

**Tandem Reactions of Substituted 3-Sulfolenes with Bis-Vinyl Ketones Leading to Highly  
Functionalized Bicyclic and Tricyclic Frameworks**

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Victoria, British Columbia, Canada V8W 3V6

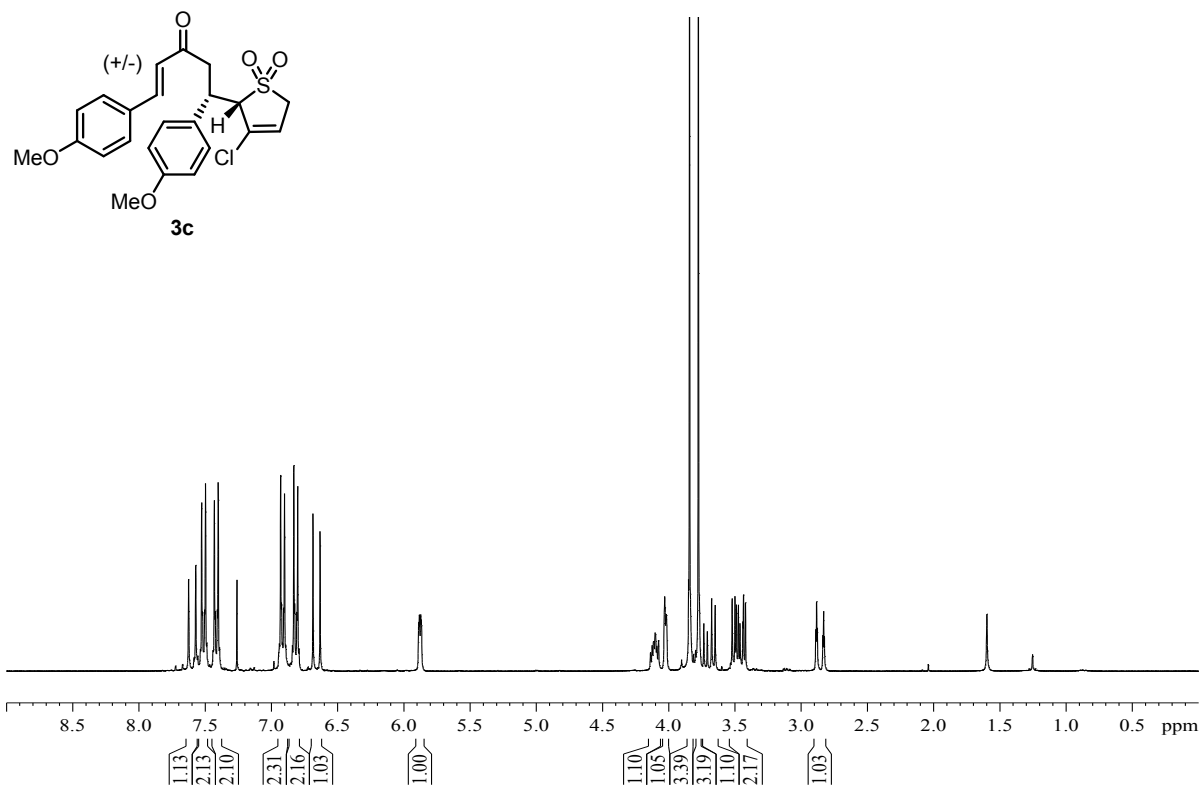
*Organic and Biomolecular Chemistry*

**Supporting Information**

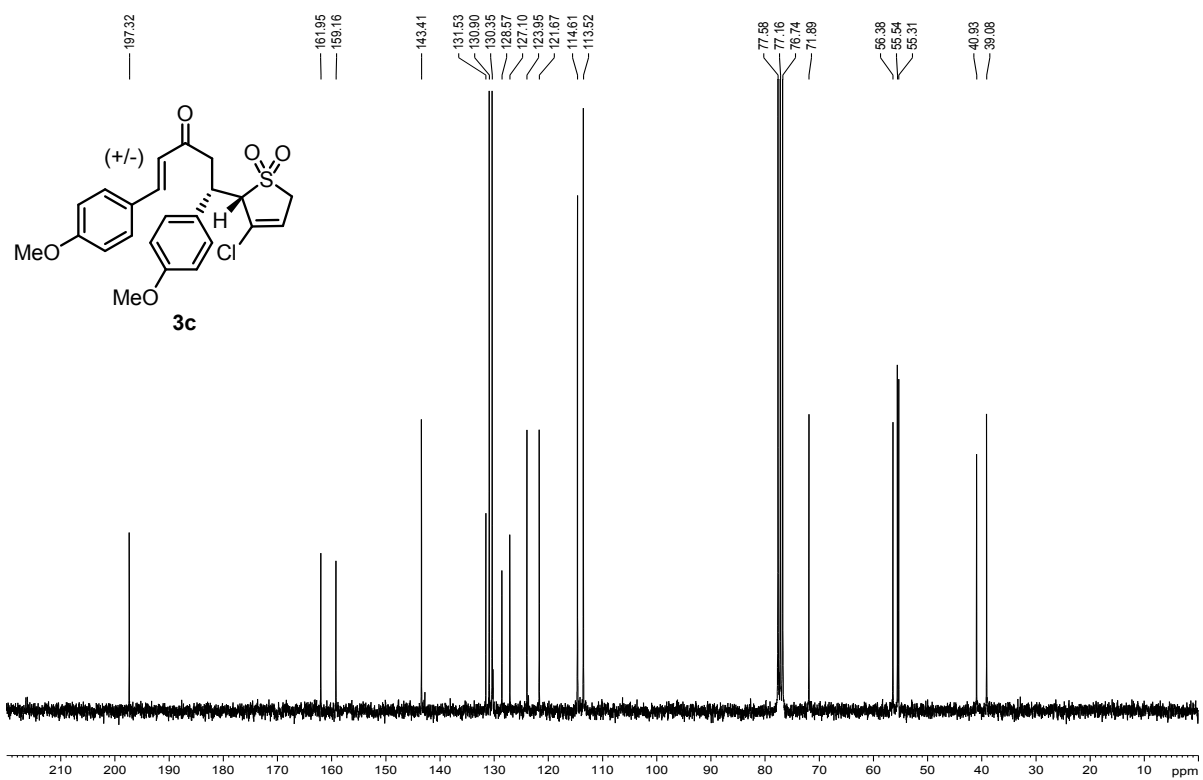
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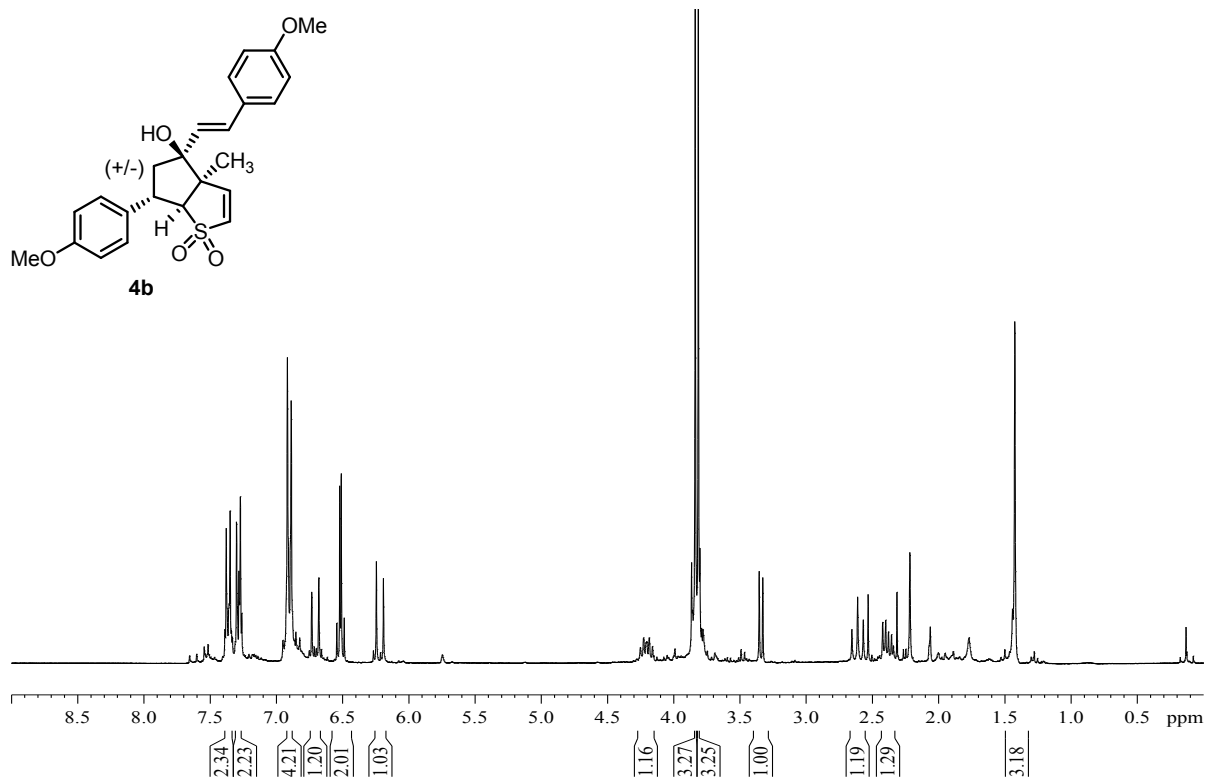
**<sup>1</sup>H NMR spectrum for 3c in CDCl<sub>3</sub>**



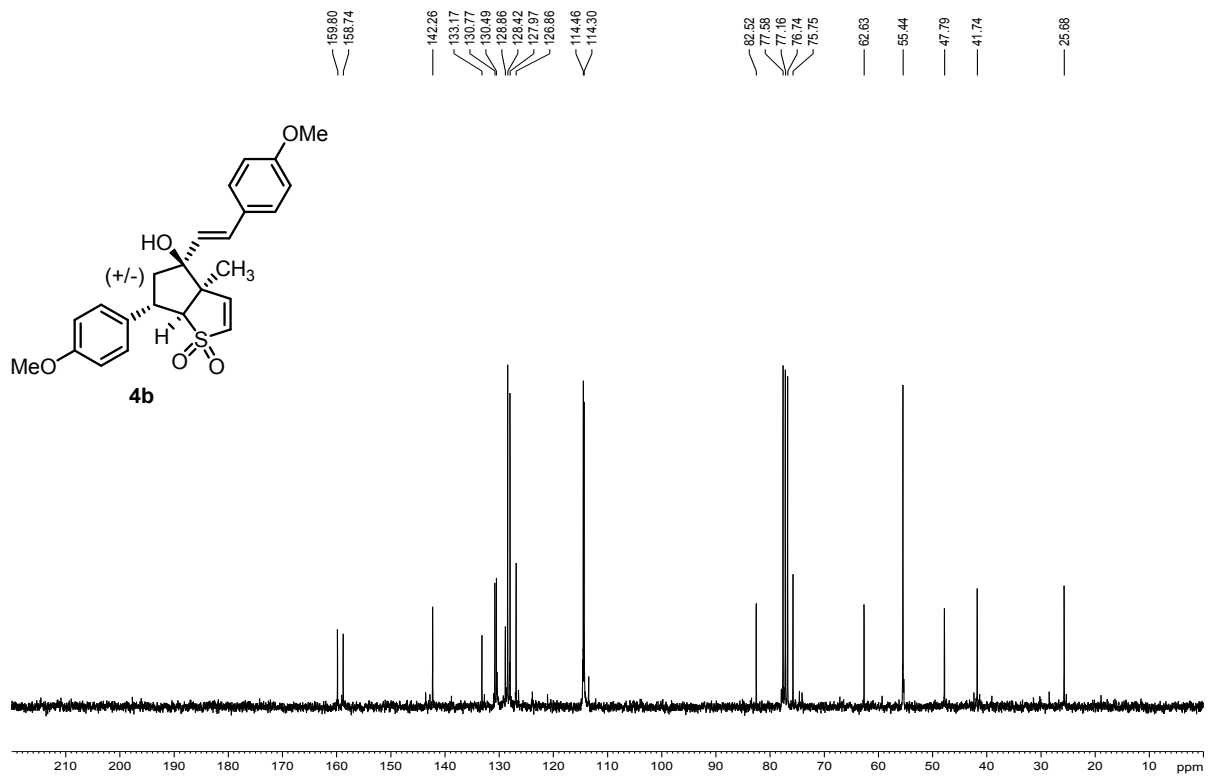
**<sup>13</sup>C NMR spectrum for 3c in CDCl<sub>3</sub>**



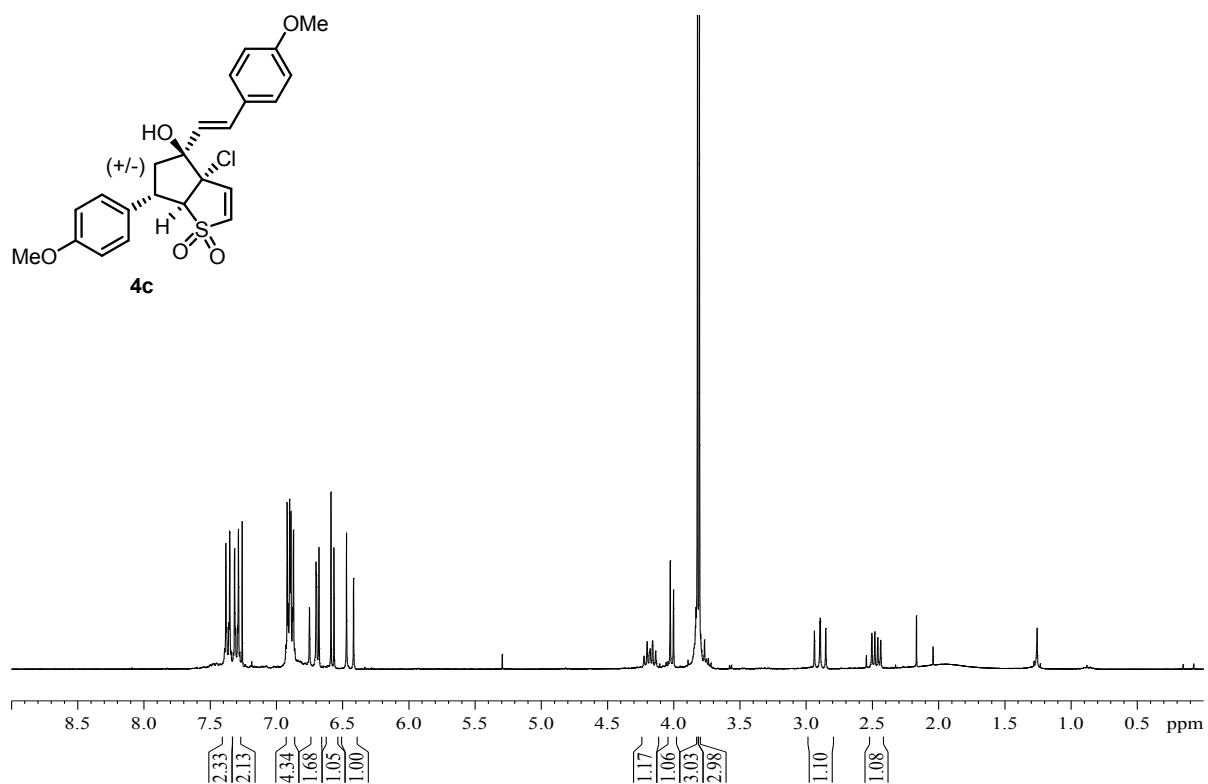
**<sup>1</sup>H NMR spectrum for 4b in CDCl<sub>3</sub>**



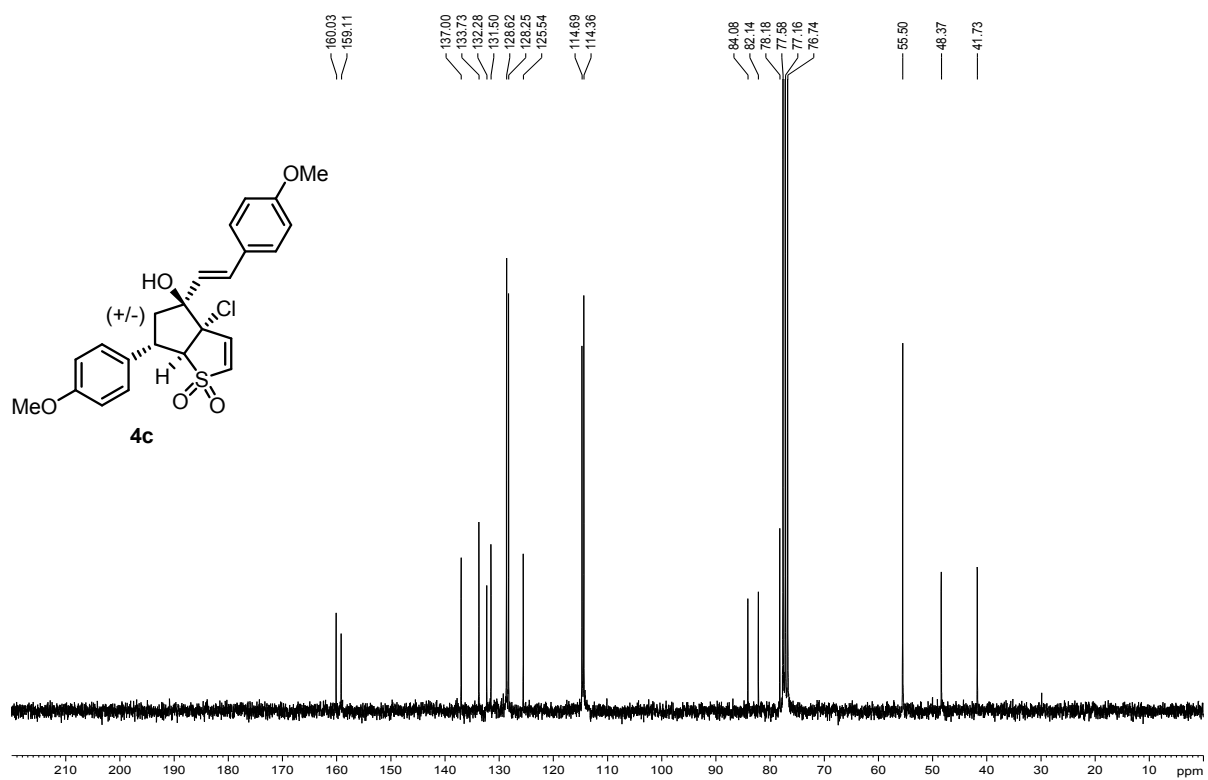
**<sup>13</sup>C NMR spectrum for 4b in CDCl<sub>3</sub>**



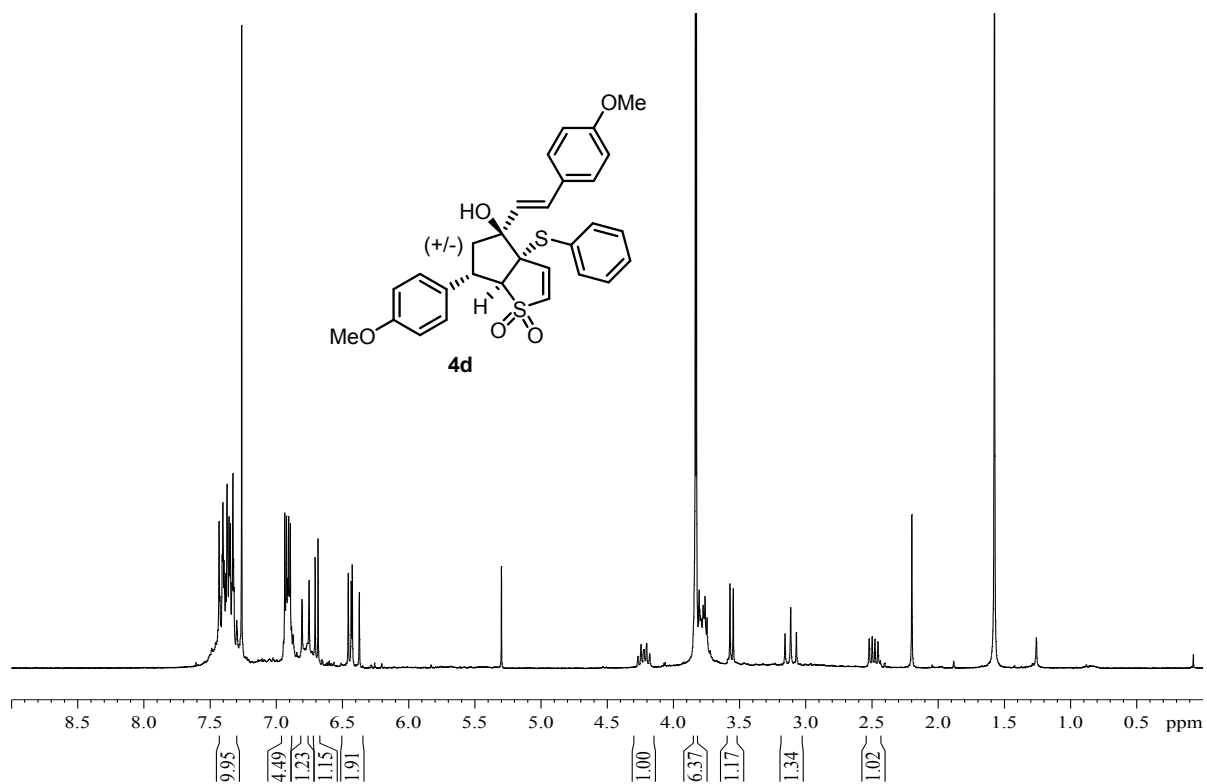
**<sup>1</sup>H NMR spectrum for 4c in CDCl<sub>3</sub>**



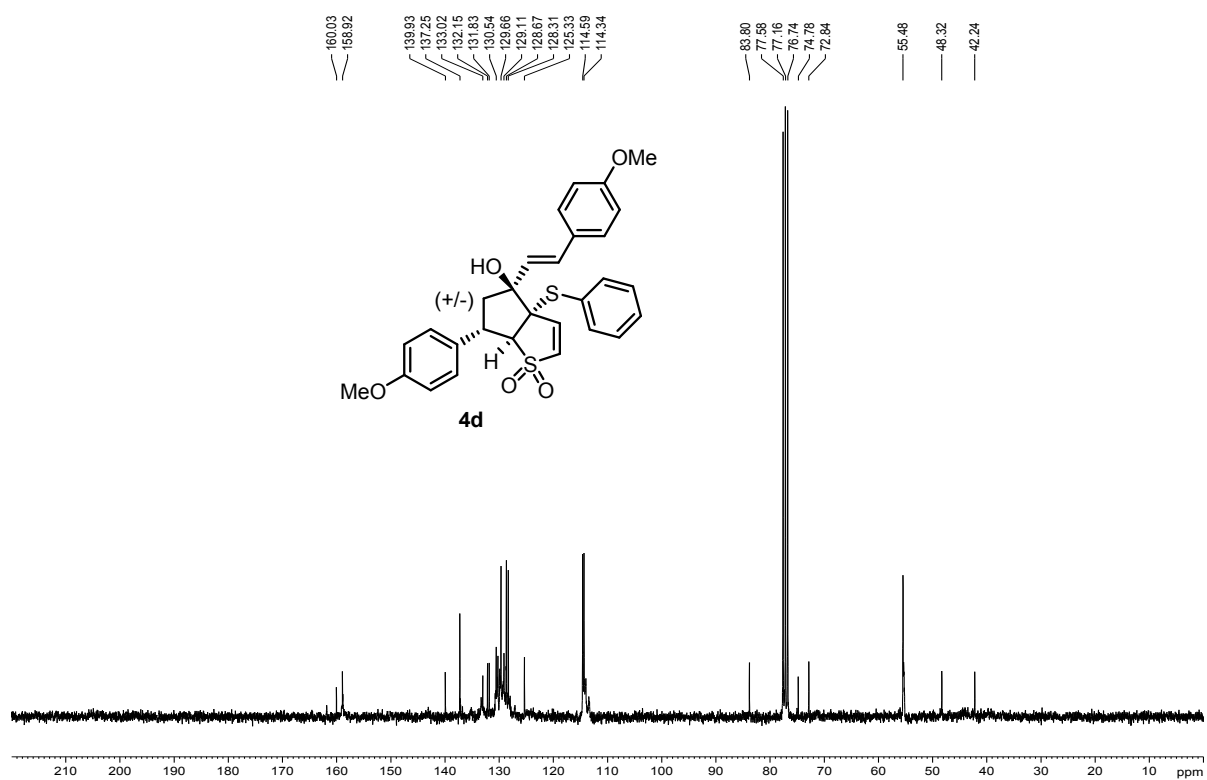
**<sup>13</sup>C NMR spectrum for 4c in CDCl<sub>3</sub>**



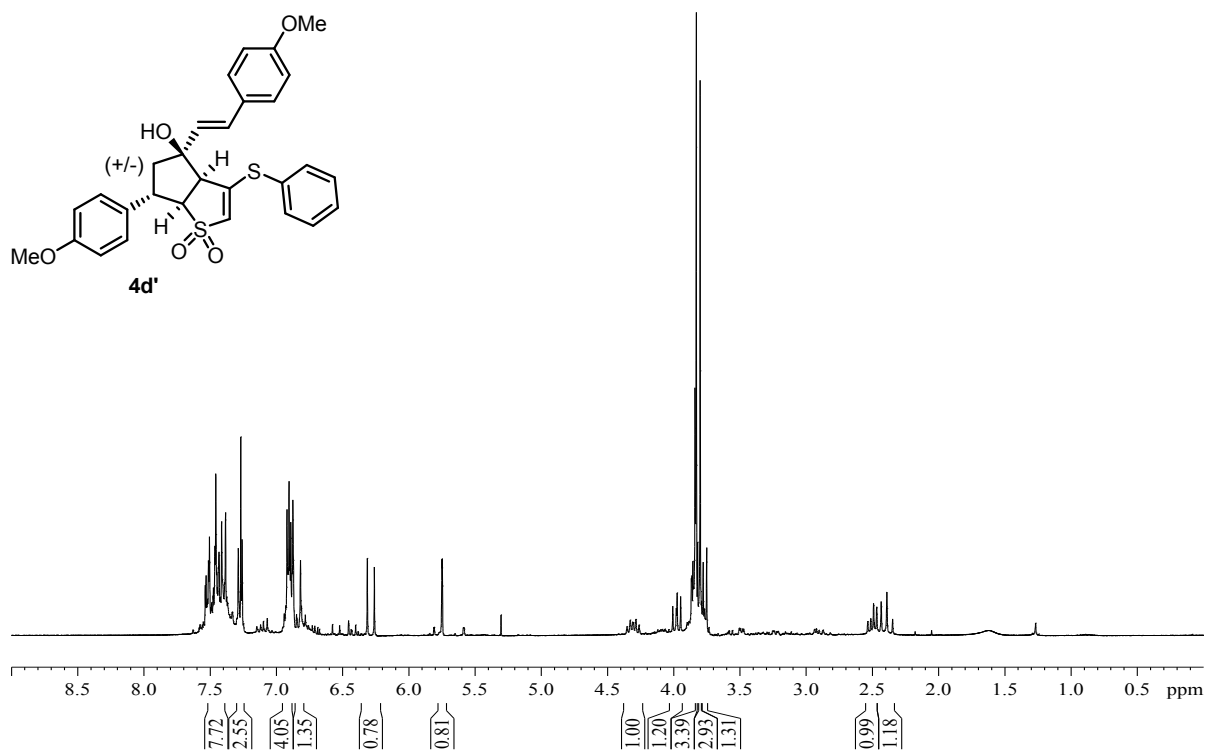
<sup>1</sup>H NMR spectrum for 4d in CDCl<sub>3</sub>



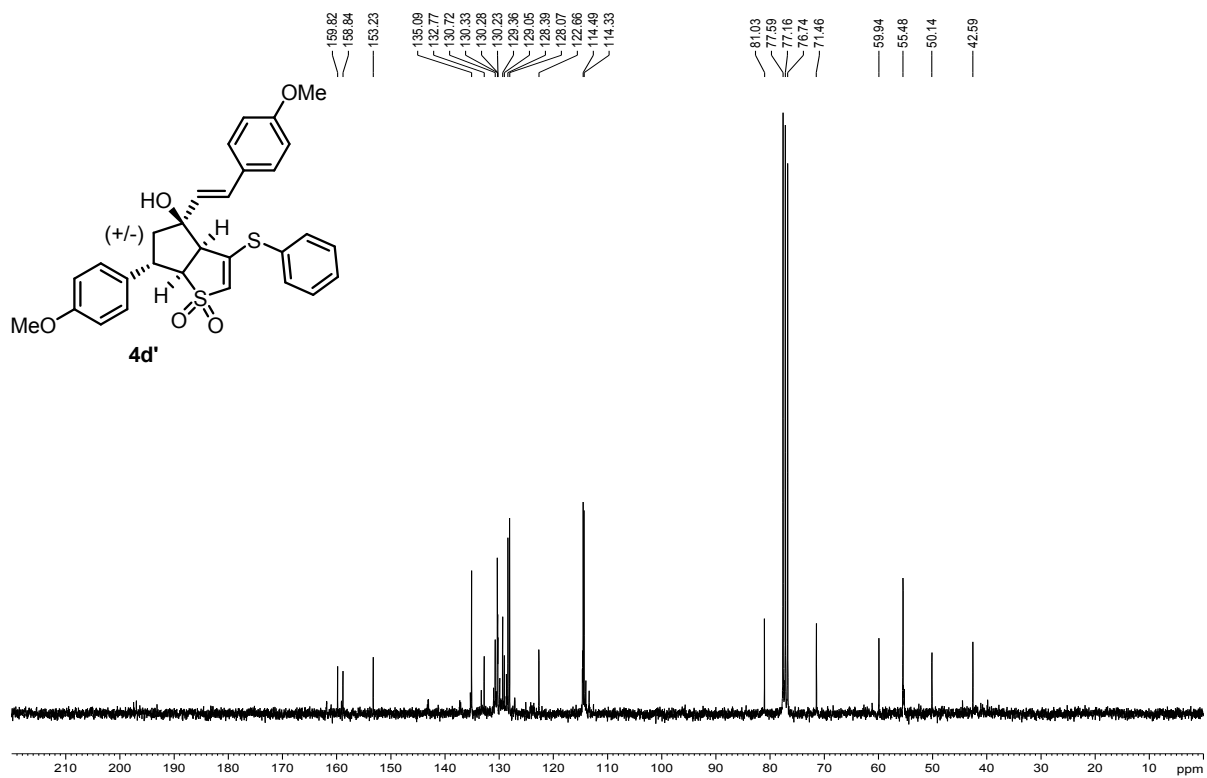
<sup>13</sup>C NMR spectrum for 4d in CDCl<sub>3</sub>



**<sup>1</sup>H NMR spectrum for 4d' (+ minor impurities) in CDCl<sub>3</sub>**

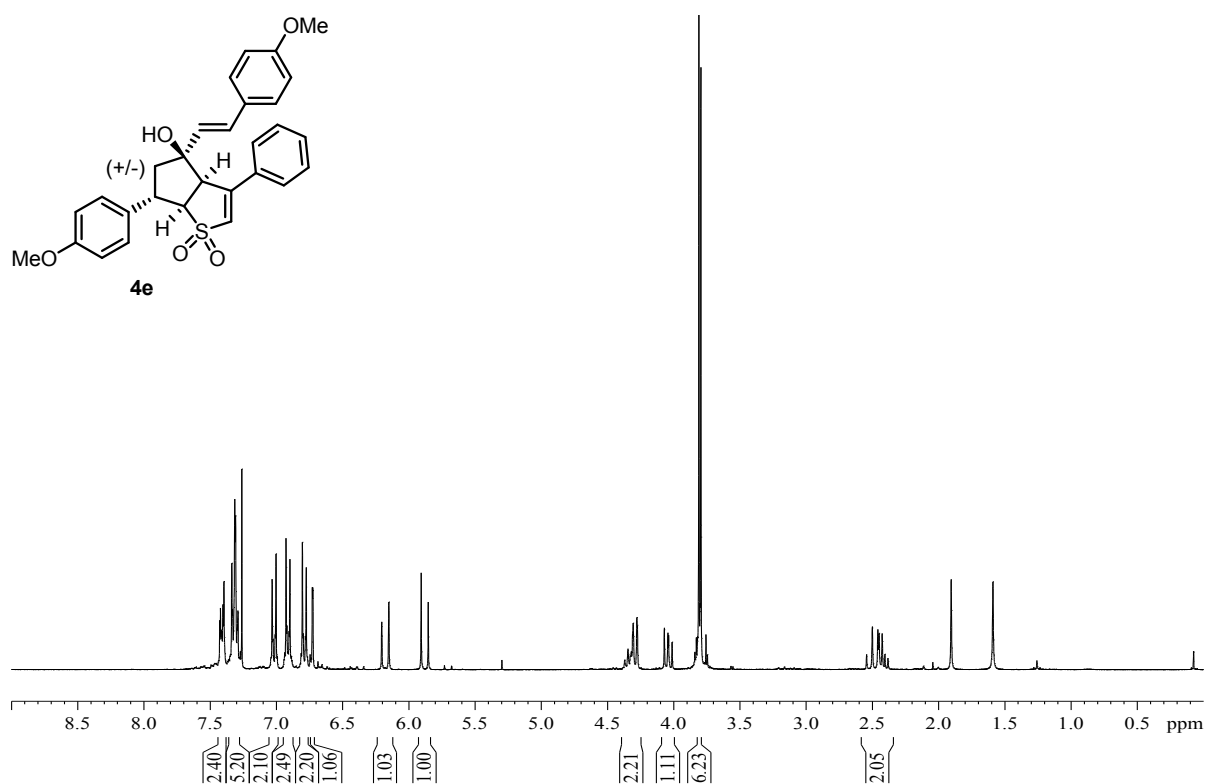


**<sup>13</sup>C NMR spectrum for 4d' (+ minor impurities) in CDCl<sub>3</sub>**

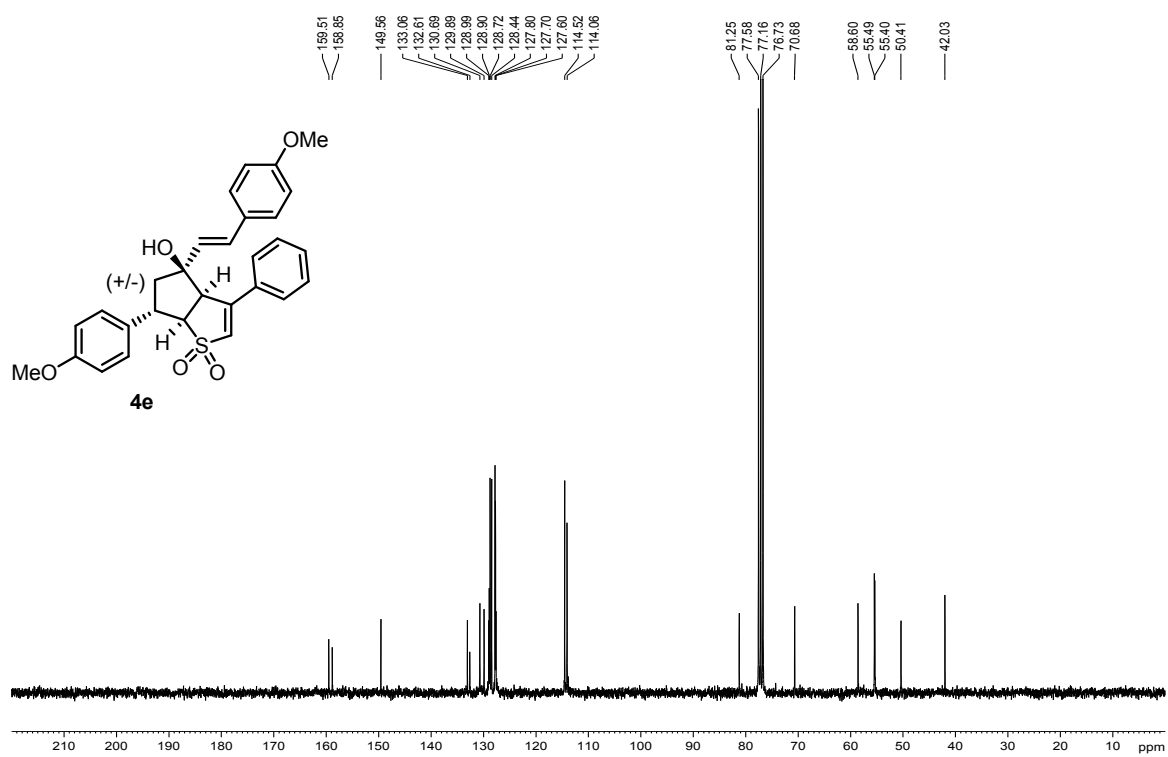




**<sup>1</sup>H NMR spectrum for 4e' in CDCl<sub>3</sub>**

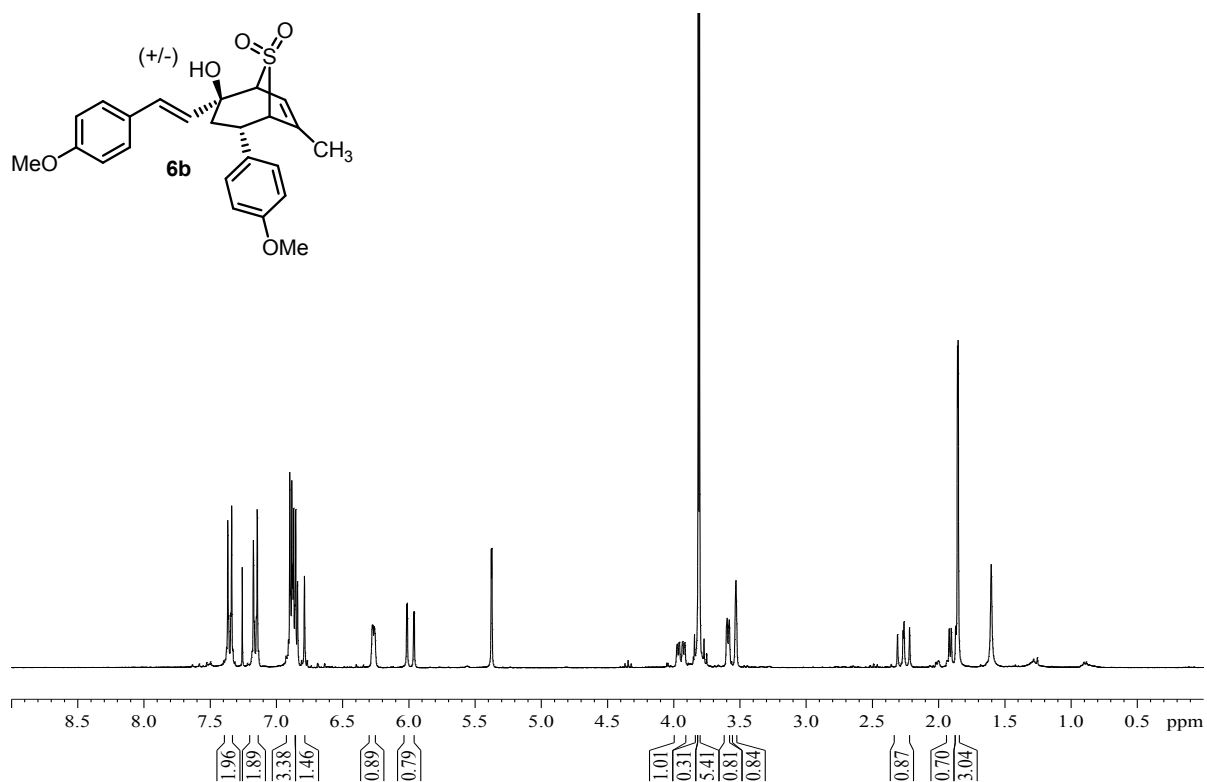


**<sup>13</sup>C NMR spectrum for 4e' in CDCl<sub>3</sub>**

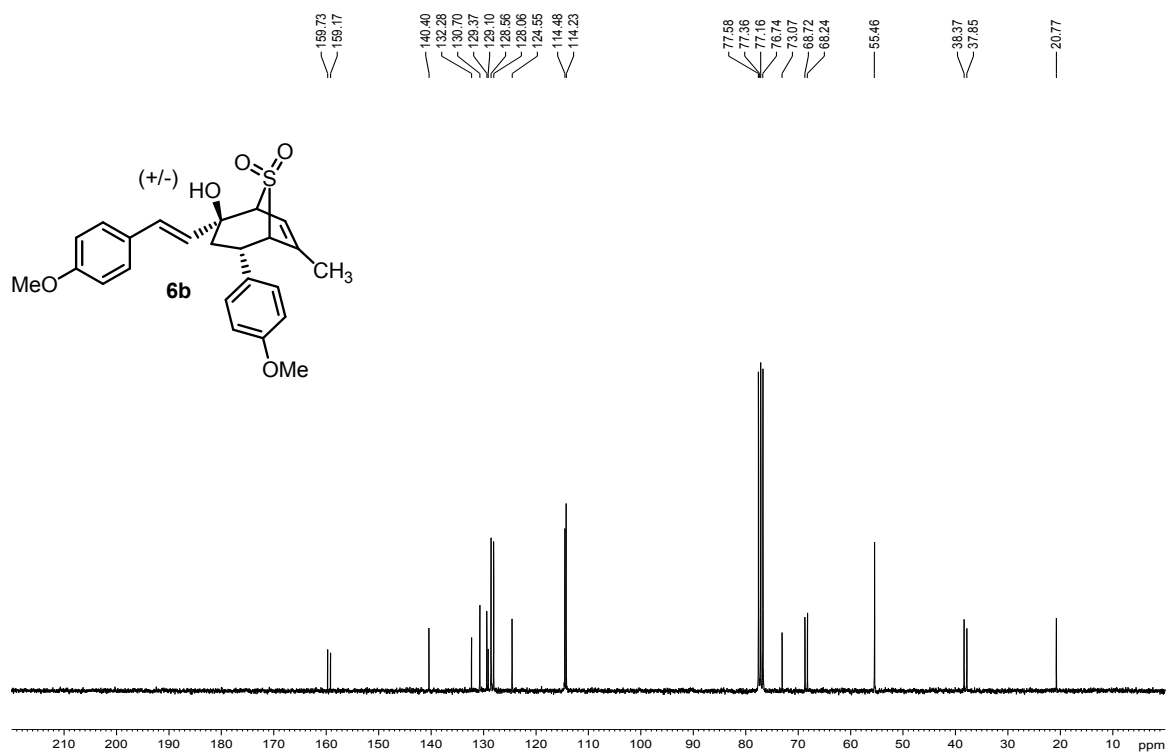




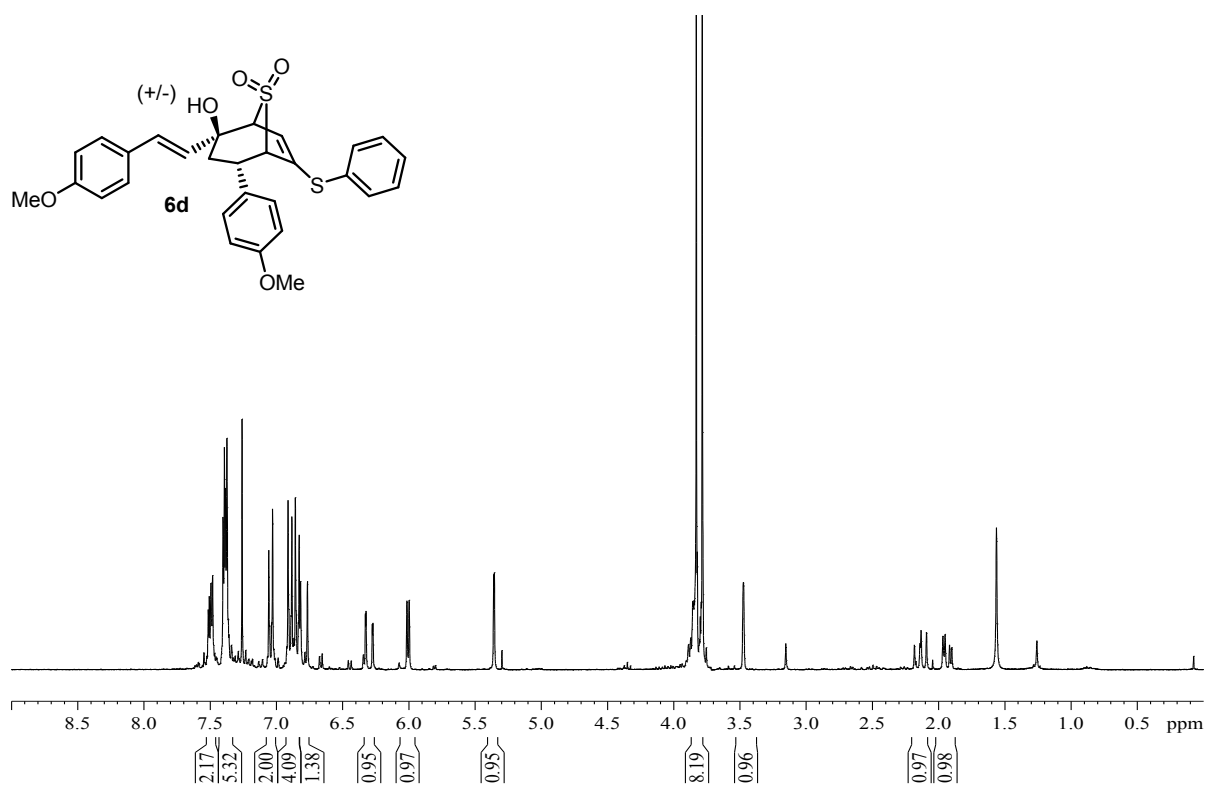
**<sup>1</sup>H NMR spectrum for 6b in CDCl<sub>3</sub>**



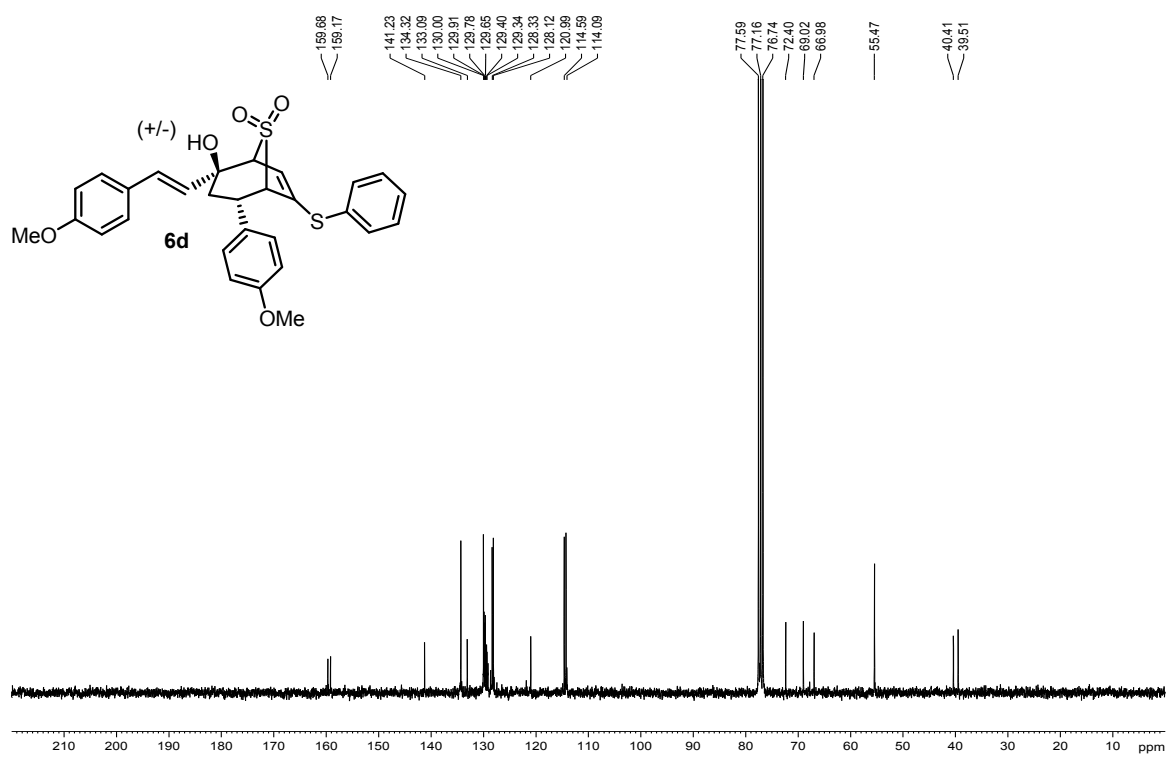
**<sup>13</sup>C NMR spectrum for 6b in CDCl<sub>3</sub>**



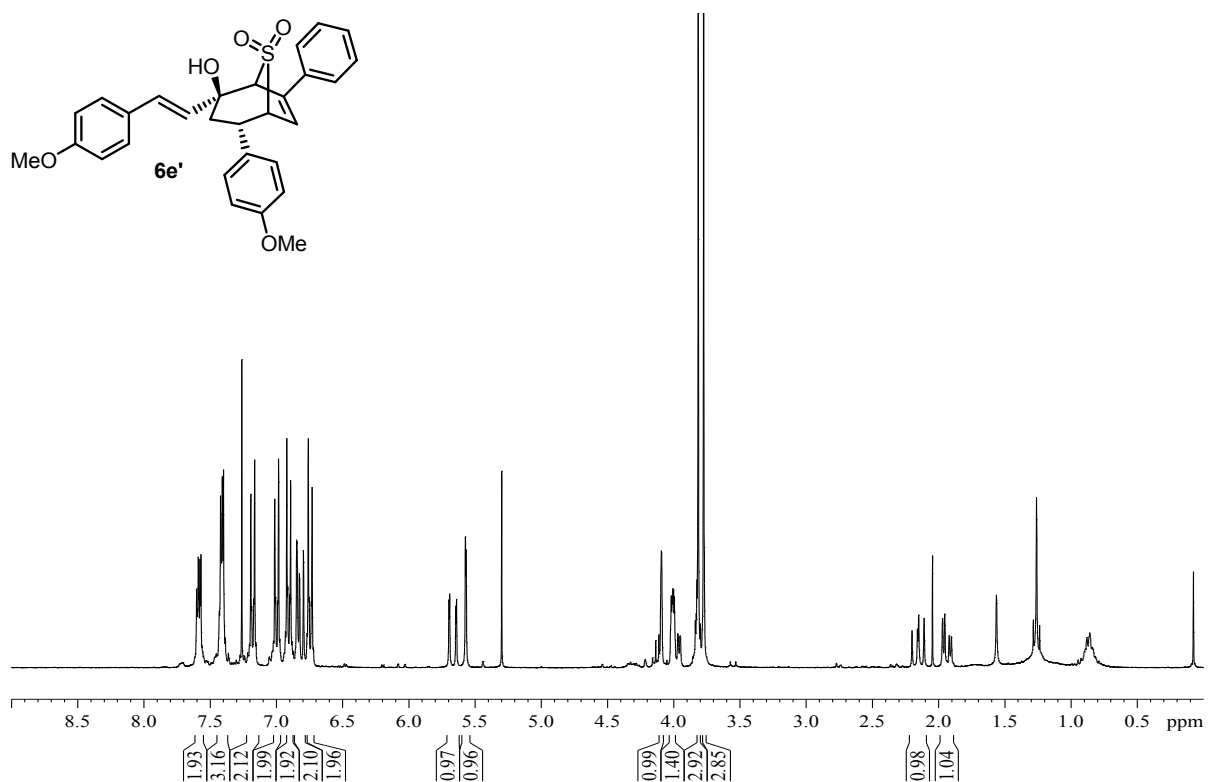
<sup>1</sup>H NMR spectrum for 6d in CDCl<sub>3</sub>



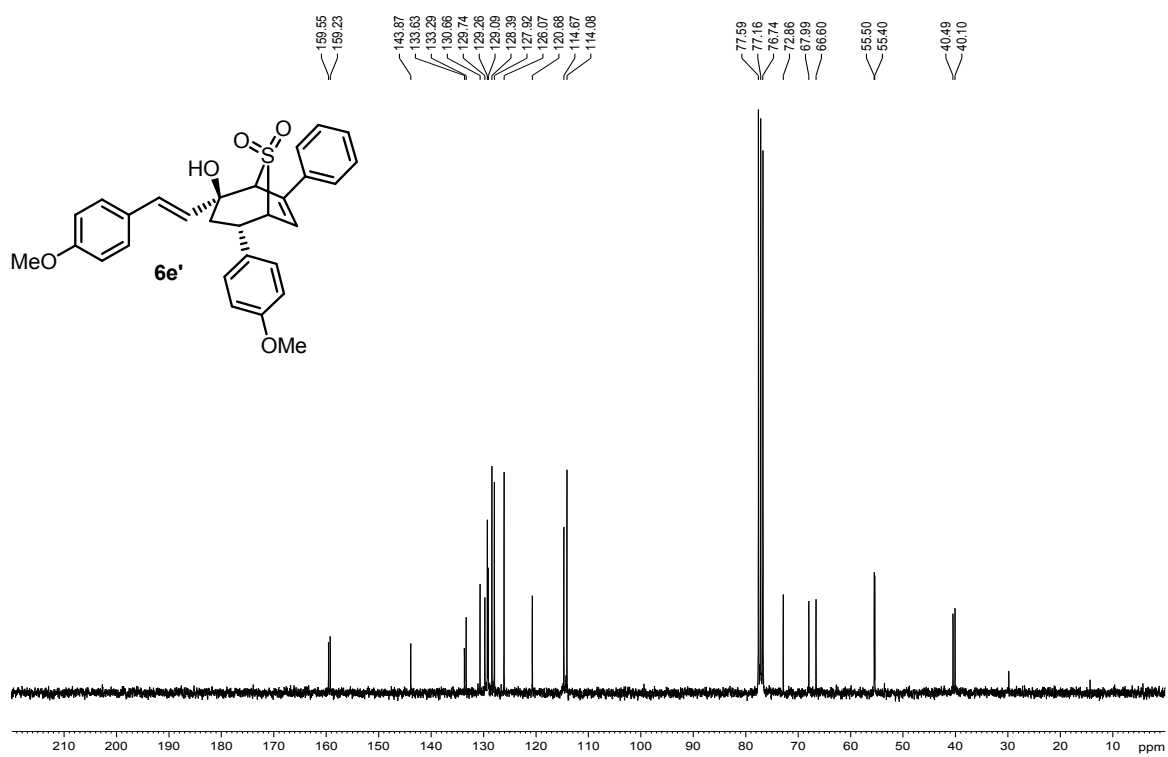
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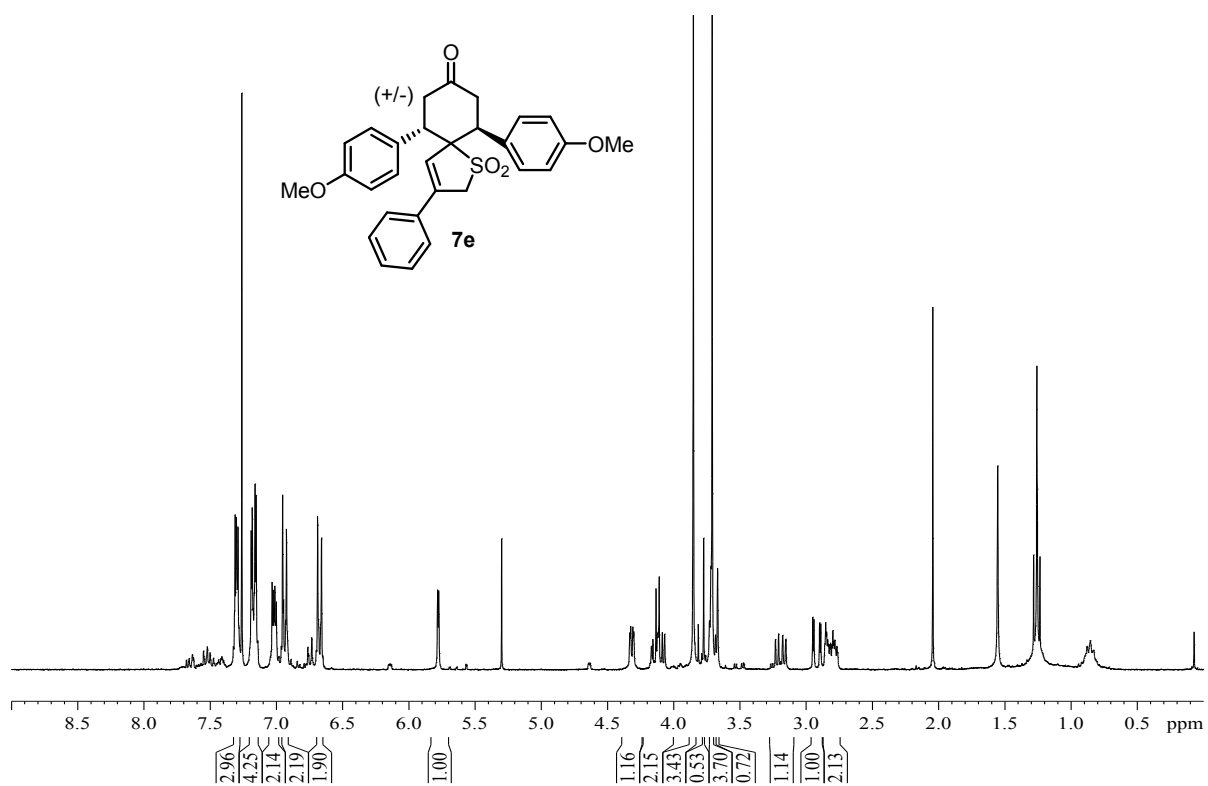
**<sup>1</sup>H NMR spectrum for 6e' in CDCl<sub>3</sub>**



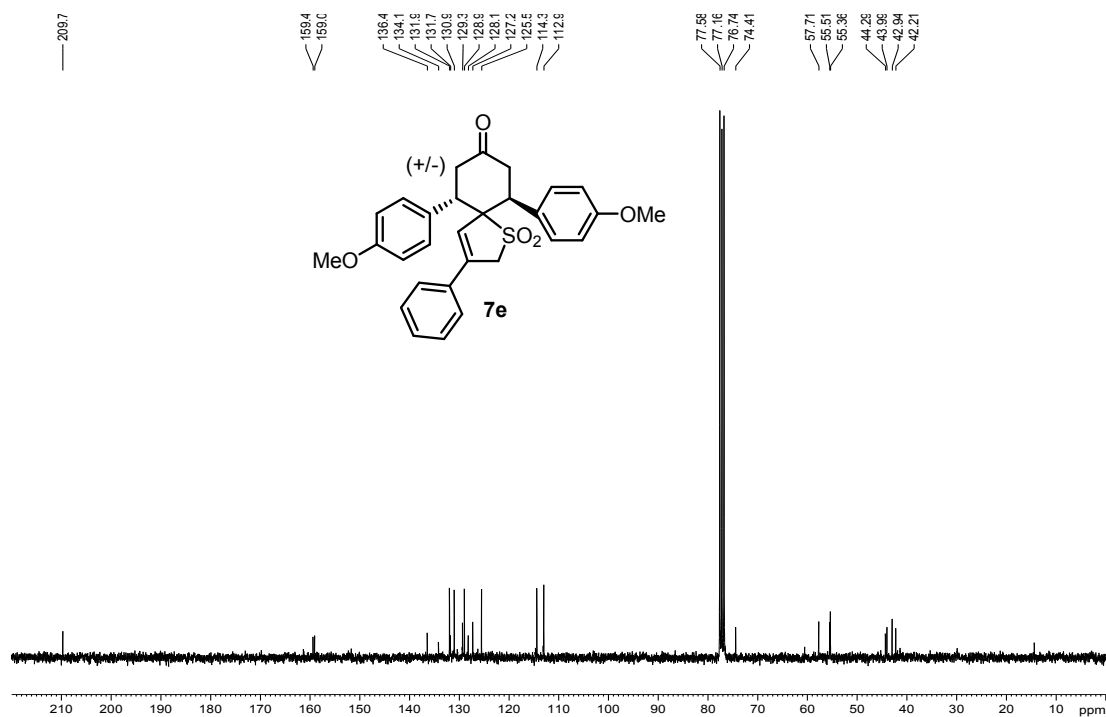
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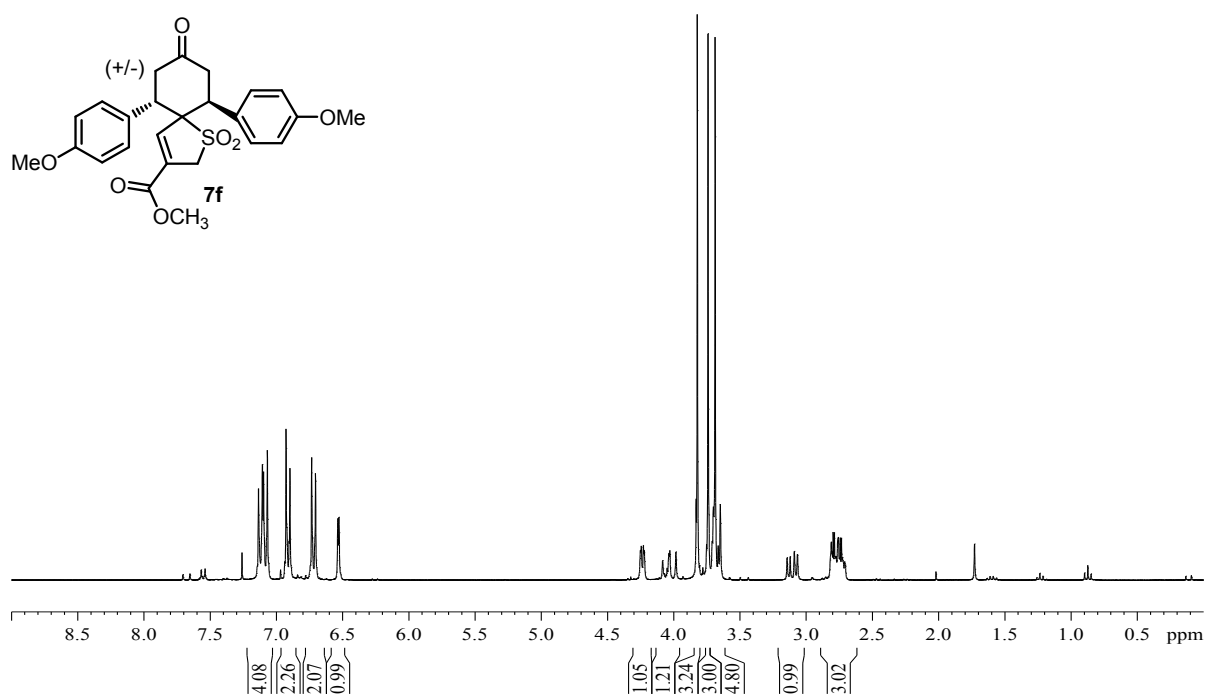
**<sup>1</sup>H NMR spectrum for 7e (with ethyl acetate contaminant) in CDCl<sub>3</sub>**



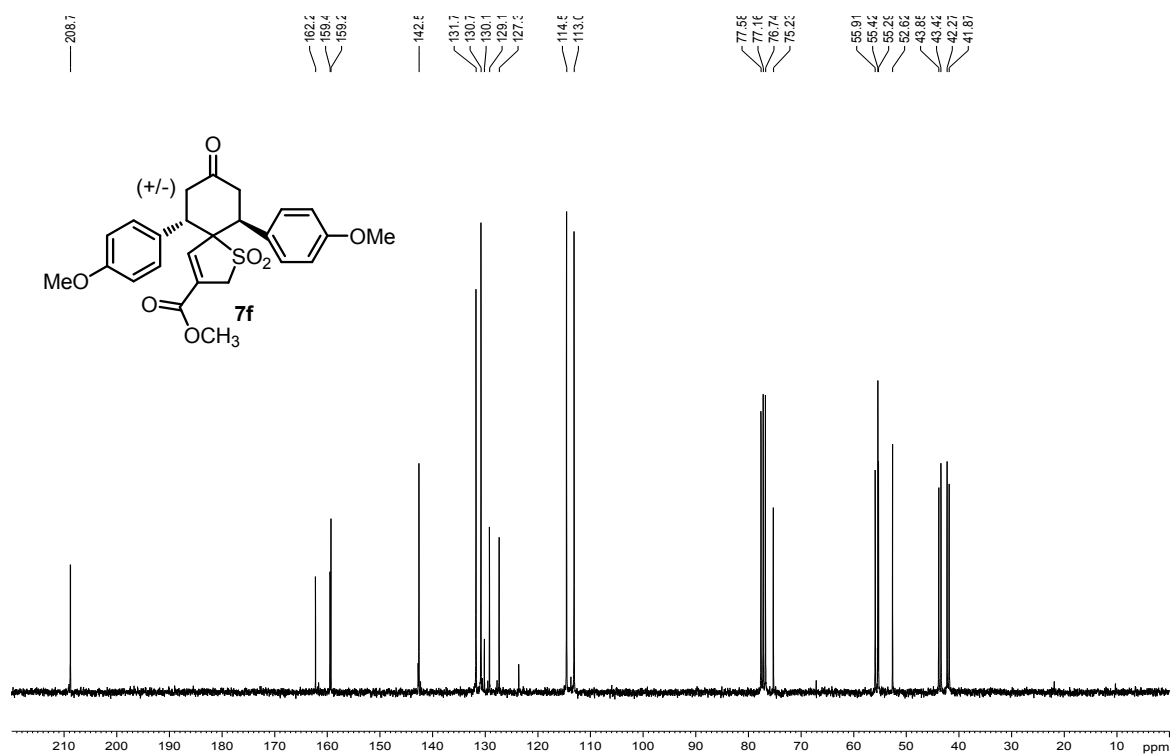
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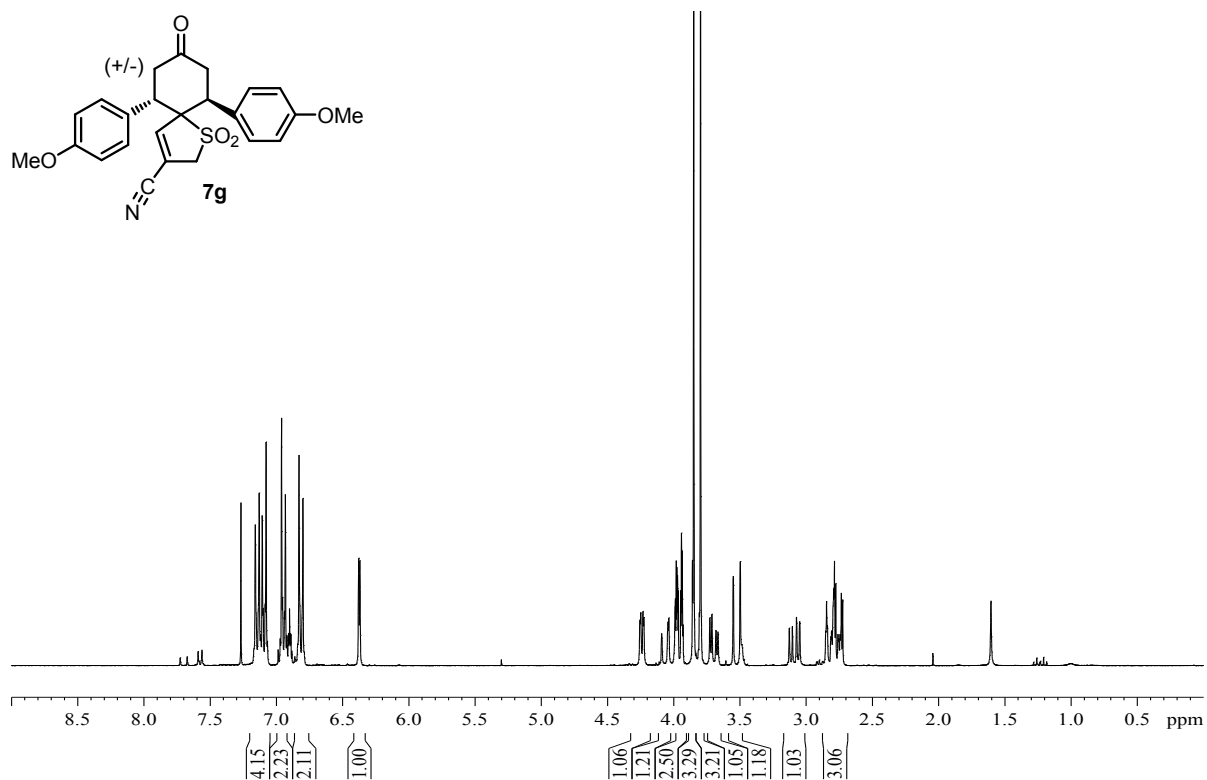
**<sup>1</sup>H NMR spectrum for 7f in CDCl<sub>3</sub>**



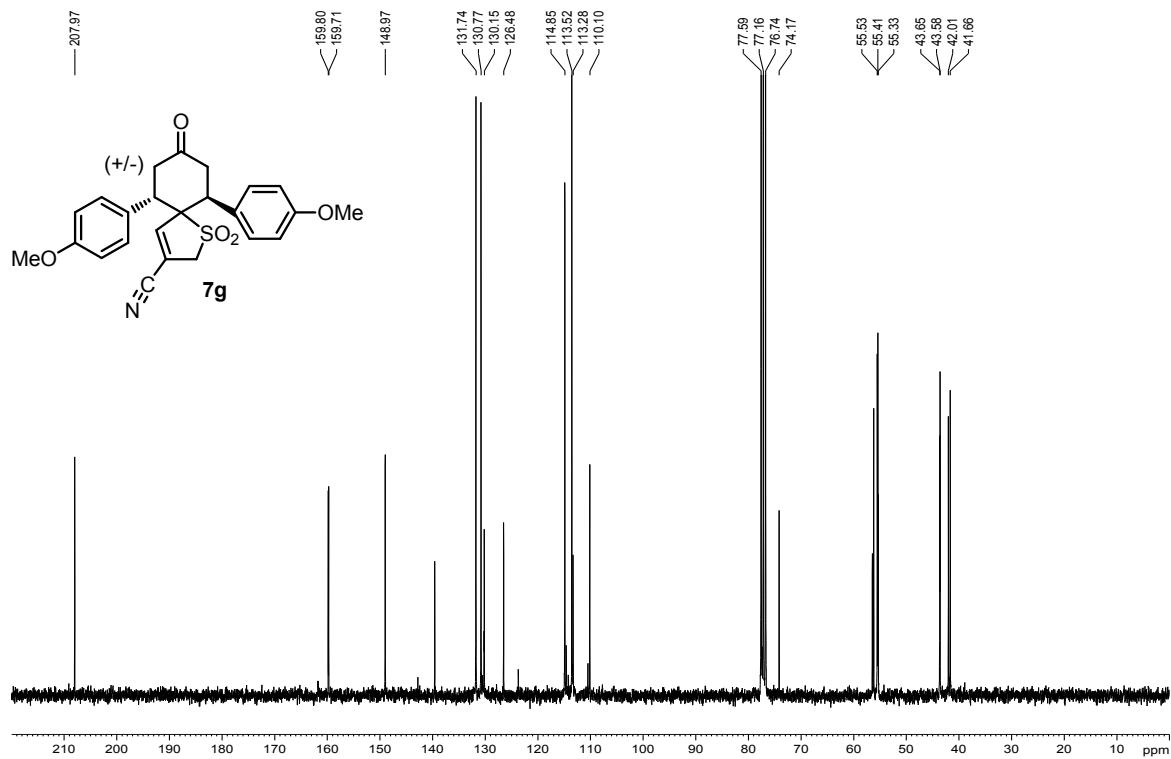
**<sup>13</sup>C NMR spectrum for 7f in CDCl<sub>3</sub>**



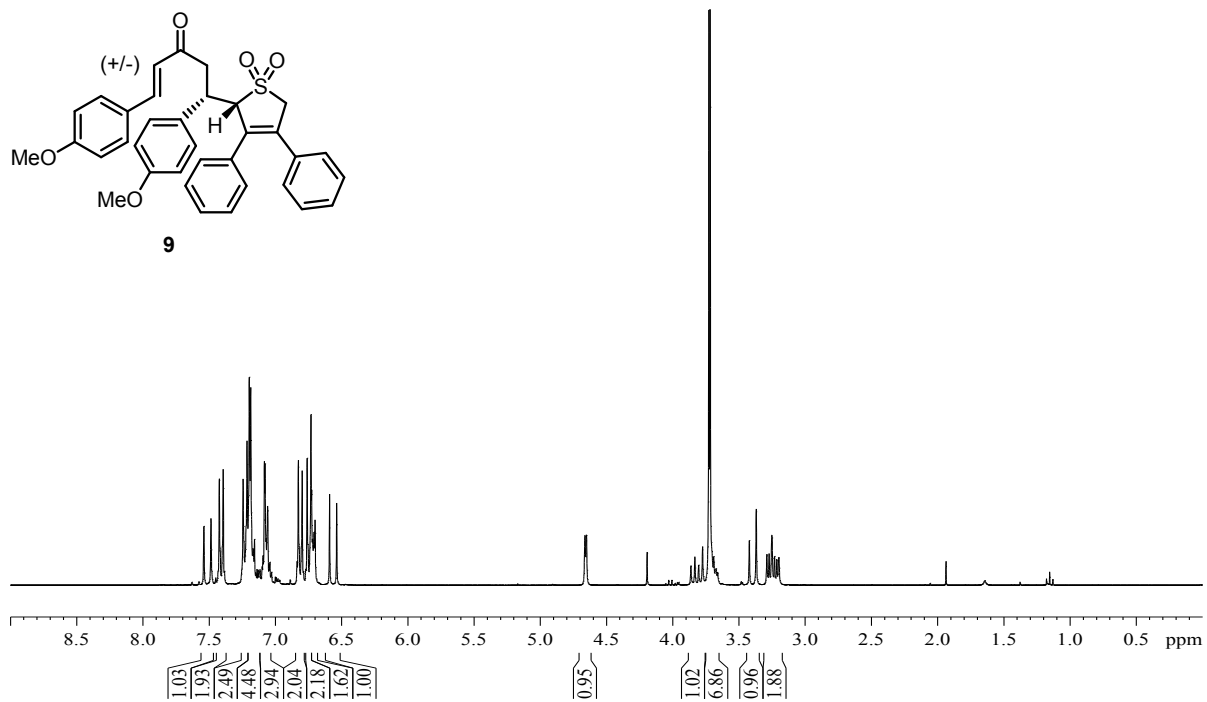
<sup>1</sup>H NMR spectrum for 7g (2:1 ratio 7g:1g) in CDCl<sub>3</sub>



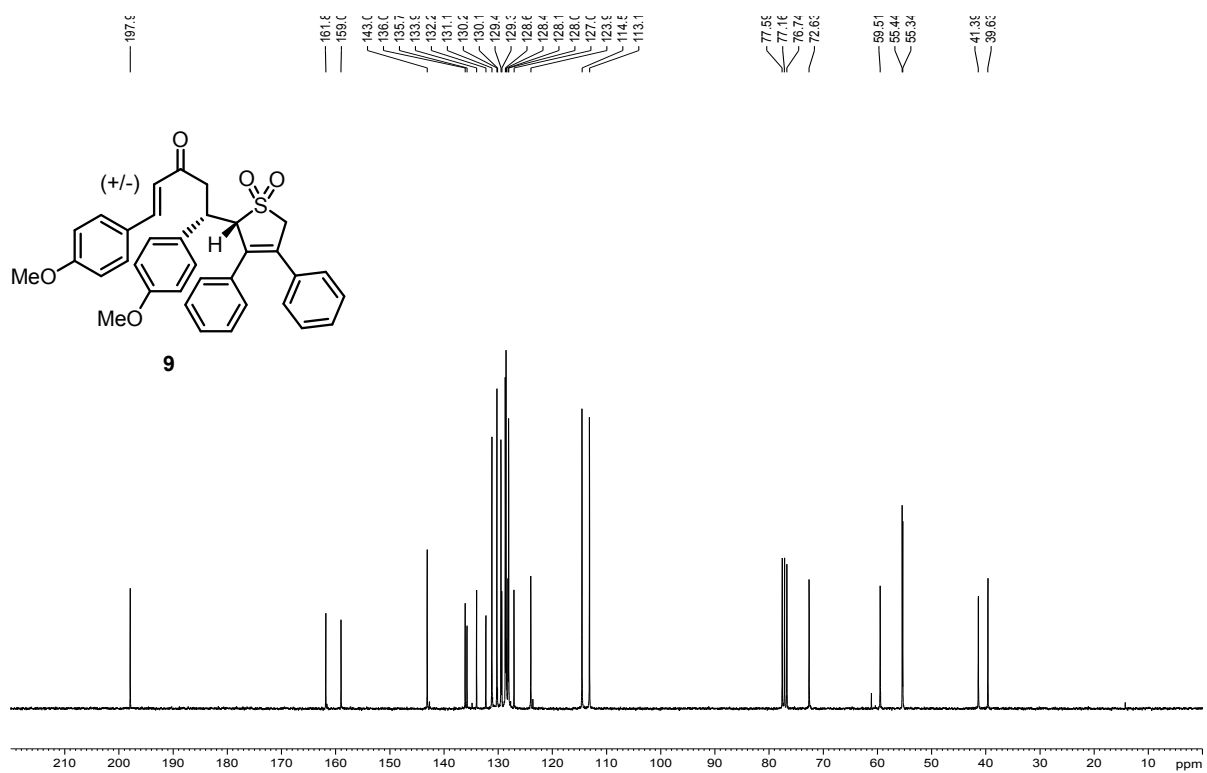
<sup>13</sup>C NMR spectrum for 7g (2:1 ratio 7g:1g) in CDCl<sub>3</sub>



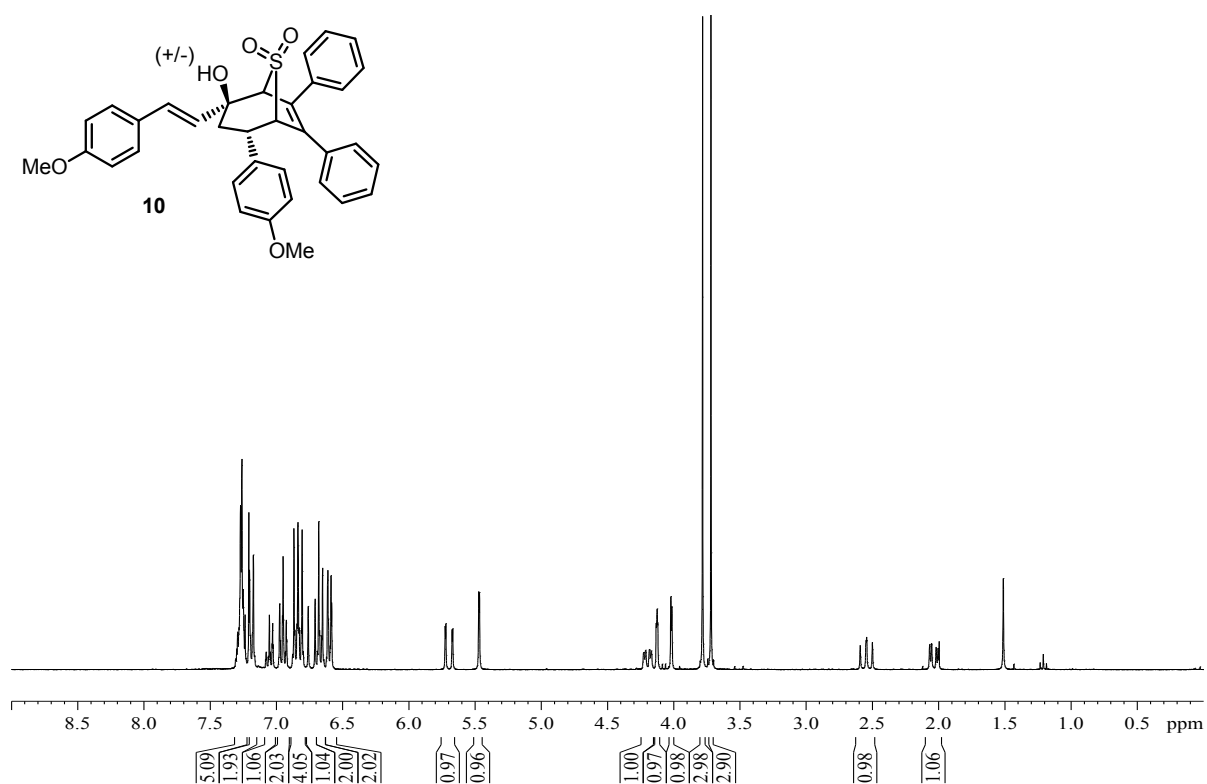
**<sup>1</sup>H NMR spectrum for 9 in CDCl<sub>3</sub>**



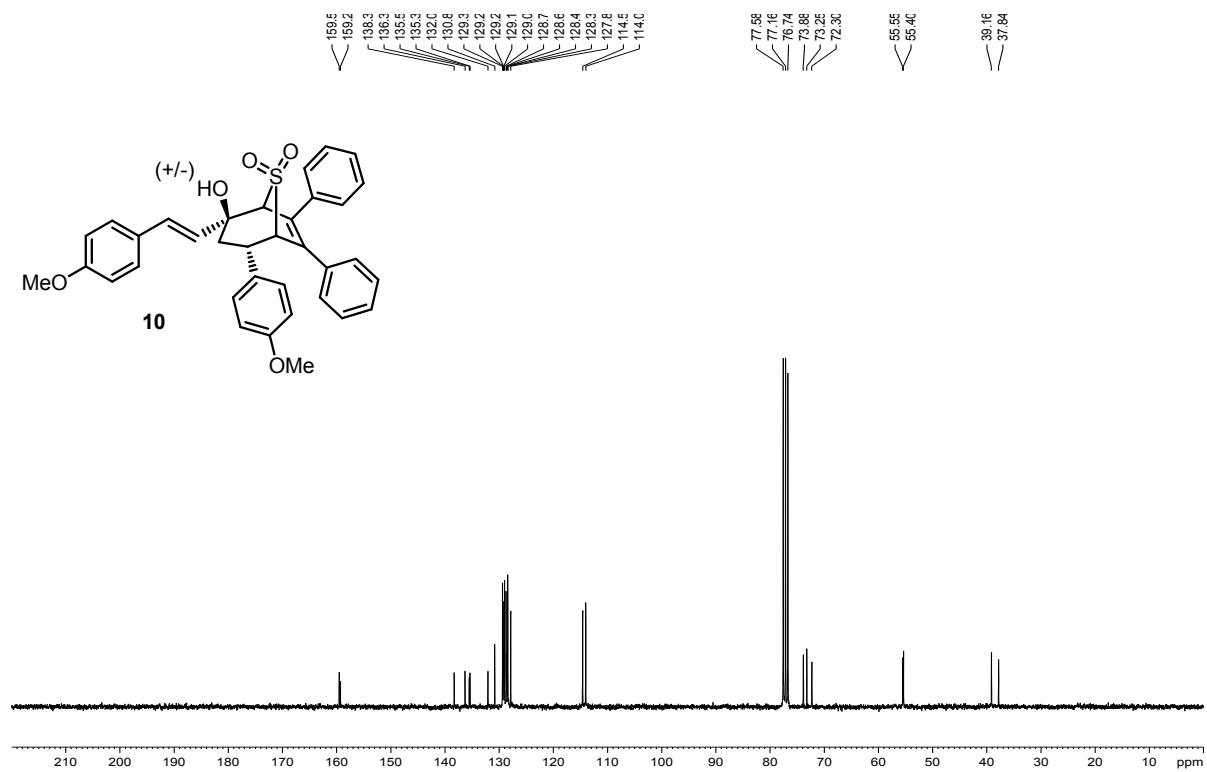
**<sup>13</sup>C NMR spectrum for 9 in CDCl<sub>3</sub>**



**<sup>1</sup>H NMR spectrum for 10 in CDCl<sub>3</sub>**

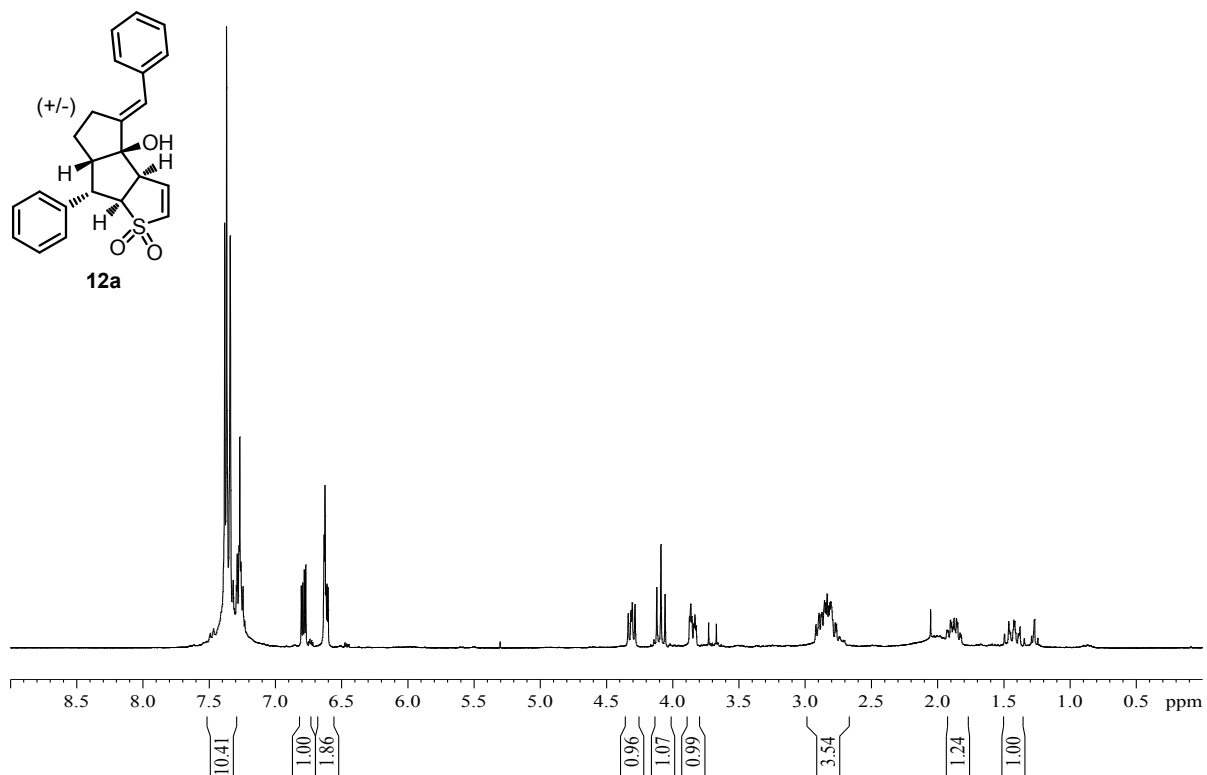


**<sup>13</sup>C NMR spectrum for 10 in CDCl<sub>3</sub>**

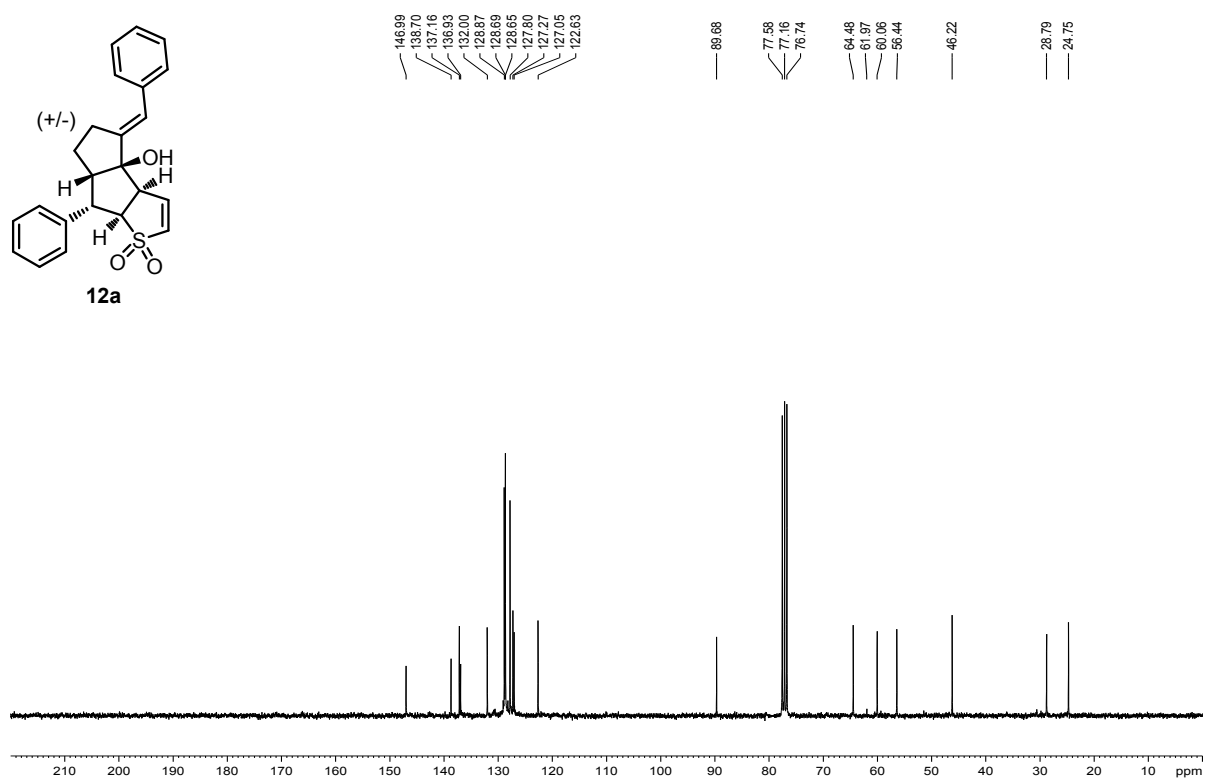




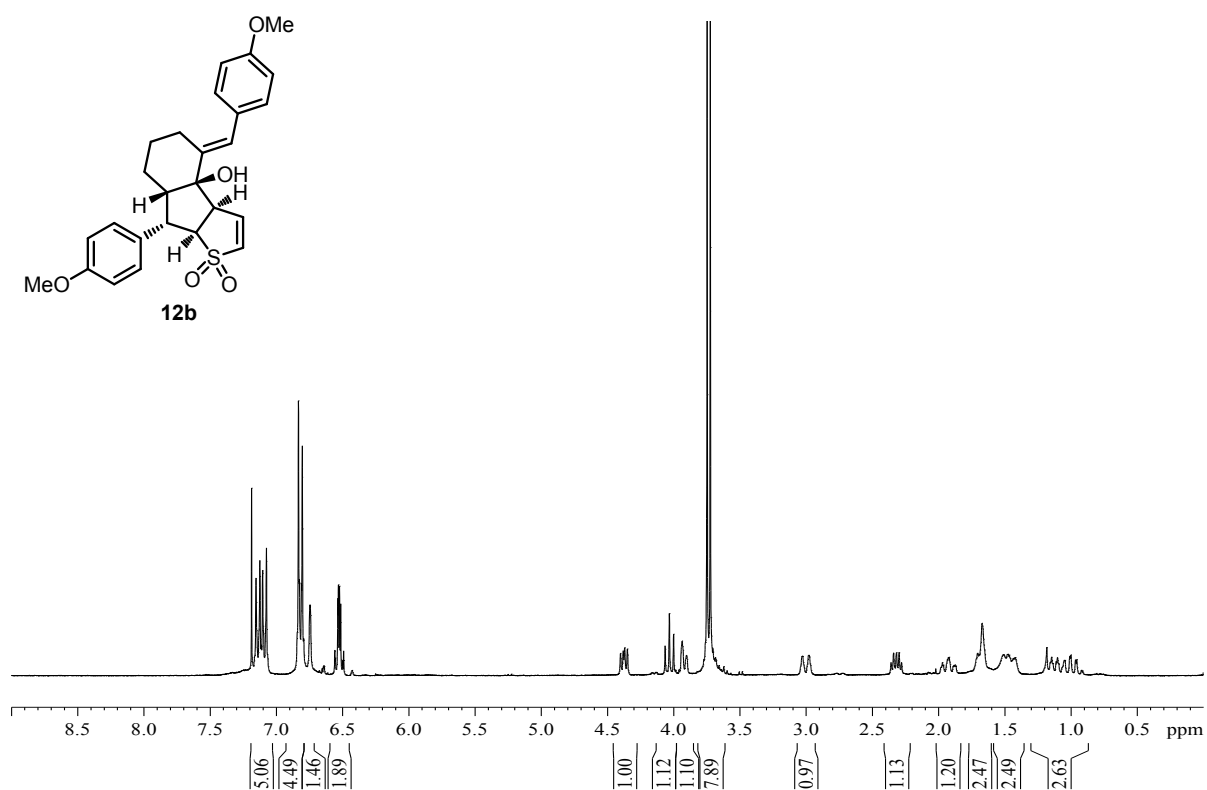
**<sup>1</sup>H NMR spectrum for 12a in CDCl<sub>3</sub>**



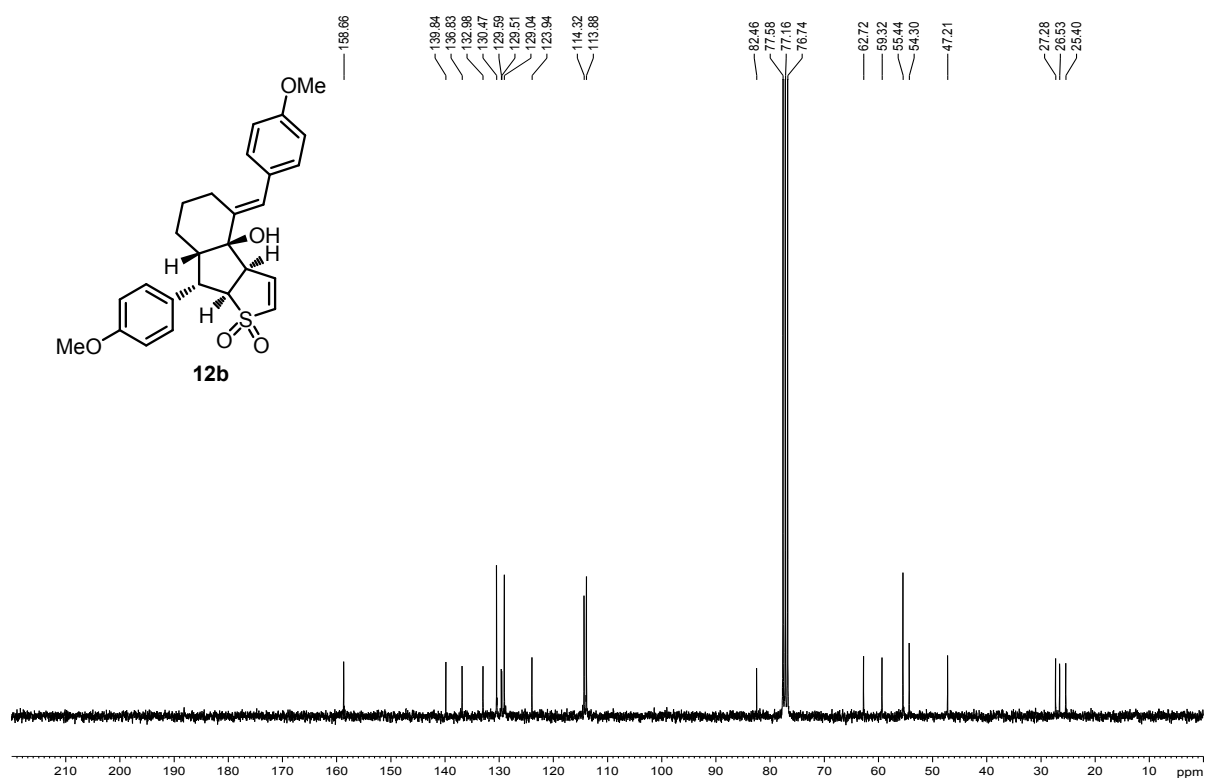
**<sup>13</sup>C NMR spectrum for 12a in CDCl<sub>3</sub>**



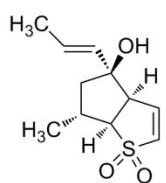
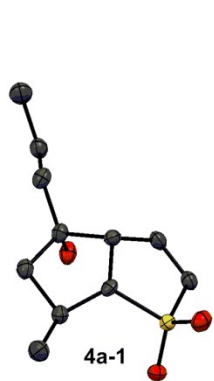
<sup>1</sup>H NMR spectrum for 12b in CDCl<sub>3</sub>



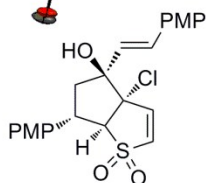
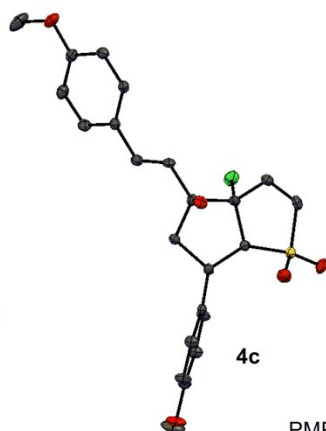
<sup>13</sup>C NMR spectrum for 12b in CDCl<sub>3</sub>



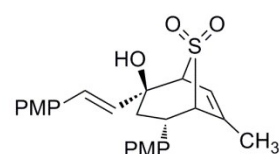
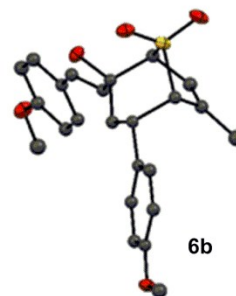
## Collected X-Ray Data



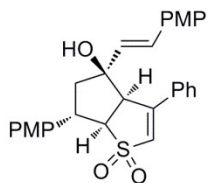
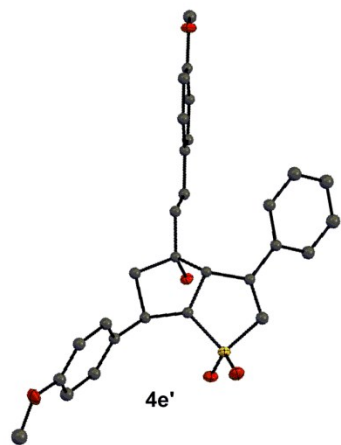
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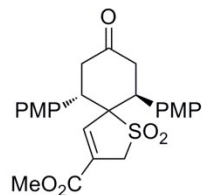
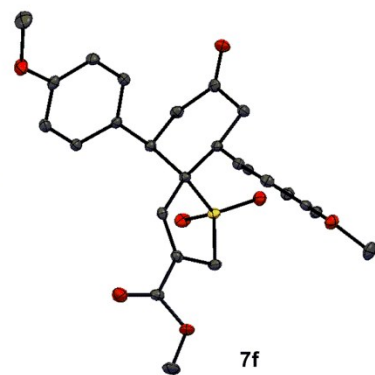
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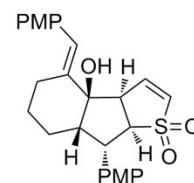
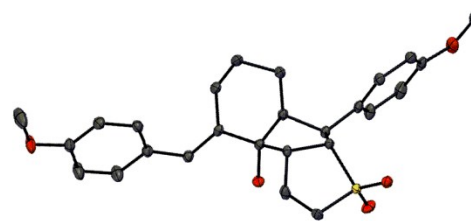
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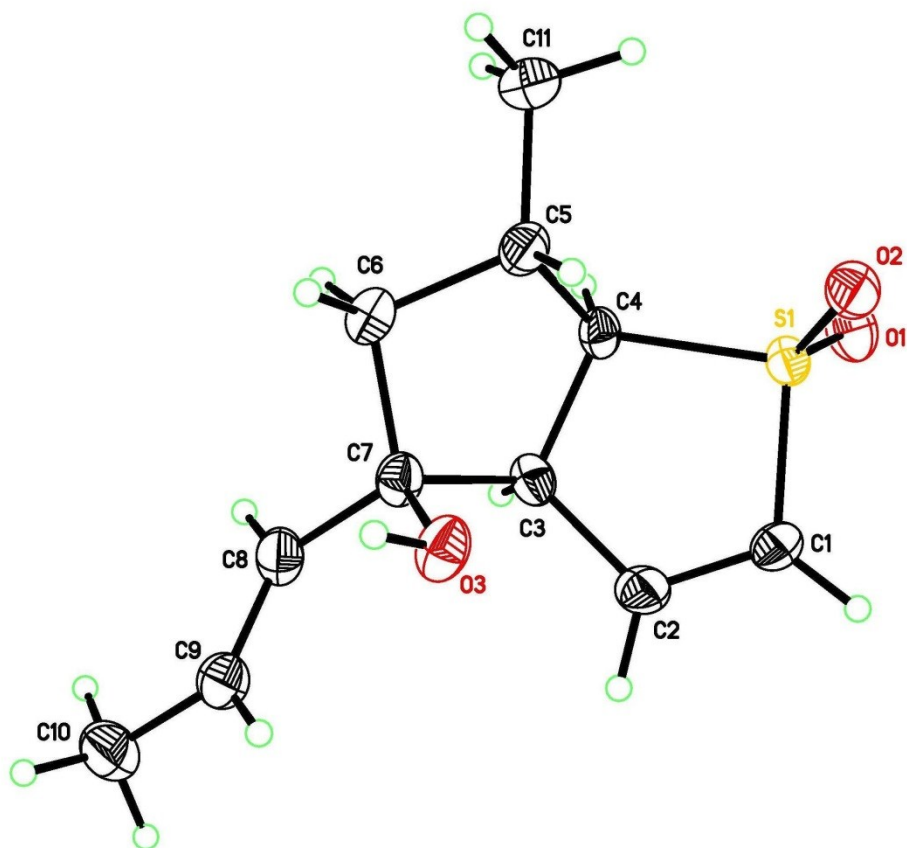


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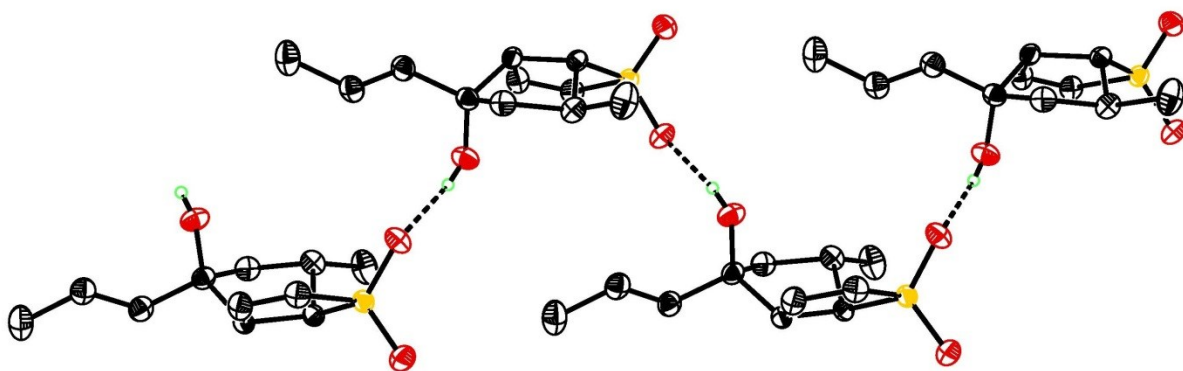


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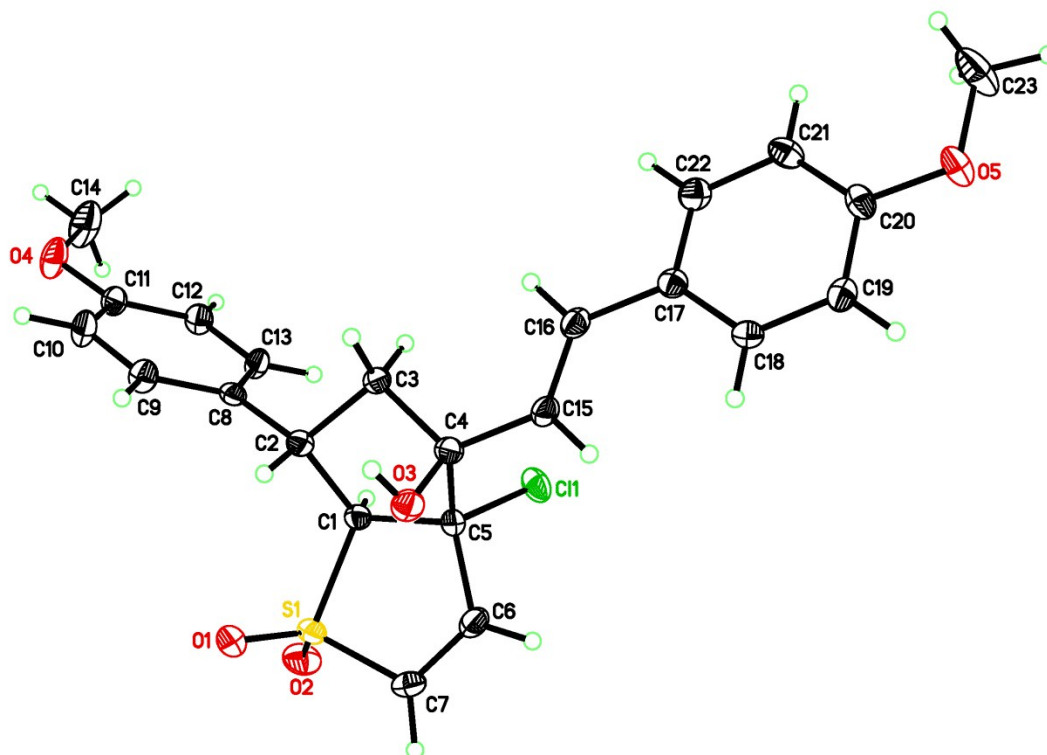
Expanded X-Ray Structure for 4a-1 (single molecule)



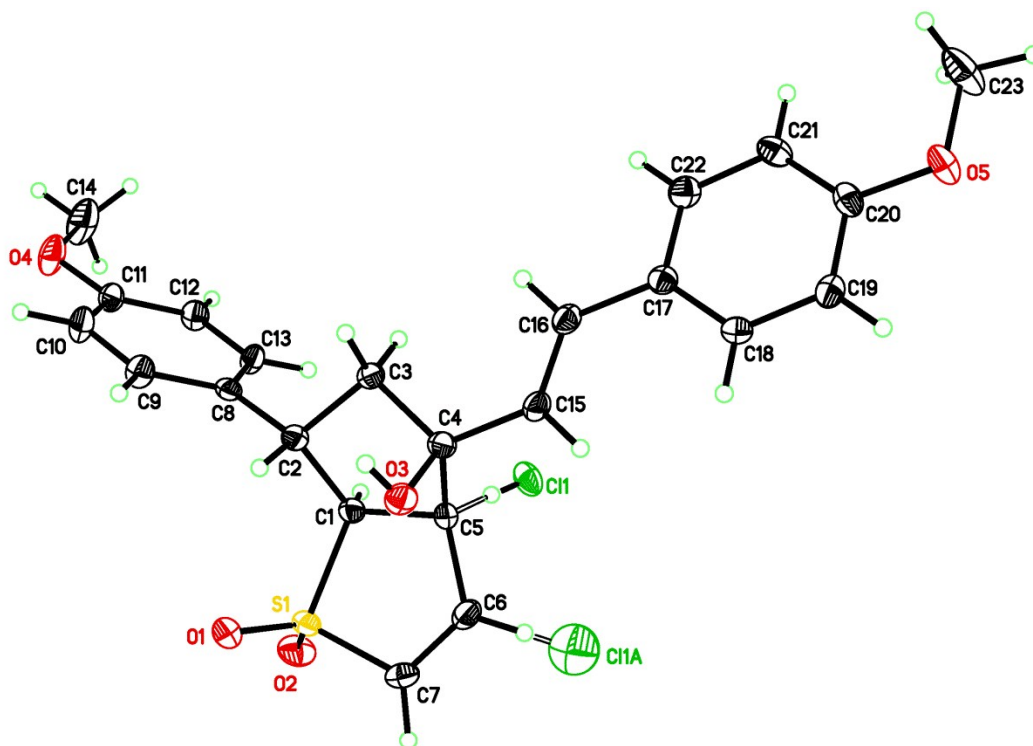
Expanded X-Ray Structure for 4a-1 (hydrogen bond network)



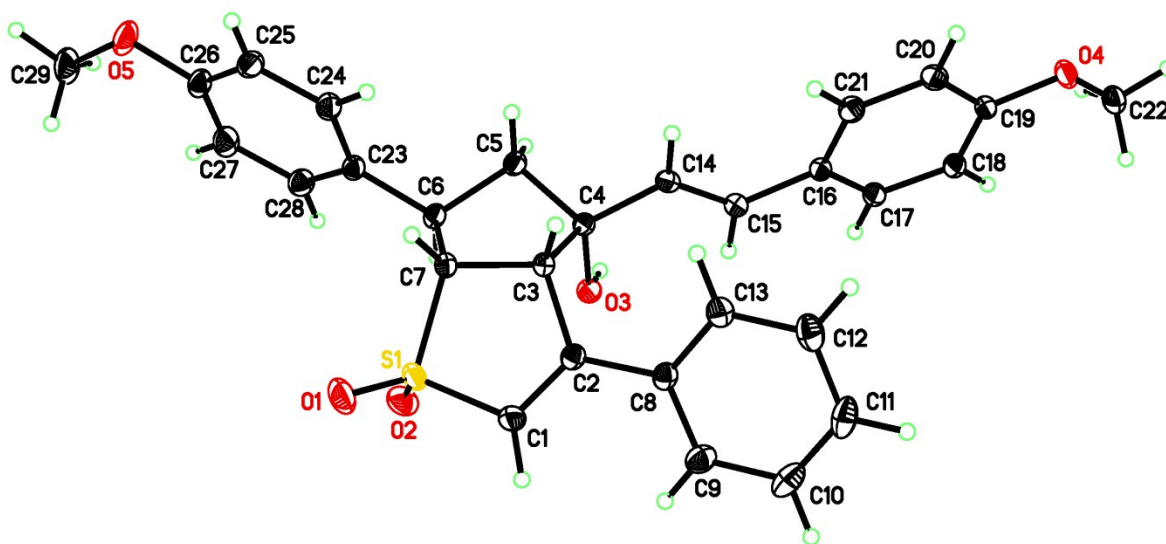
Expanded X-Ray Structure for 4c (major species)



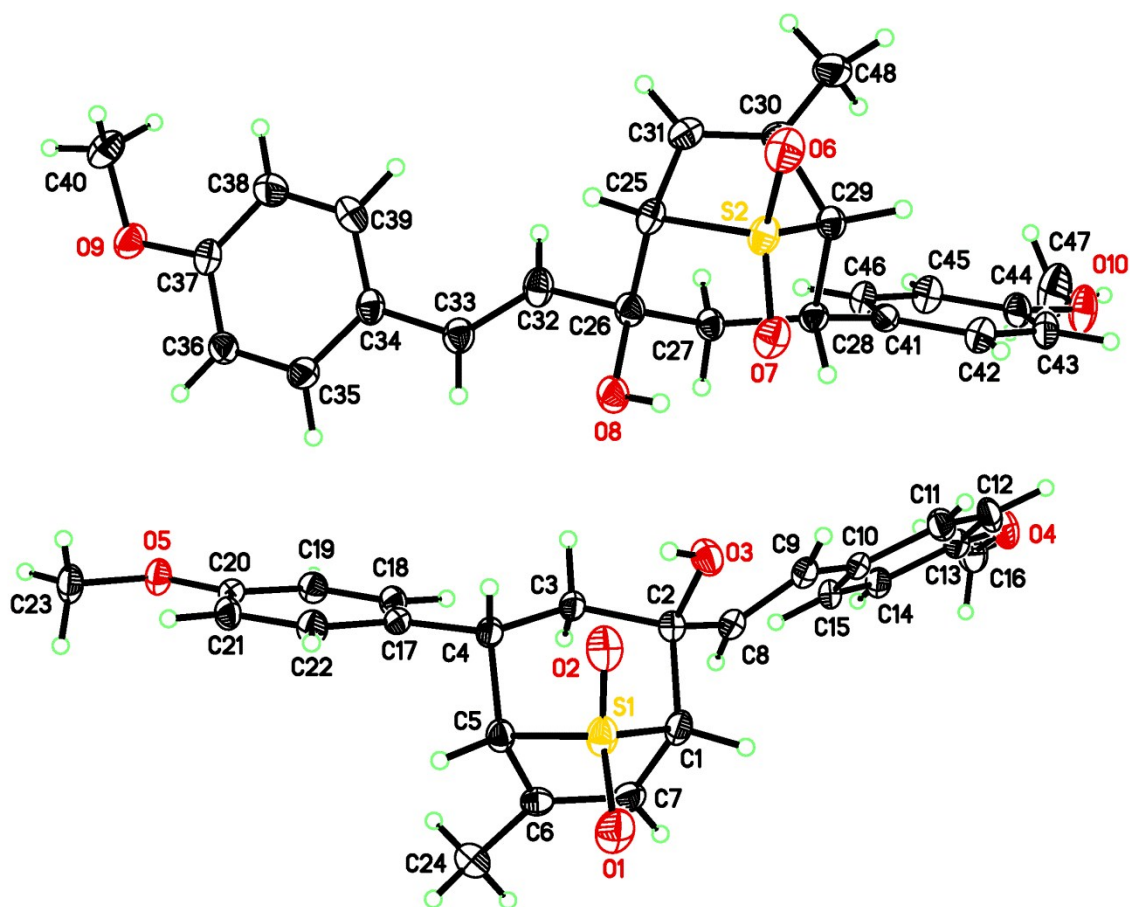
Expanded X-Ray Structure for 4c (full analysis)



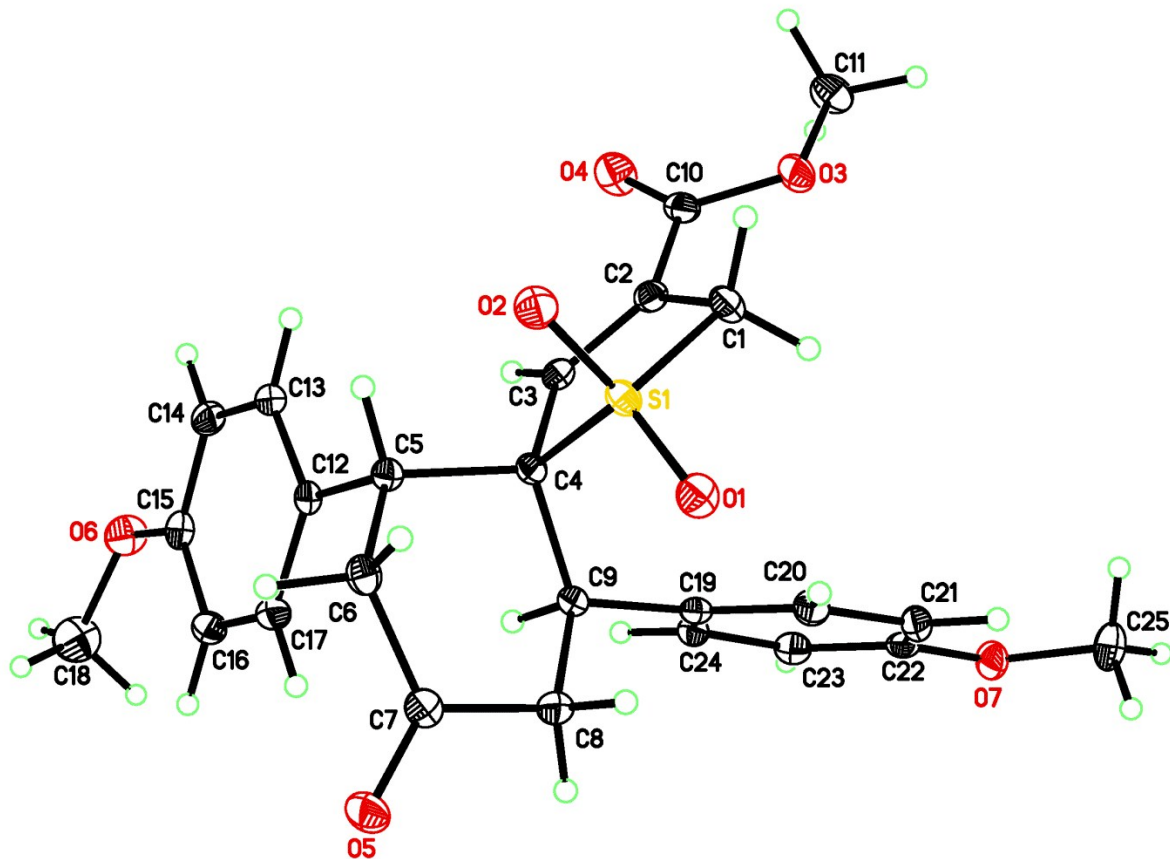
Expanded X-Ray Structure for 4e'



Expanded X-Ray Structure for 6b



Expanded X-Ray Structure for 7f



Expanded X-Ray Structure for 12b

