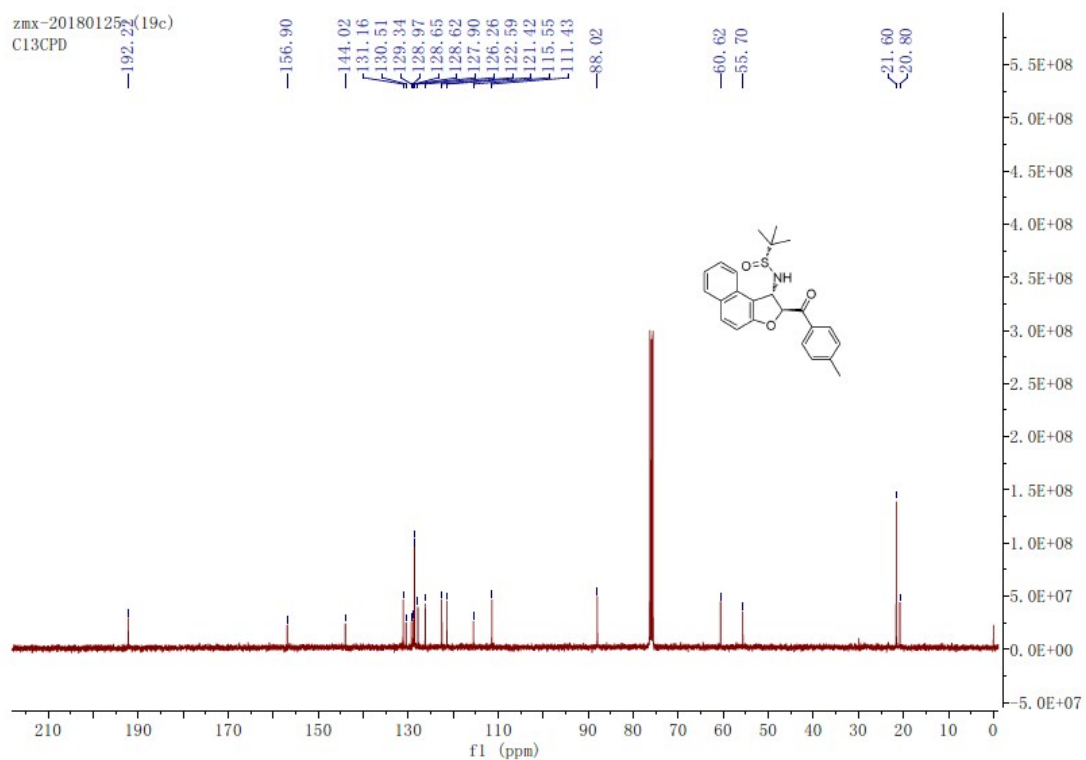
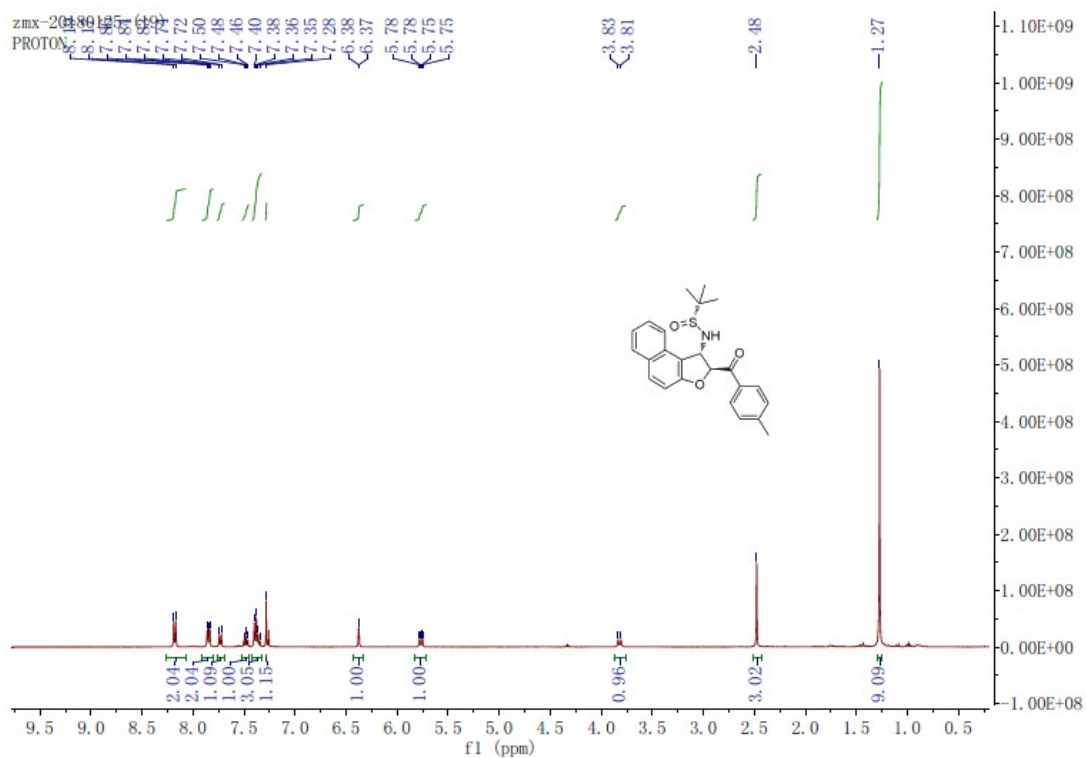
Trans-(R)-N-((2S,3S)-5,7-Dichloro-2-(4-chlorobenzoyl)-2,3-dihydrobenzofuran-3-yl)-2-methylpropane-2-sulfinamide (3h)



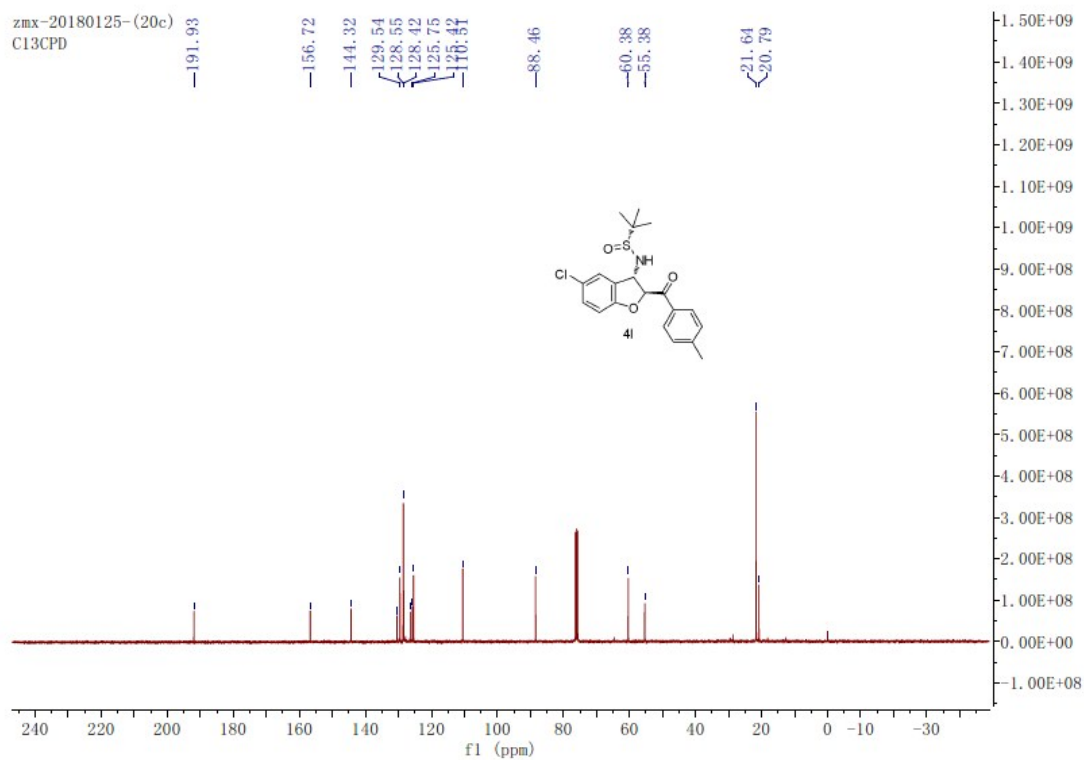
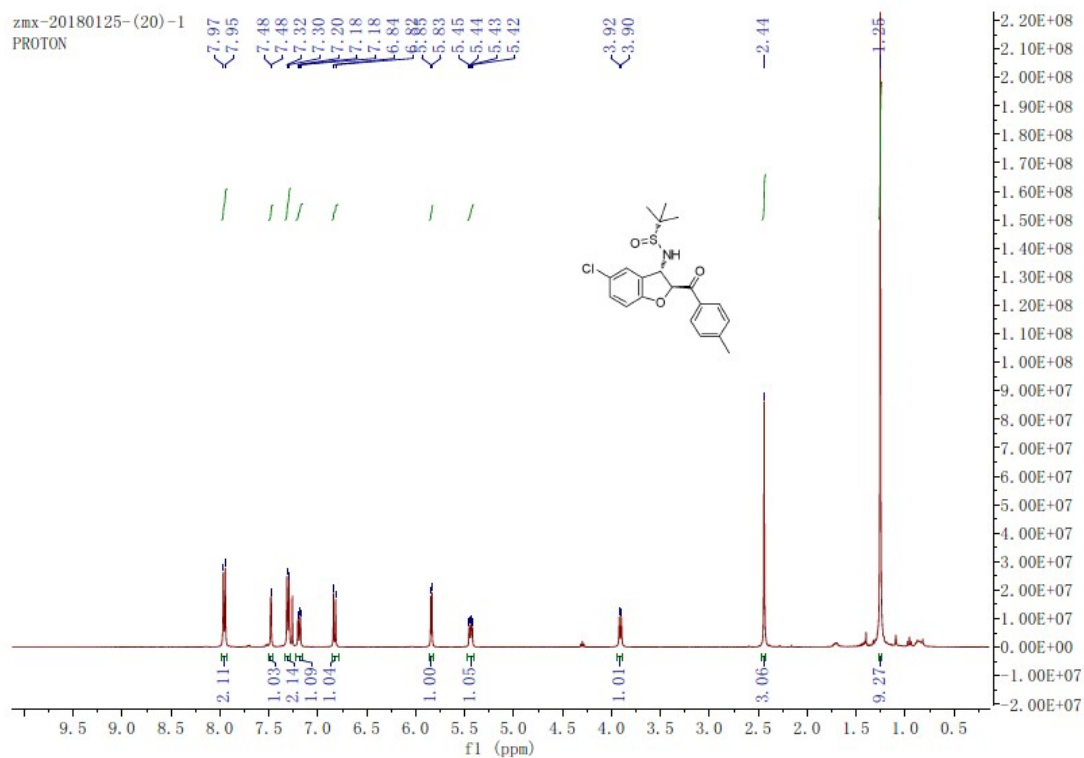
Trans-(R)-N-((1S,2S)-2-(4-Chlorobenzoyl)-1,2-dihydronaphtho[2,1-b]furan-1-yl)-2-methylpropane-2-sulfinamide (3i)



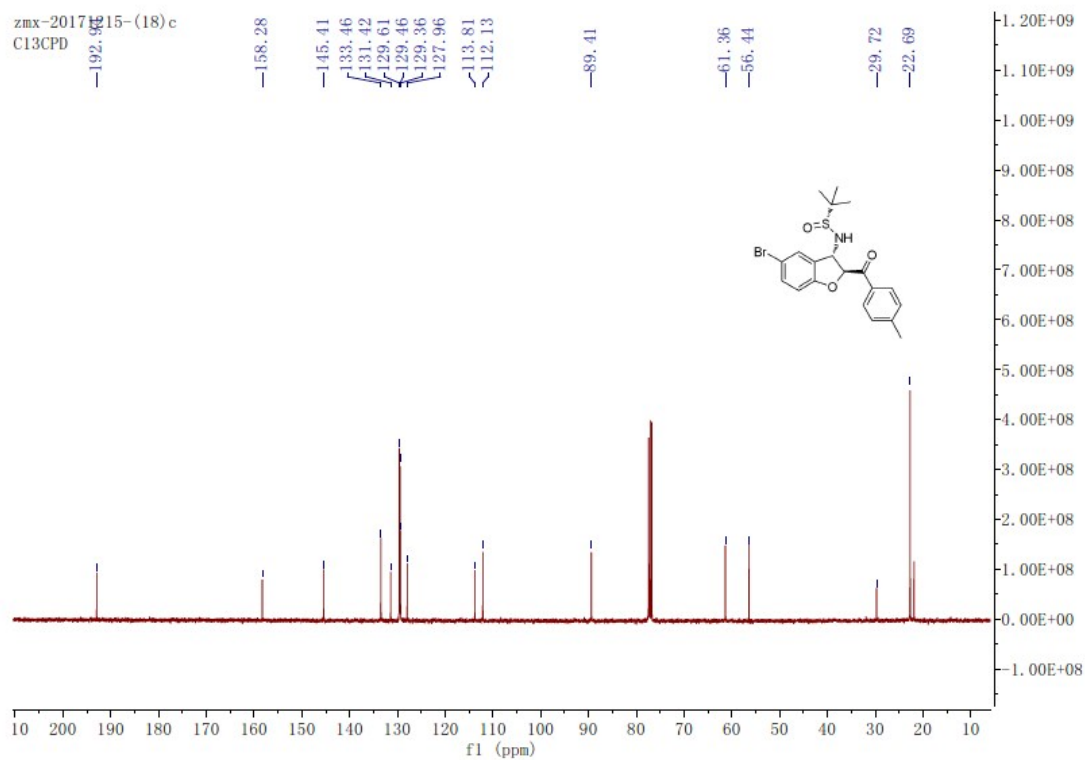
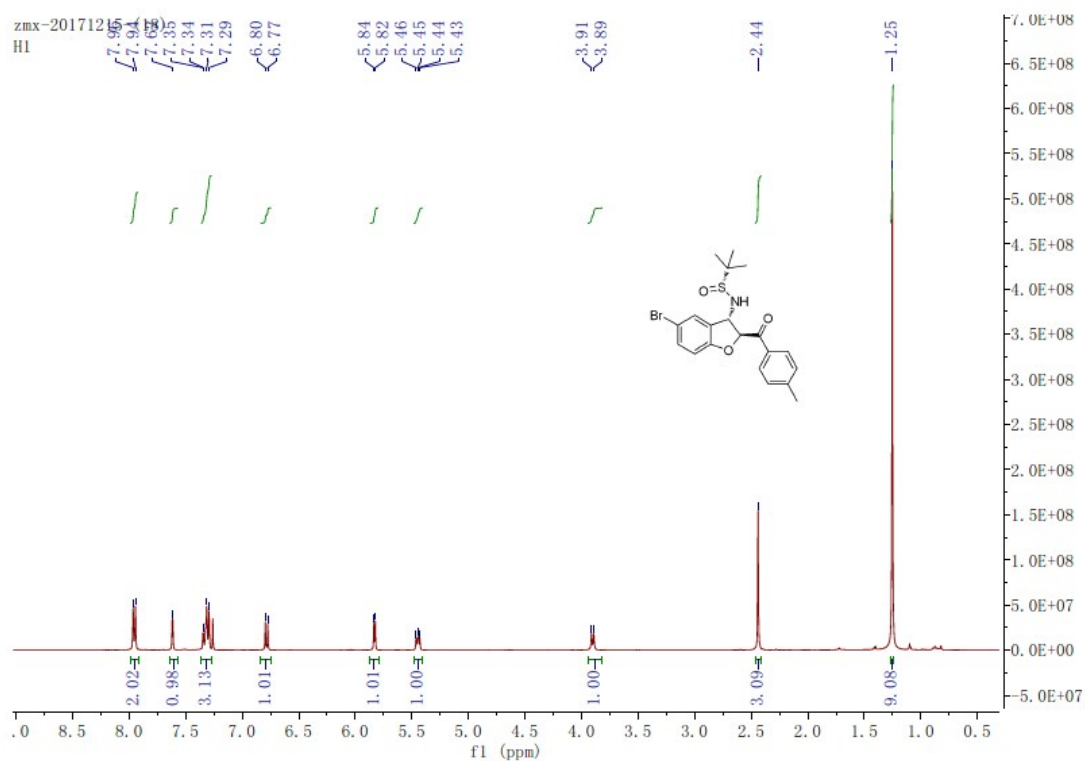
Trans-(R)-2-Methyl-N-((1S,2S)-2-(4-methylbenzoyl)-1,2-dihydronaphtho[2,1-b]furan-1-yl)propane-2-sulfinamide (3j)



Trans-(R)-N-((2S,3S)-5-Chloro-2-(4-methylbenzoyl)-2,3-dihydrobenzofuran-3-yl)-2-methylpropane-2-sulfinamide (3l)

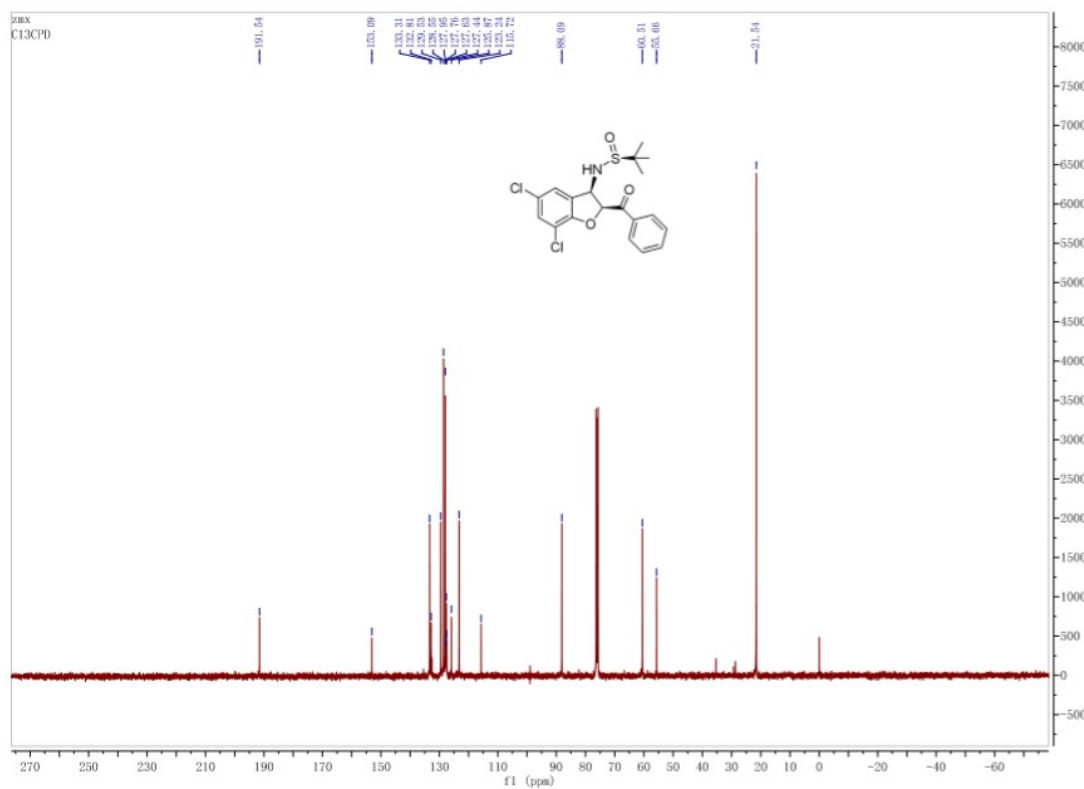
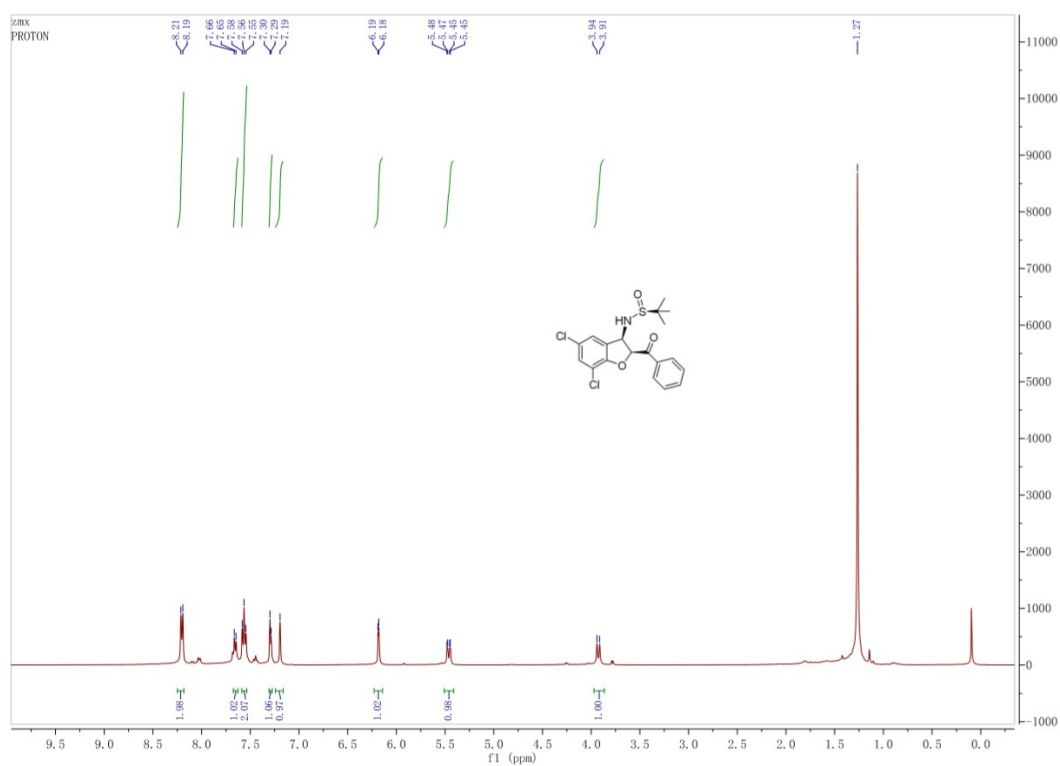


Trans-(R)-N-((2S,3S)-5-Bromo-2-(4-methylbenzoyl)-2,3-dihydrobenzofuran-3-yl)-2-methylpropane-2-sulfinamide (3n)

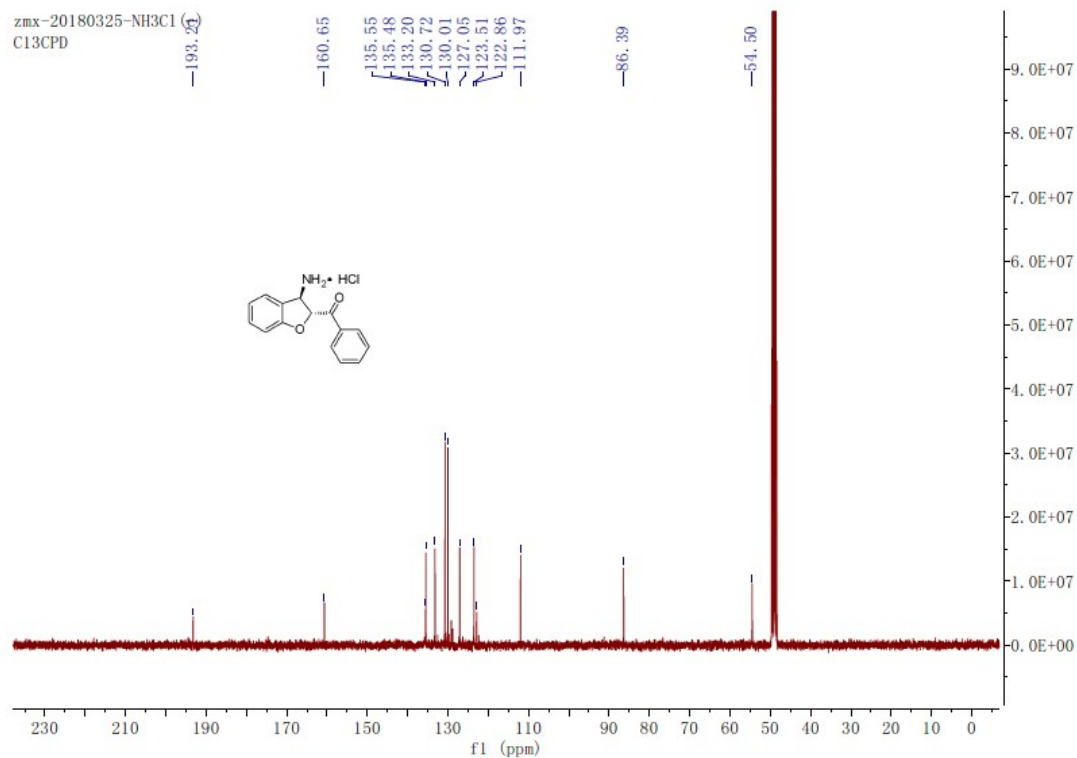
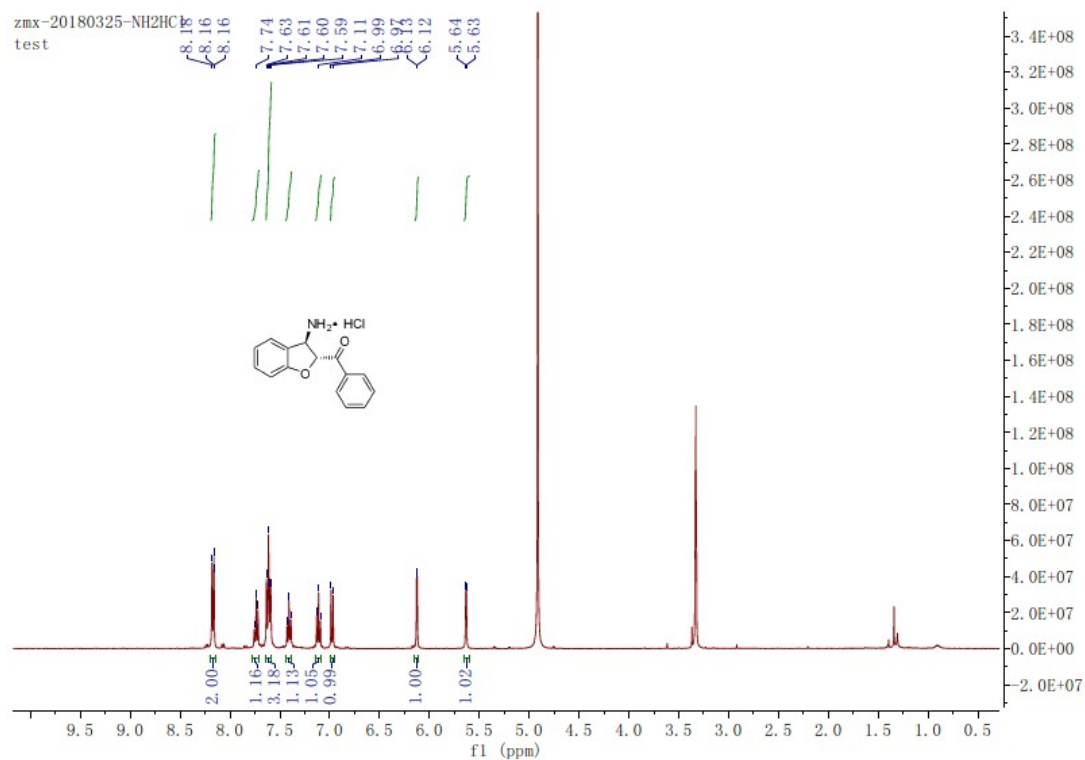


Copies of ^1H NMR and ^{13}C NMR spectra of *cis*-(*Ss*,*2R*,*3R*)-**3d**:

Cis-(*S*)-*N*-((*2S*,*3R*)-2-Benzoyl-5,7-dichloro-2,3-dihydrobenzofuran-3-yl)-2-methylpropane-2-sulfonamide (**3d**)



((2R,3R)-3-amino-2,3-dihydrobenzofuran-2-yl)(phenyl)methanone hydrochloride (4a)



X-ray crystallographic data of compound *trans*-(*Ss,2R,3R*)-**3a**

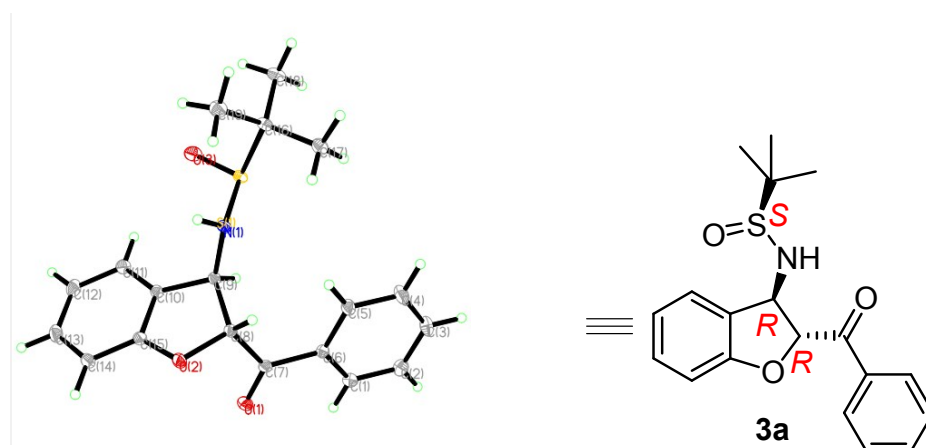


Figure S1 X-ray crystal structure of *trans*-**3a**

Displacement ellipsoids are shown at the 50% probability level.

Table S1 Crystal data and structure refinement for compound *trans*-**3a**

Name	Compound 193e
Empirical formula	C ₁₉ H ₂₁ NO ₃ S
Formula weight	343.43
Temperature/K	133.15
Crystal system	orthorhombic
Space group	P2 ₁ 2 ₁ 2 ₁
a/Å	9.1621(2)
b/Å	11.5165(2)
c/Å	17.1645(4)
α /°	90.00
β /°	90.00
γ /°	90.00
Volume/Å ³	1811.10(7)
Z	4
ρ_{calc} /cm ³	1.260

μ/mm^{-1}	0.195
F(000)	728.0
Crystal size/ mm^3	$0.2 \times 0.18 \times 0.12$
Radiation	MoK α ($\lambda = 0.71073$)
2θ range for data collection/ $^\circ$	4.26 to 61.8
Index ranges	$-12 \leq h \leq 12, -15 \leq k \leq 15, -24 \leq l \leq 23$
Reflections collected	19767
Independent reflections	5059 [$R_{\text{int}} = 0.0240, R_{\text{sigma}} = 0.0238$]
Data/restraints/parameters	5059/1/223
Goodness-of-fit on F^2	1.047
Final R indexes [$I \geq 2\sigma(I)$]	$R_1 = 0.0281, wR_2 = 0.0701$
Final R indexes [all data]	$R_1 = 0.0303, wR_2 = 0.0710$
Largest diff. peak/hole / $e \text{ \AA}^{-3}$	0.21/-0.22
Flack parameter	-0.04(4)

X-ray crystallographic data of compound *trans*-(*R*,*2S*,*3S*)-3d

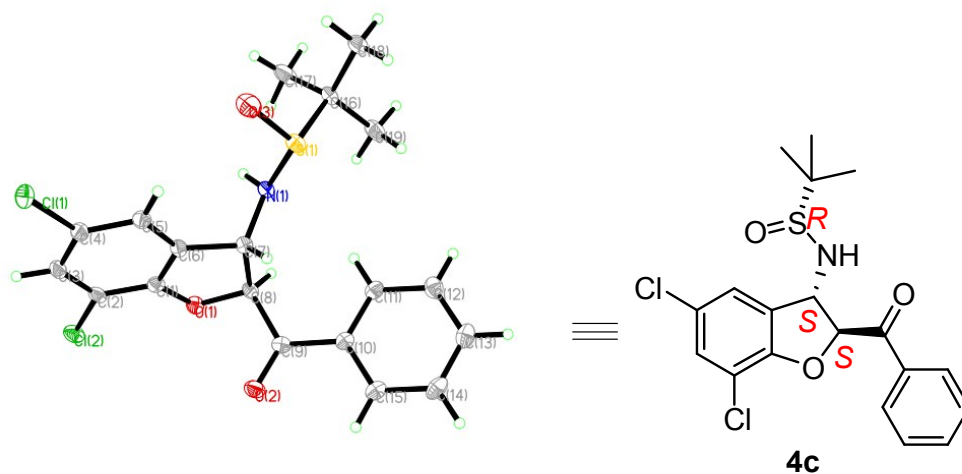


Figure S2 X-ray crystal structure of *trans*-3d

Displacement ellipsoids are shown at the 50% probability level.

Table S2 Crystal data and structure refinement for compound *trans*-3d

Name	Compound 193c
Empirical formula	C ₁₉ H ₁₉ Cl ₂ NO ₃ S
Formula weight	412.31
Temperature/K	133.15
Crystal system	orthorhombic
Space group	P2 ₁ 2 ₁ 2 ₁
a/Å	8.4226(17)
b/Å	14.002(3)
c/Å	16.760(3)
α /°	90.00
β /°	90.00
γ /°	90.00
Volume/Å ³	1976.6(7)

Z	4
$\rho_{\text{calc}}/\text{cm}^3$	1.386
μ/mm^{-1}	0.452
F(000)	856.0
Crystal size/ mm^3	$0.2 \times 0.18 \times 0.12$
Radiation	MoK α ($\lambda = 0.71073$)
2 Θ range for data collection/ $^\circ$	4.86 to 55.688
Index ranges	$-10 \leq h \leq 11, -18 \leq k \leq 18, -22 \leq l \leq 22$
Reflections collected	19834
Independent reflections	4700 [$R_{\text{int}} = 0.0510, R_{\text{sigma}} = 0.0460$]
Data/restraints/parameters	4700/1/243
Goodness-of-fit on F^2	0.993
Final R indexes [$I \geq 2\sigma(I)$]	$R_1 = 0.0382, wR_2 = 0.0769$
Final R indexes [all data]	$R_1 = 0.0451, wR_2 = 0.0808$
Largest diff. peak/hole / $e \text{ \AA}^{-3}$	0.33/-0.23
Flack parameter	-0.09(3)