

Four-component reaction of *N*-alkylimidazoles (*N*-alkylbenzimidazoles), but-2-ynedioate, *N*-alkylisatins and malononitrile

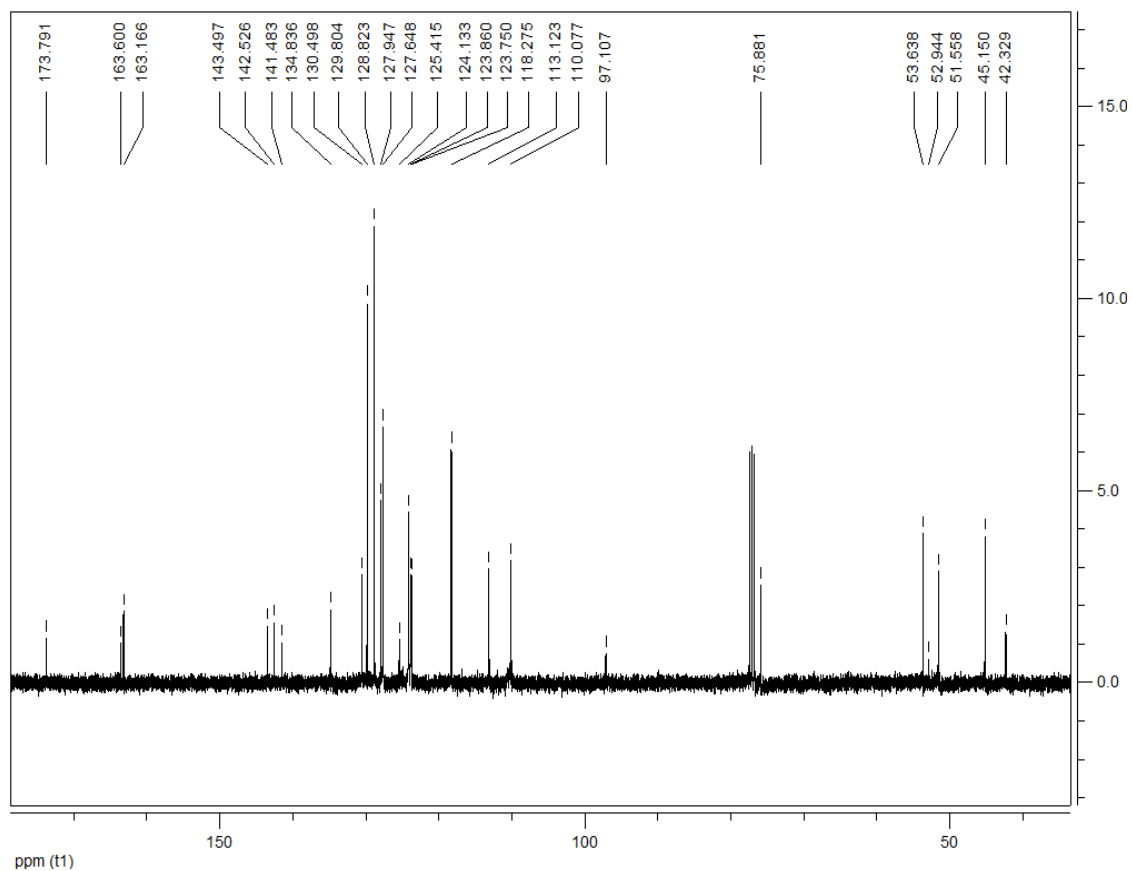
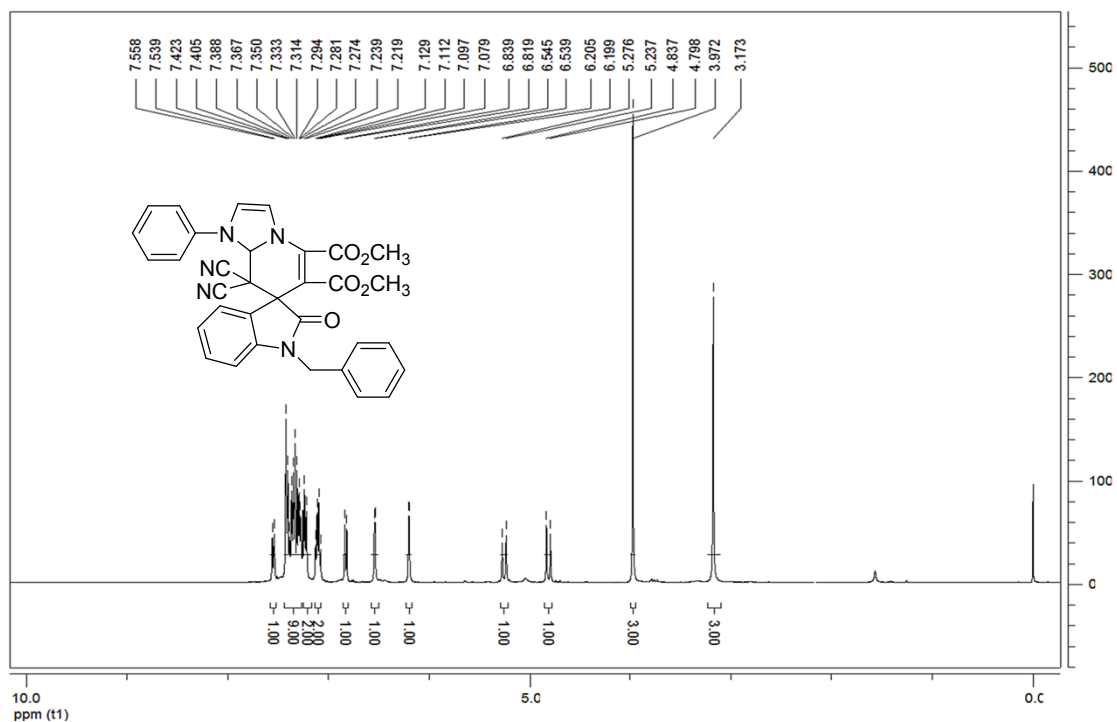
Fan Yang, Li-Juan Zhang, Chao-Guo Yan*

Supporting Information

The characterization data and ^1H , ^{13}C NMR spectra of new compounds

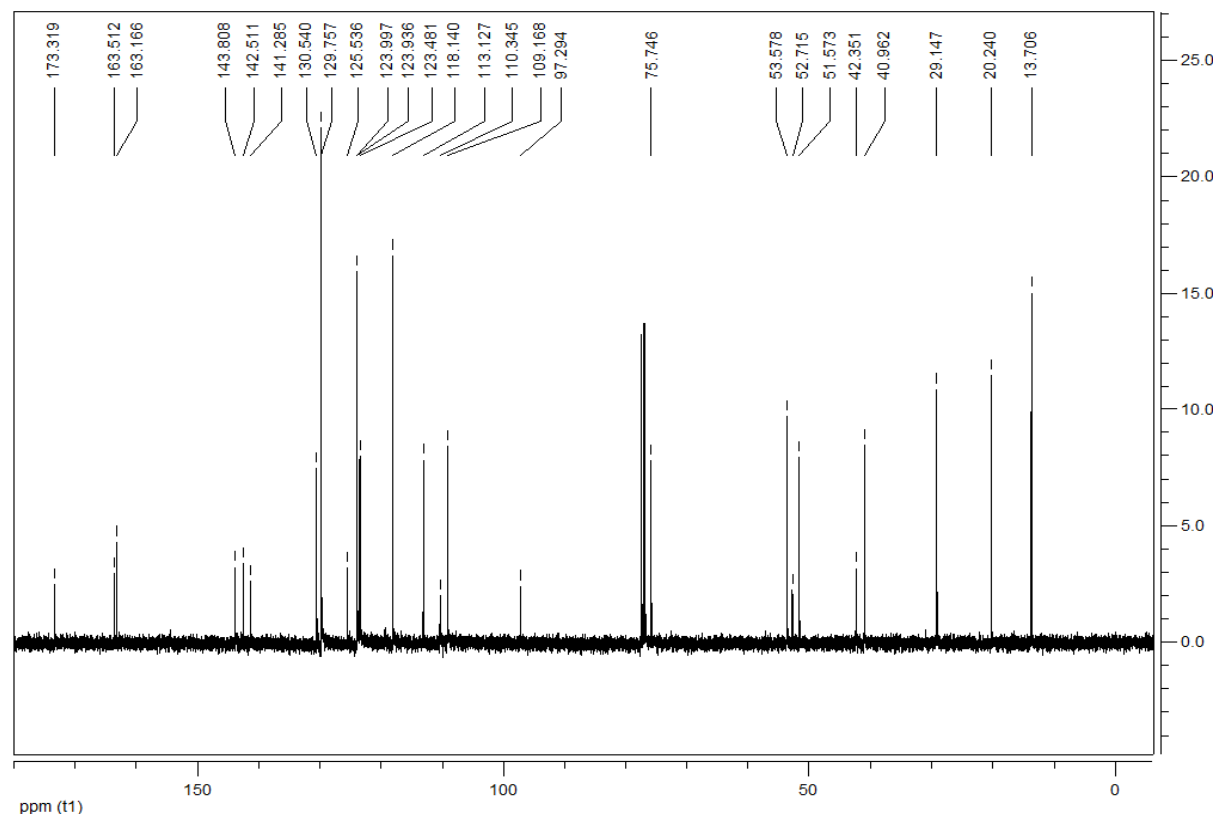
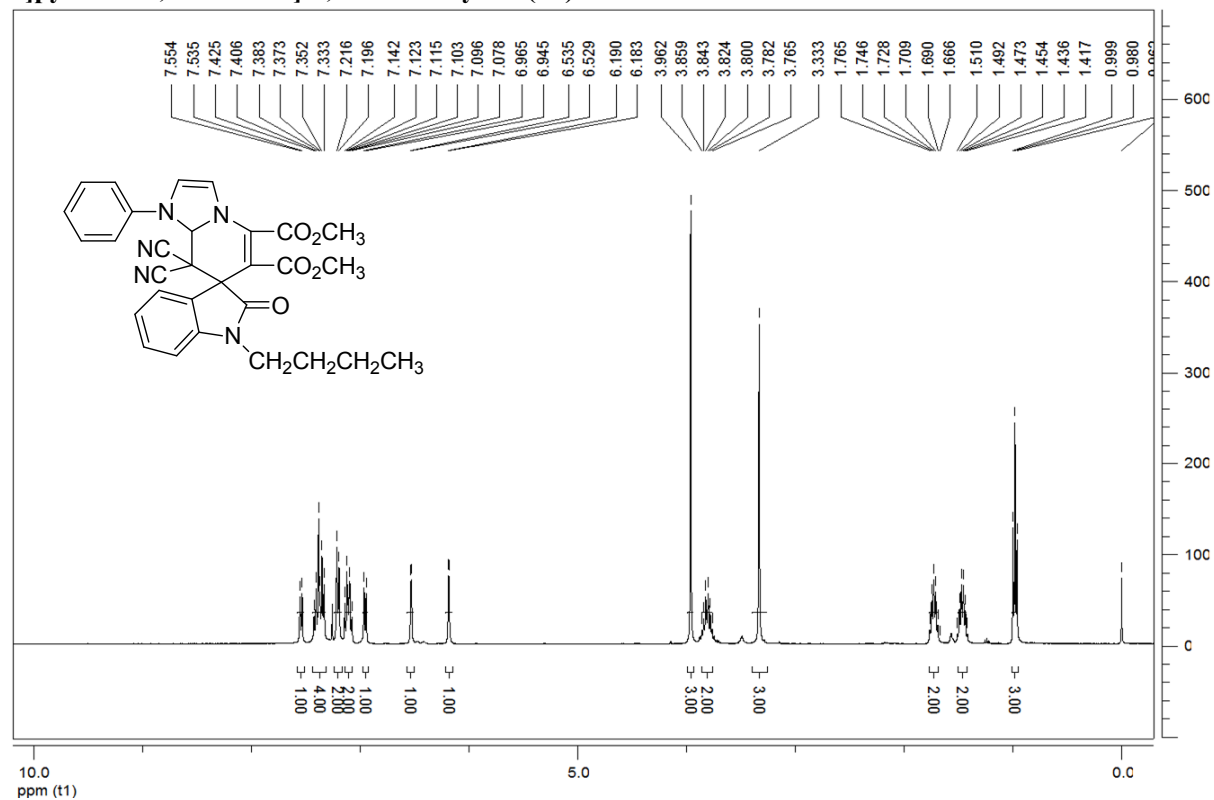
2-30

Dimethyl 1'-benzyl-8,8-dicyano-2'-oxo-1-phenyl-8,8a-dihydro-1H-spiro[imidazo[1,2-a]pyridine-7,3'-indoline]-5,6-dicarboxylate (1a):

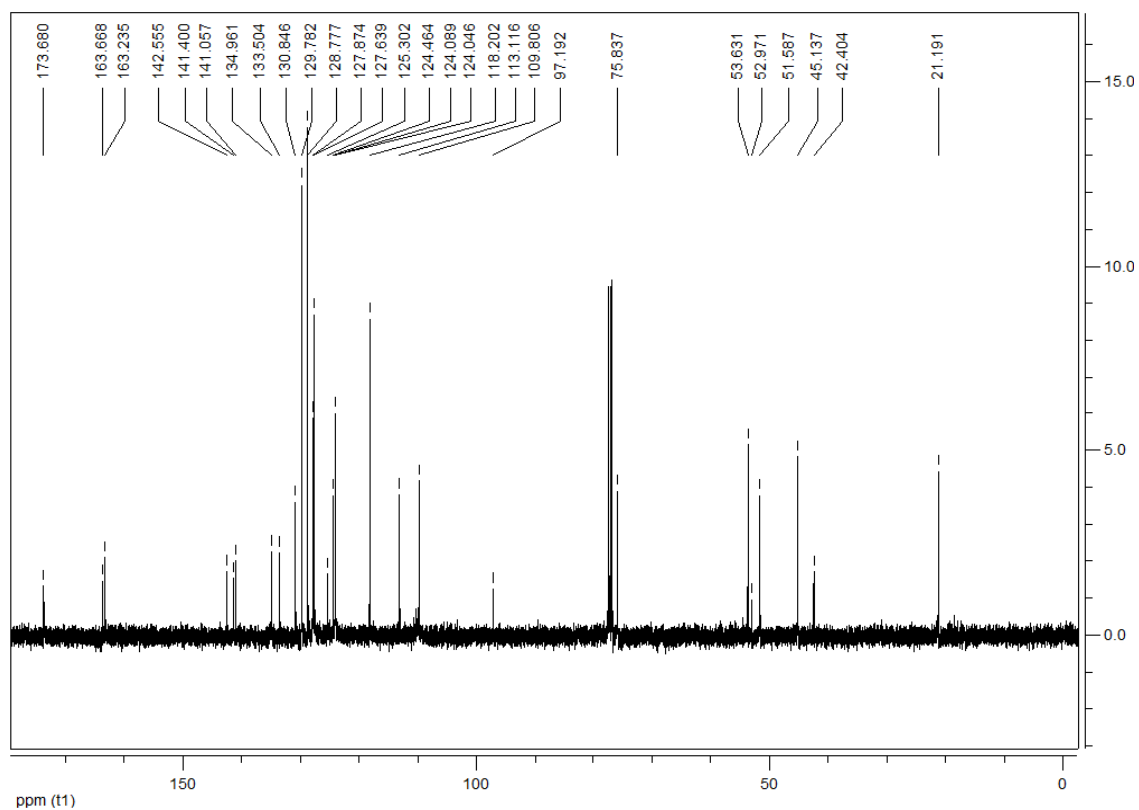
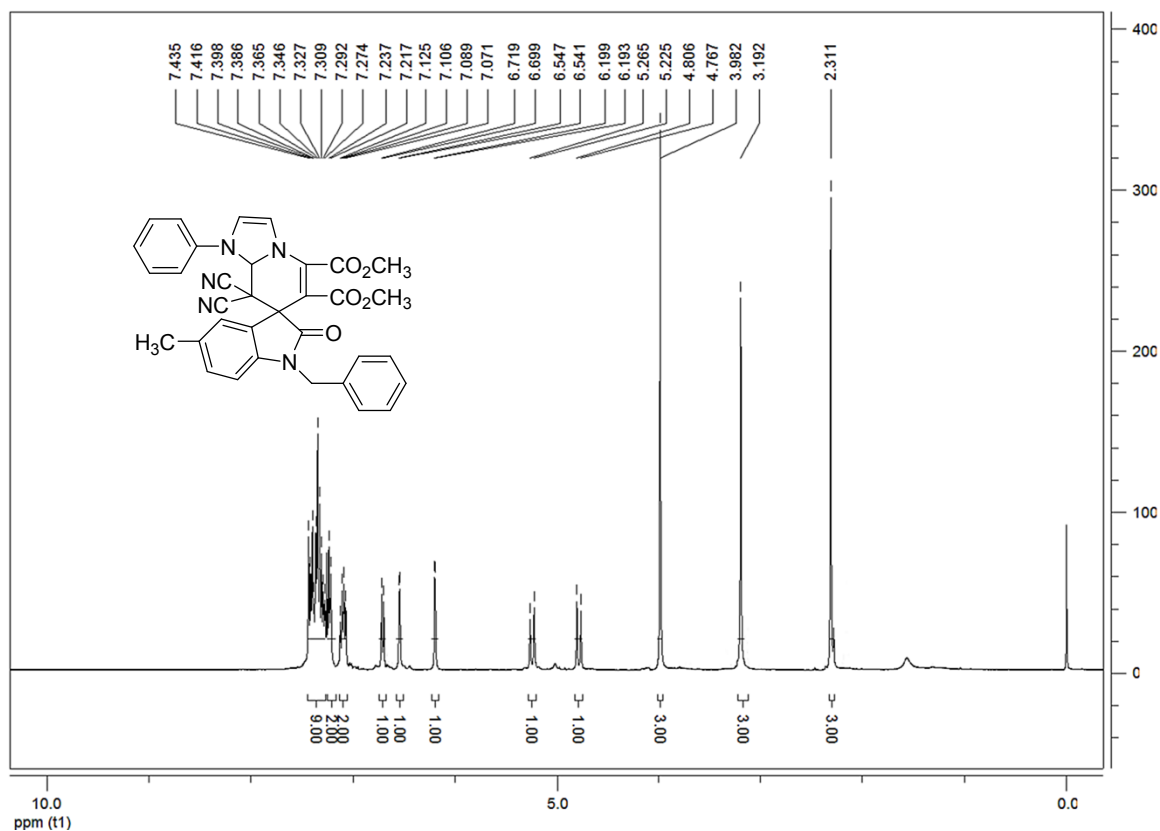


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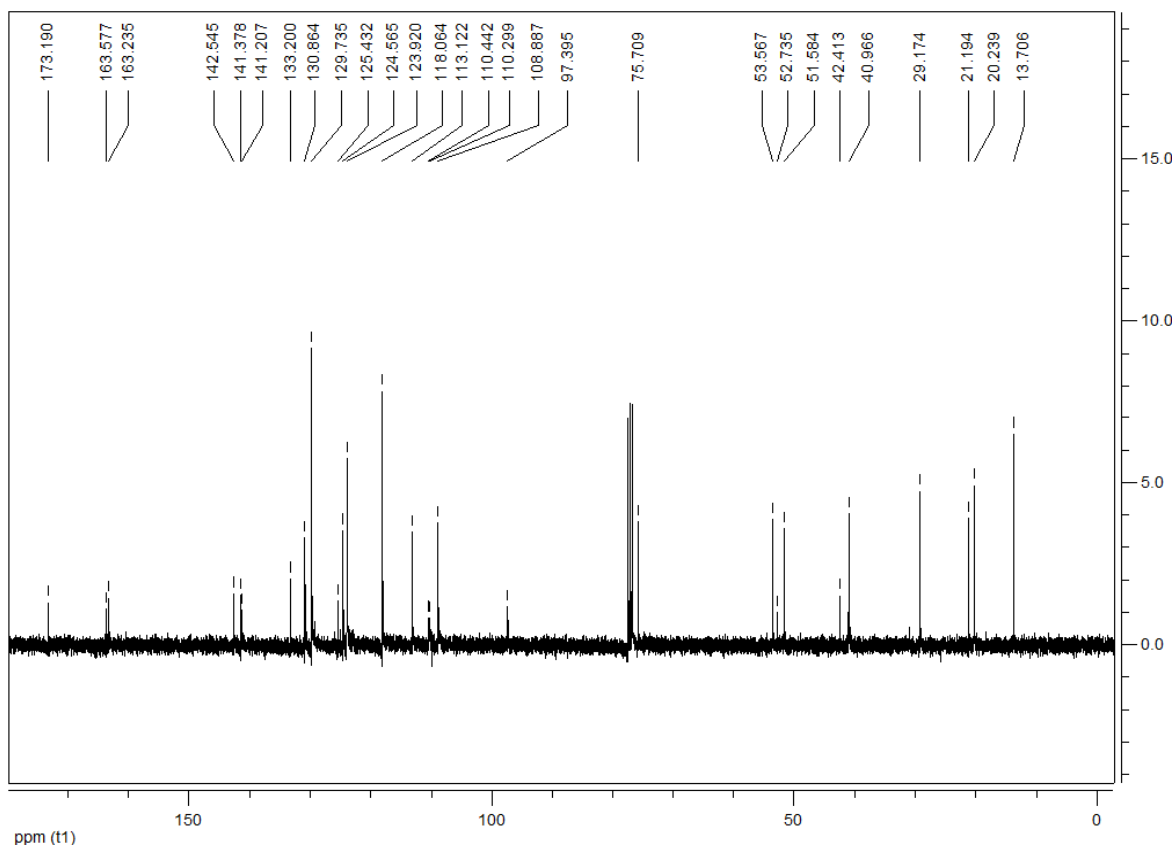
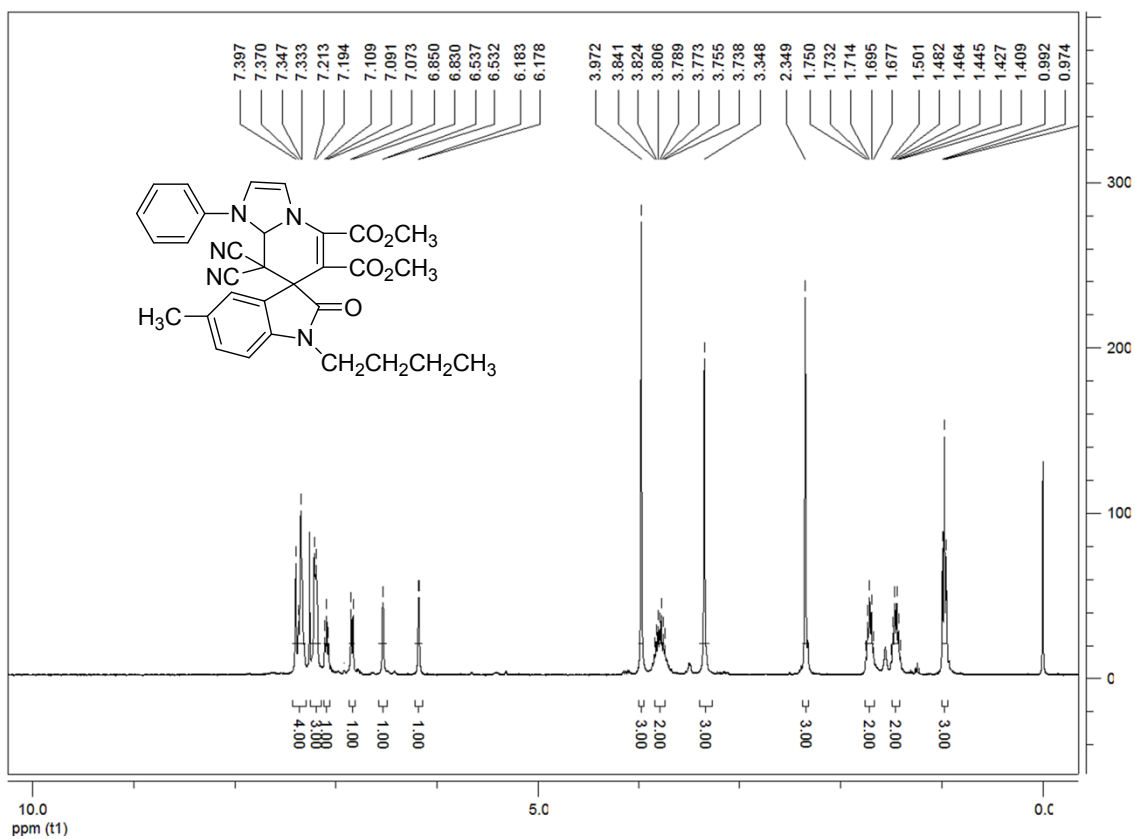
a]pyridine-7,3'-indoline]-5,6-dicarboxylate (1b):



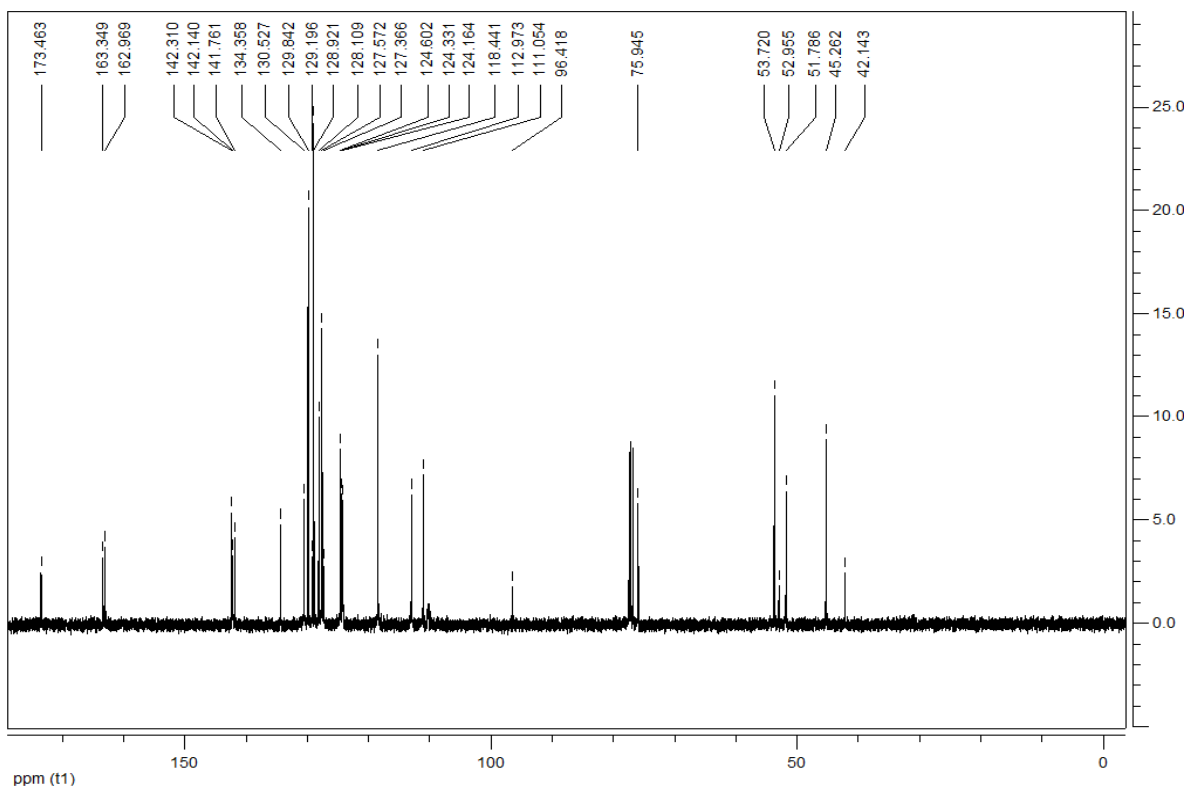
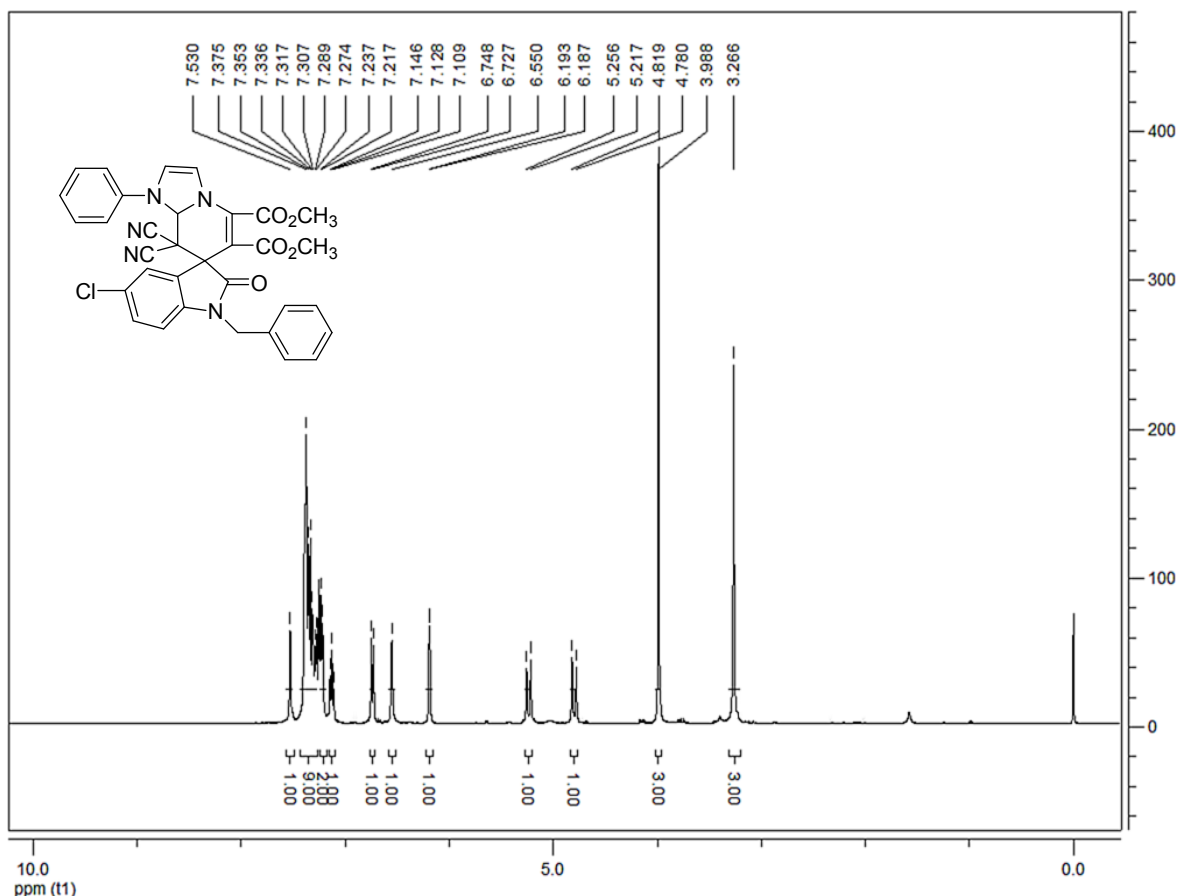
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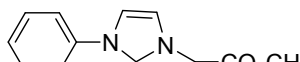
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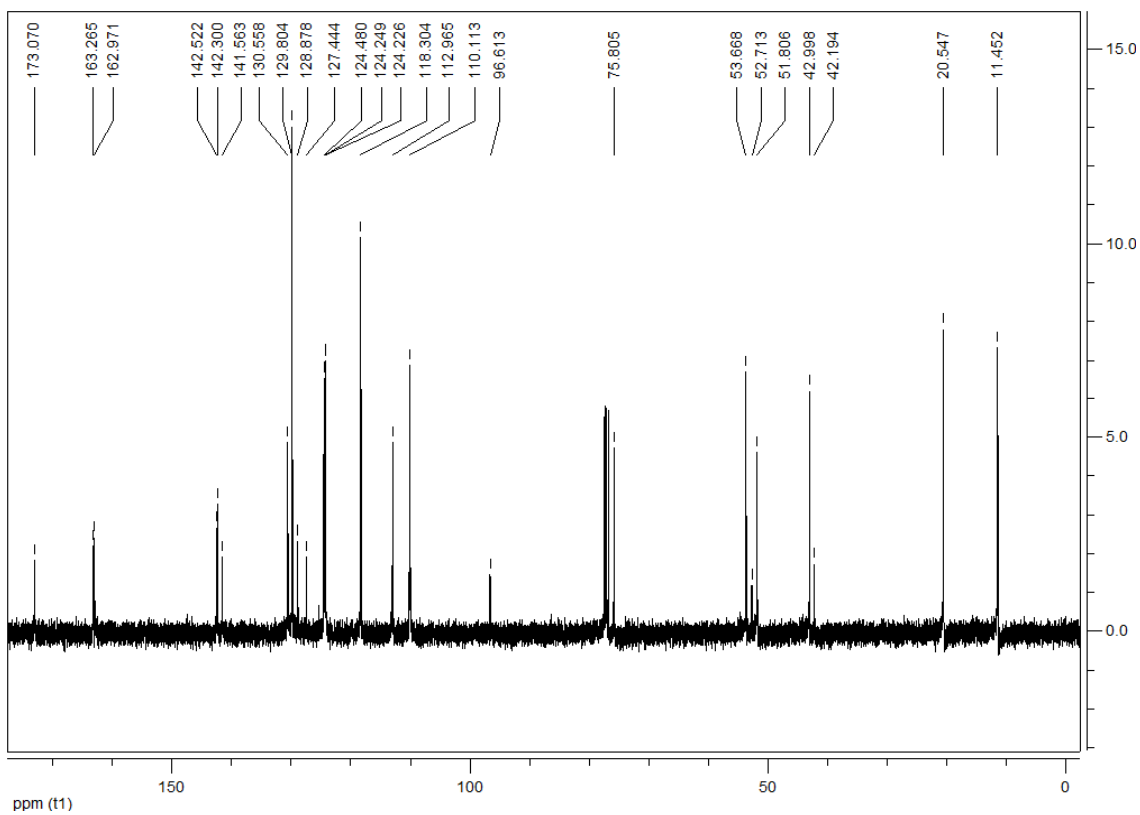
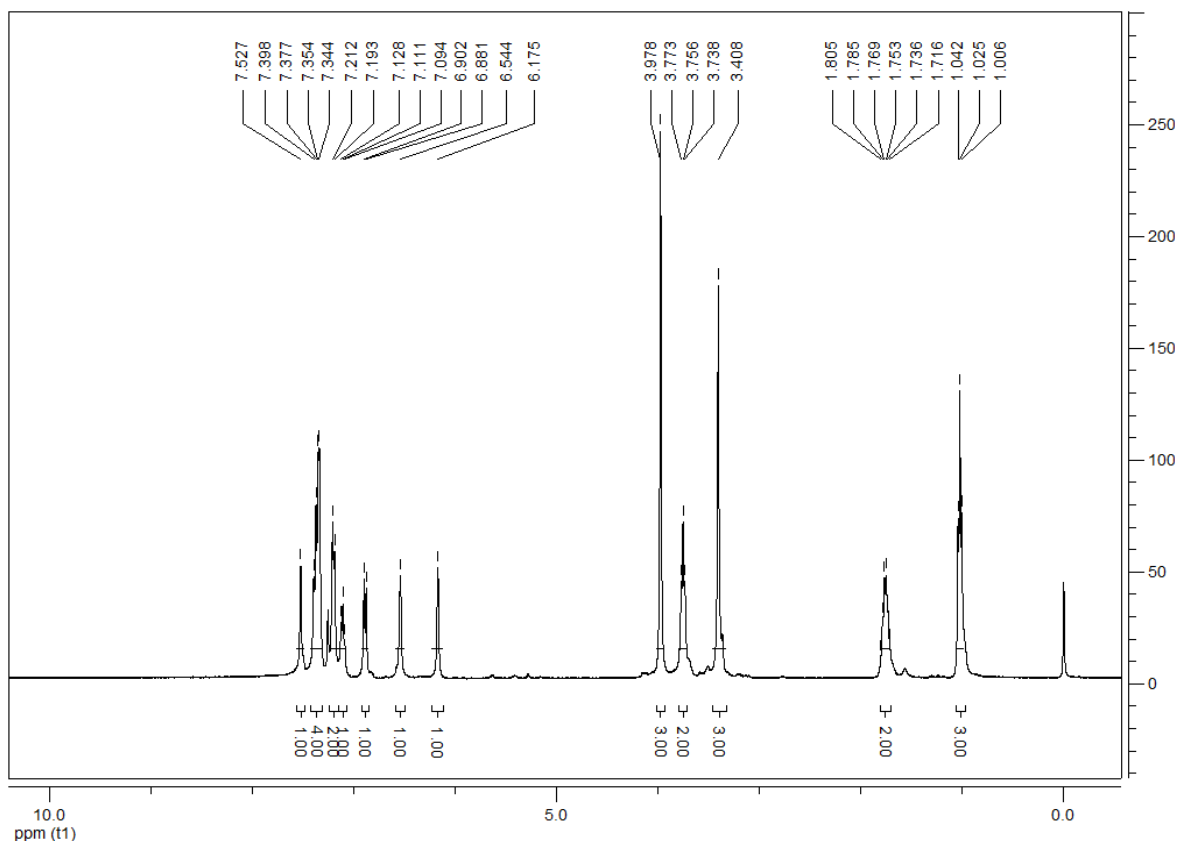


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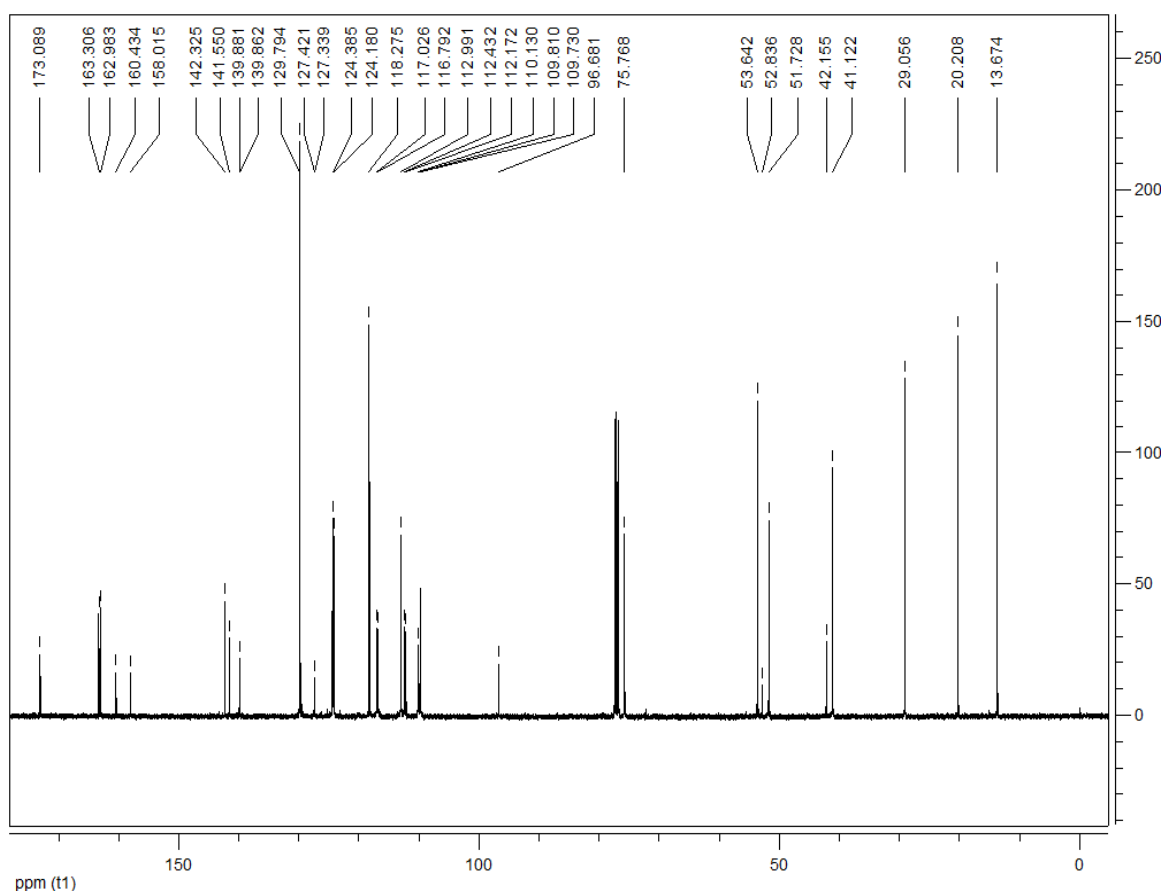
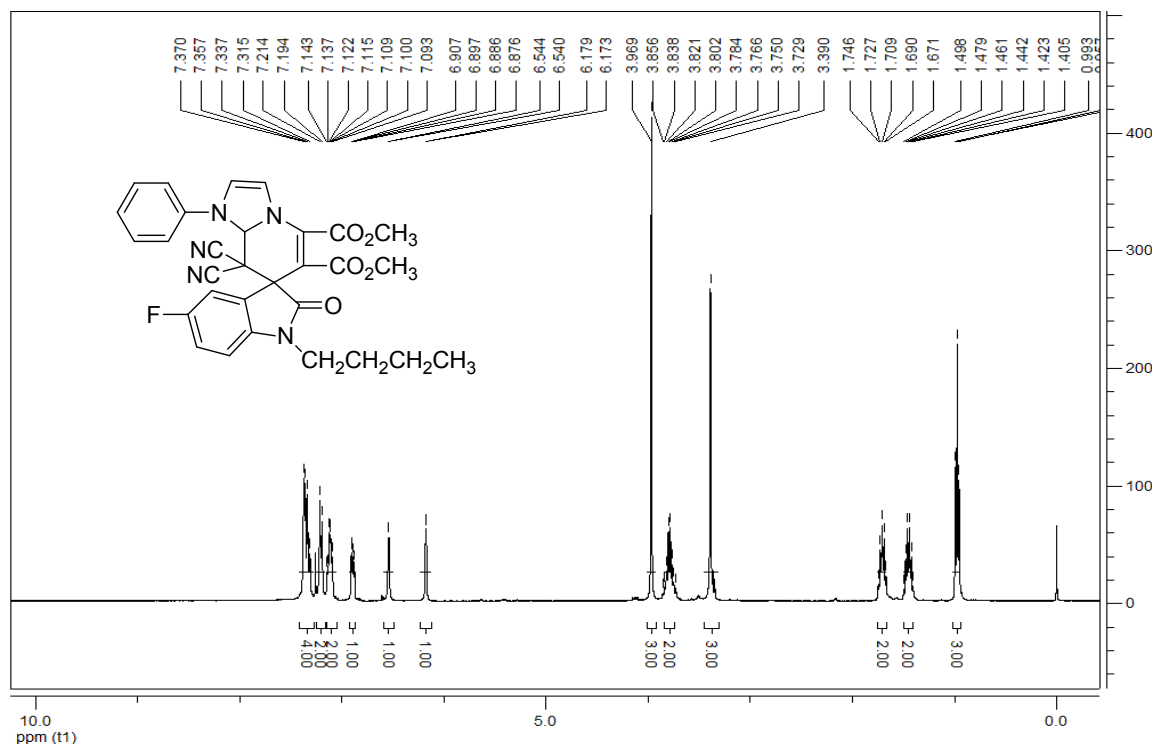


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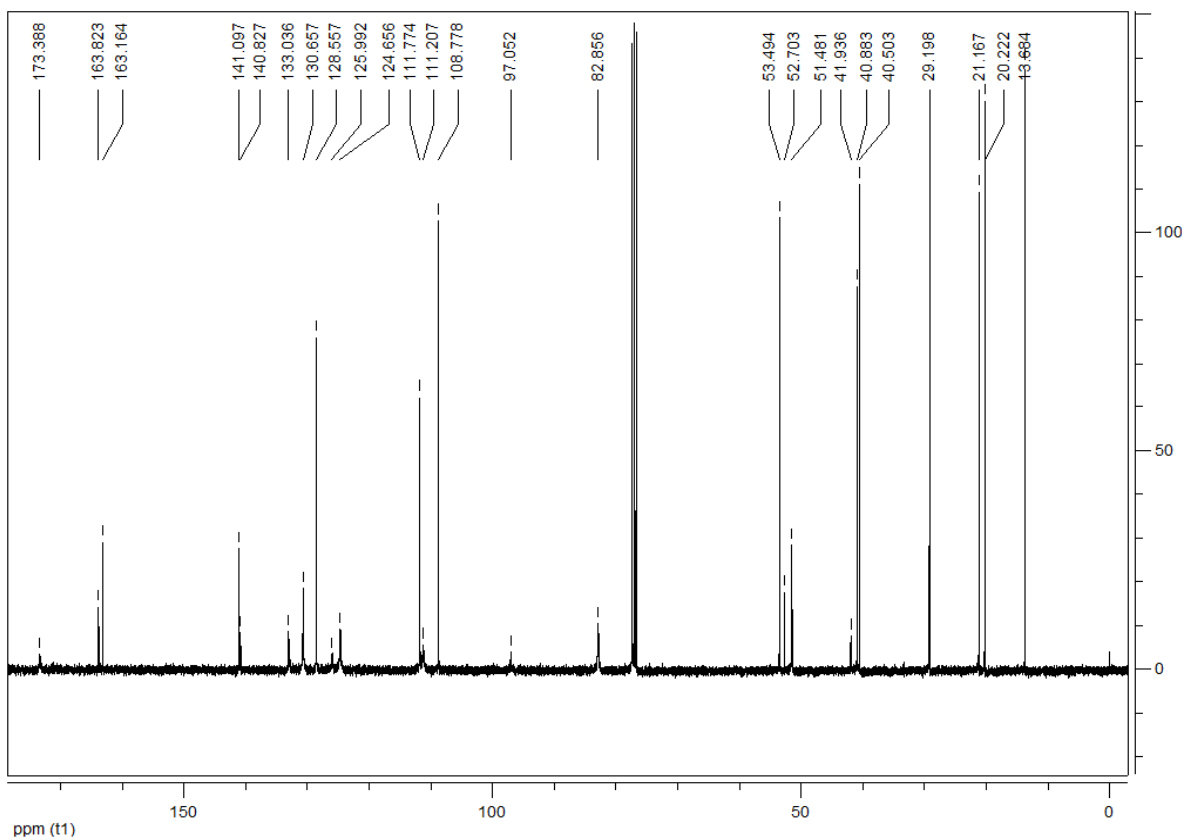
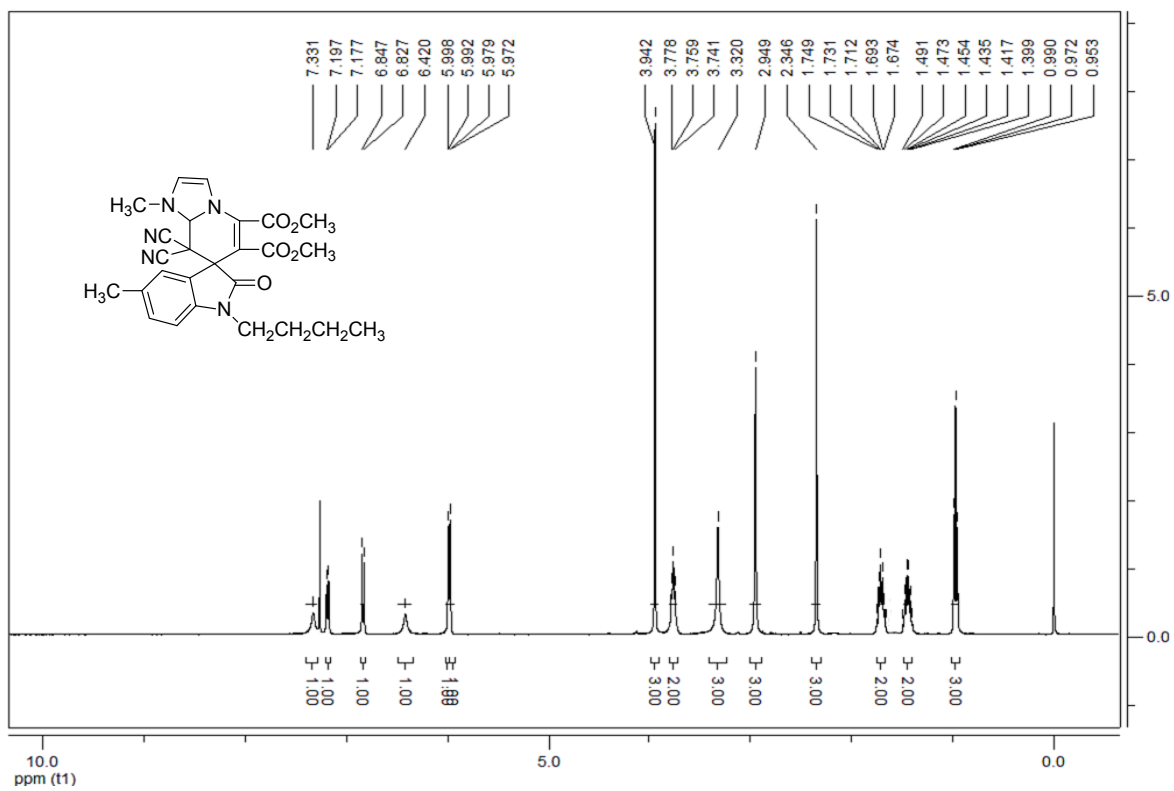




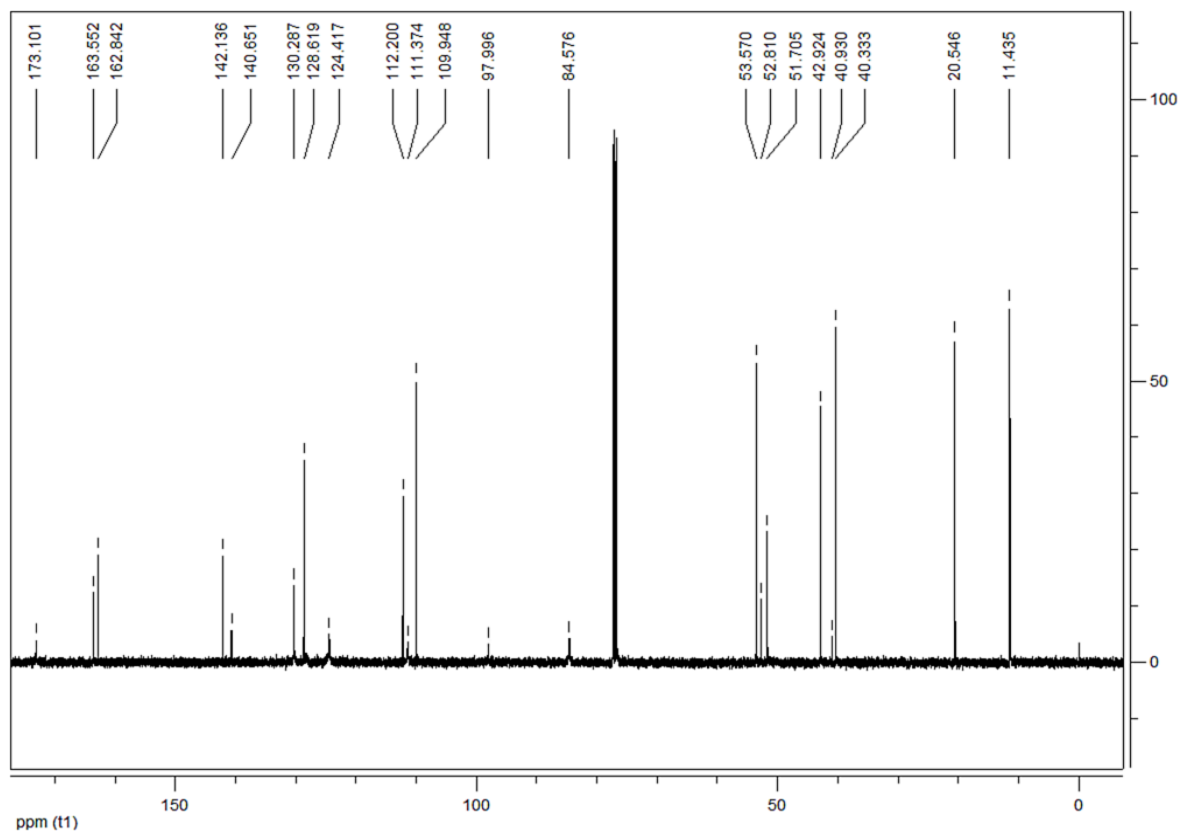
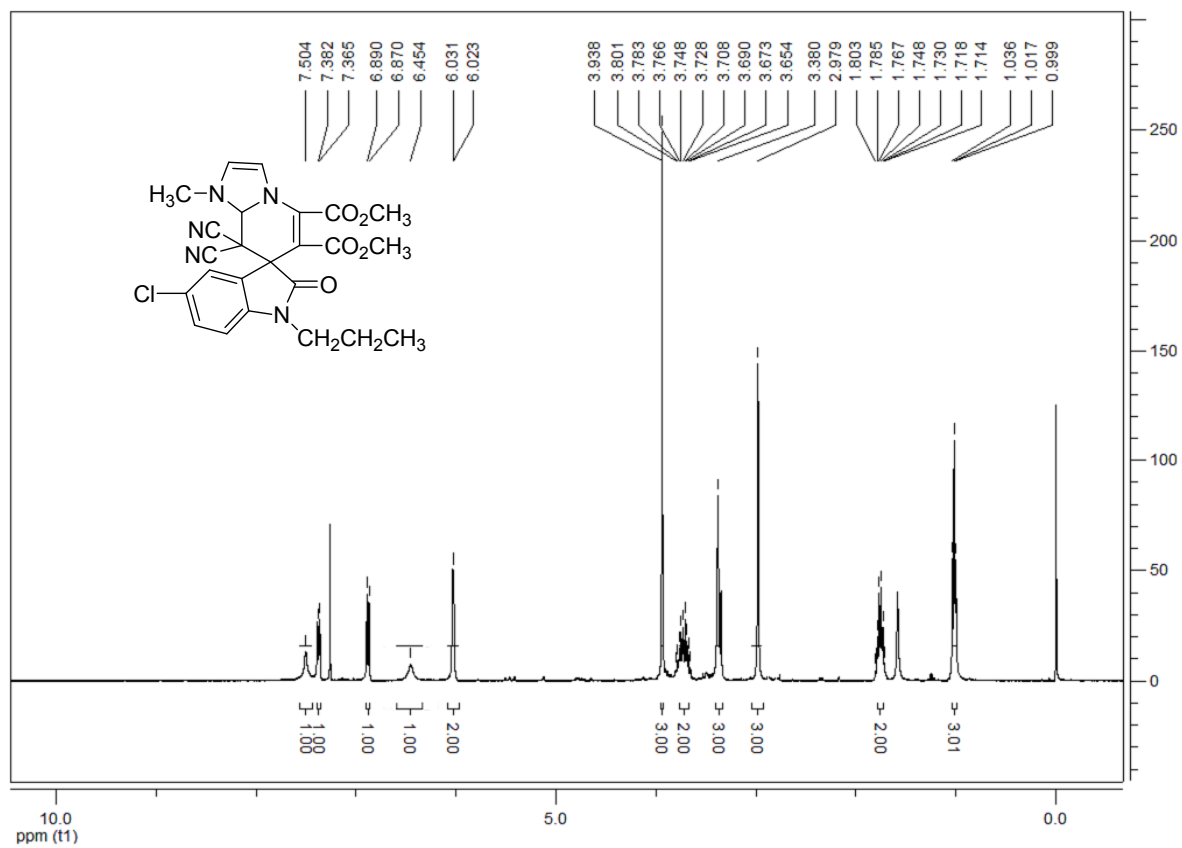
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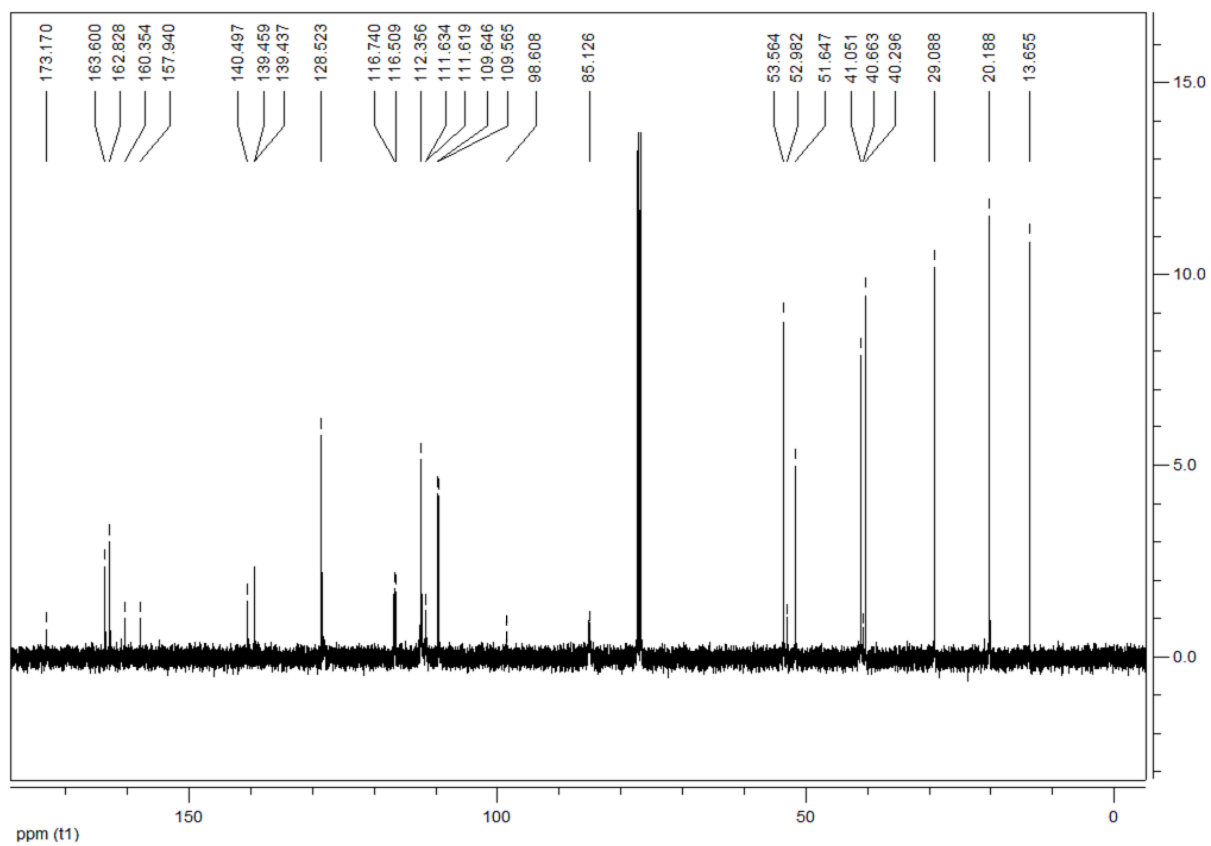
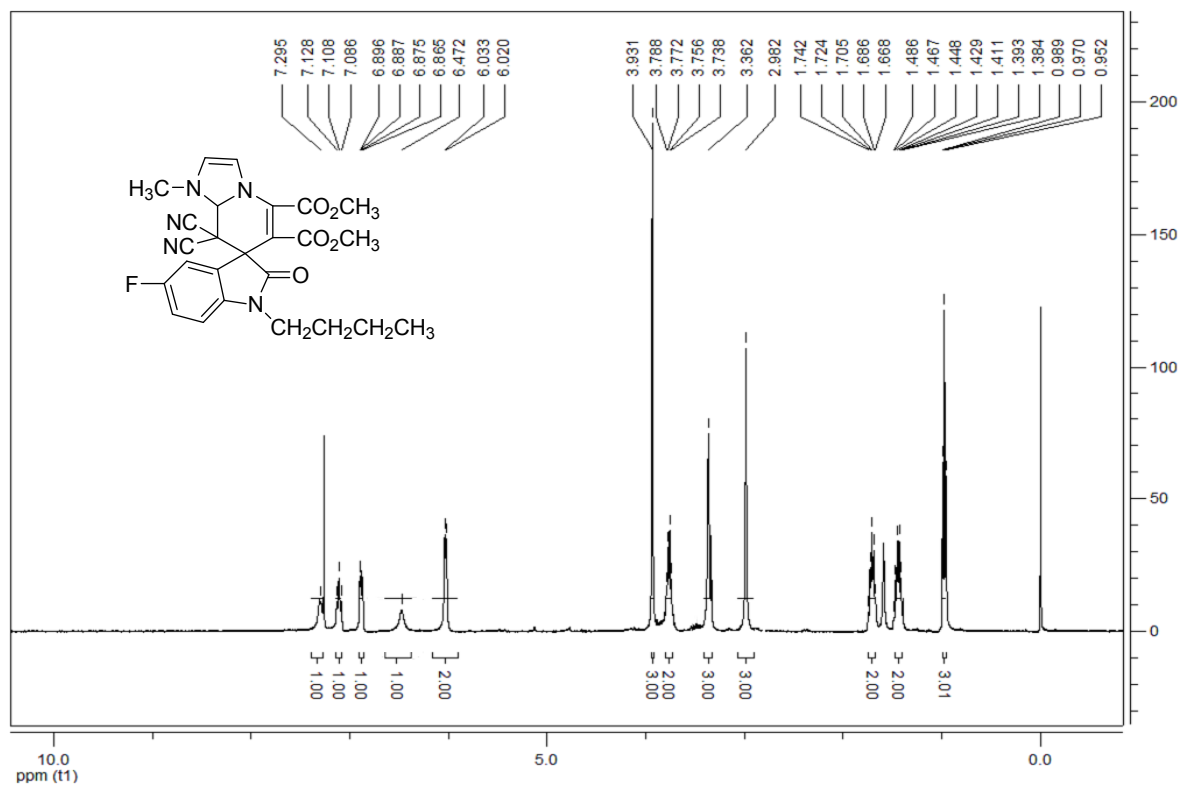
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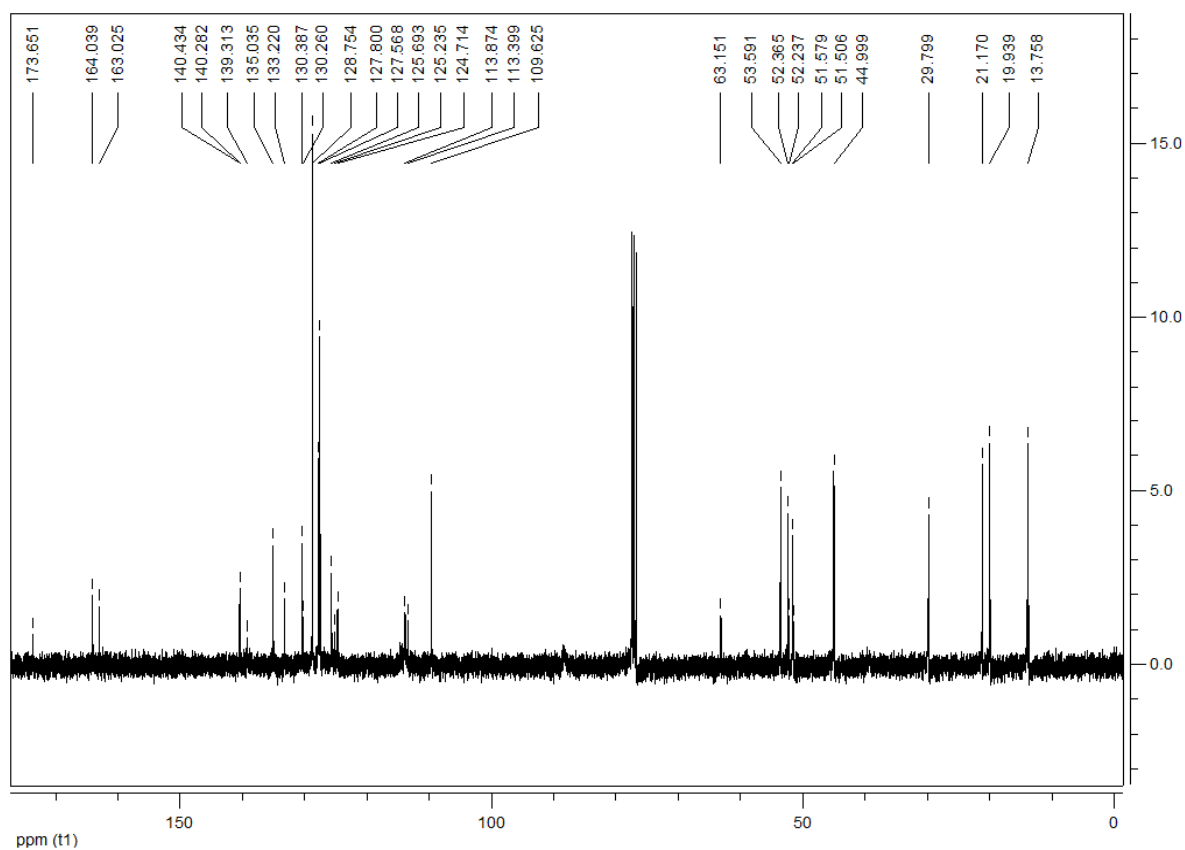
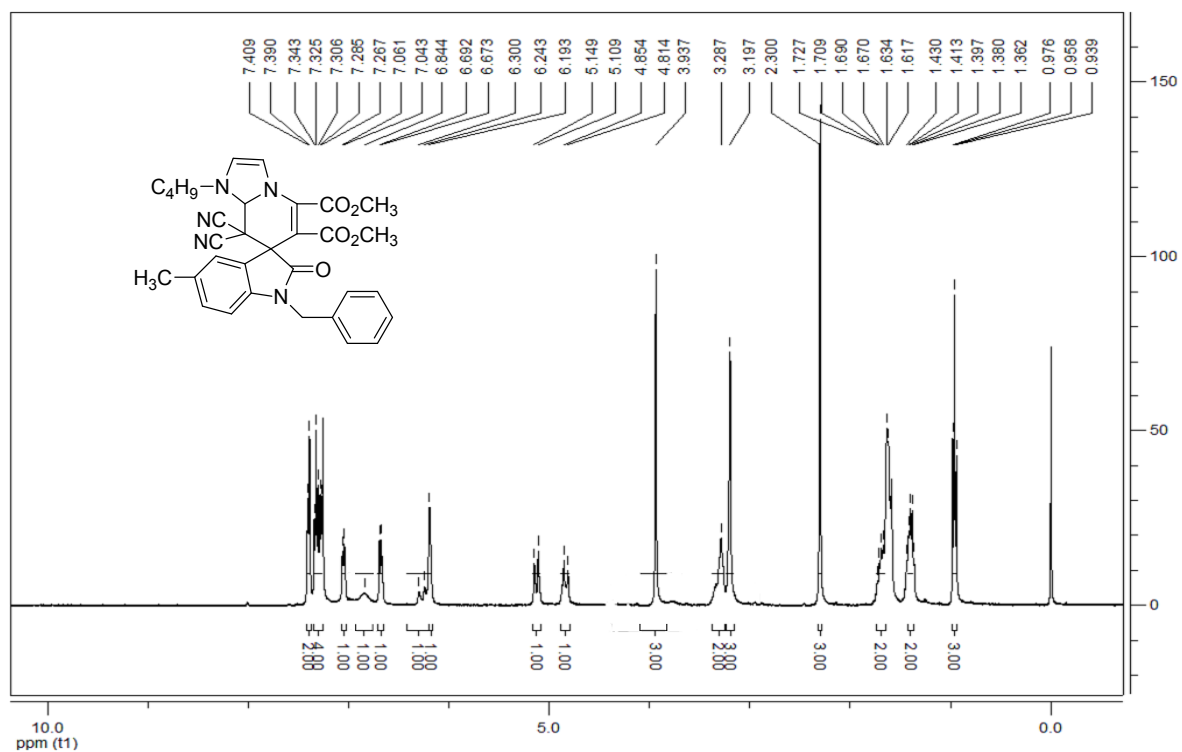
Dimethyl 5'-chloro-8,8-dicyano-1-methyl-2'-oxo-1'-propyl-8,8a-dihydro-1H-spiro[imidazo[1,2-a]pyridine-7,3'-indoline]-5,6-dicarboxylate (1j):



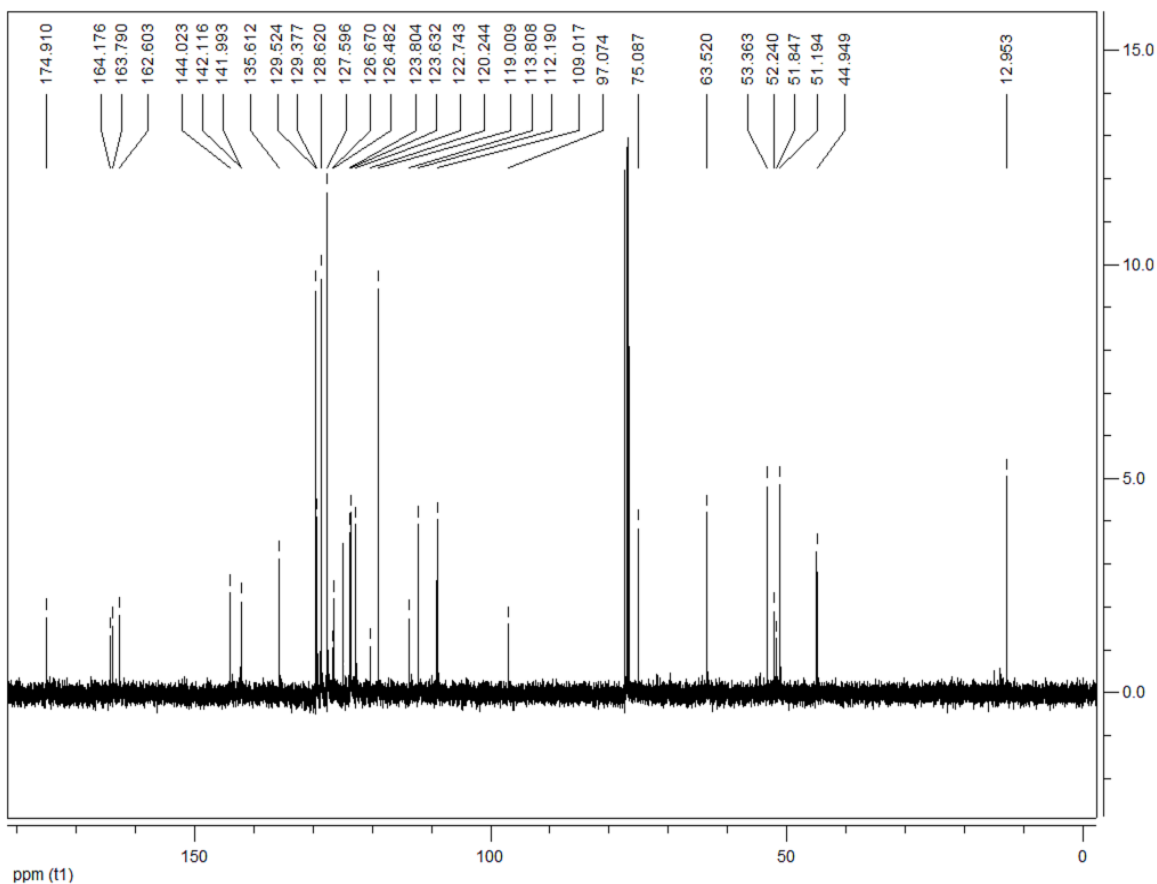
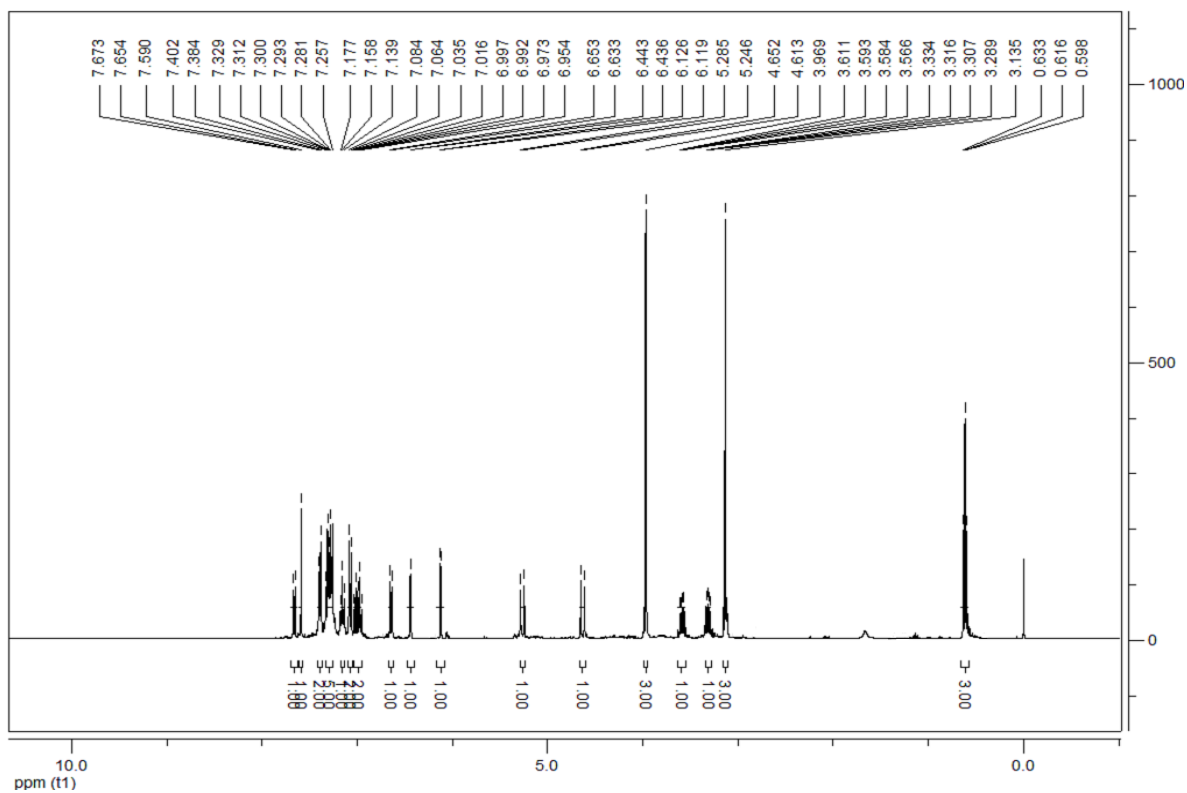
Dimethyl 1'-butyl-8,8-dicyano-5'-fluoro-1-methyl-2'-oxo-8,8a-dihydro-1H-spiro[imidazo[1,2-a]pyridine-7,3'-indoline]-5,6-dicarboxylate (1k):



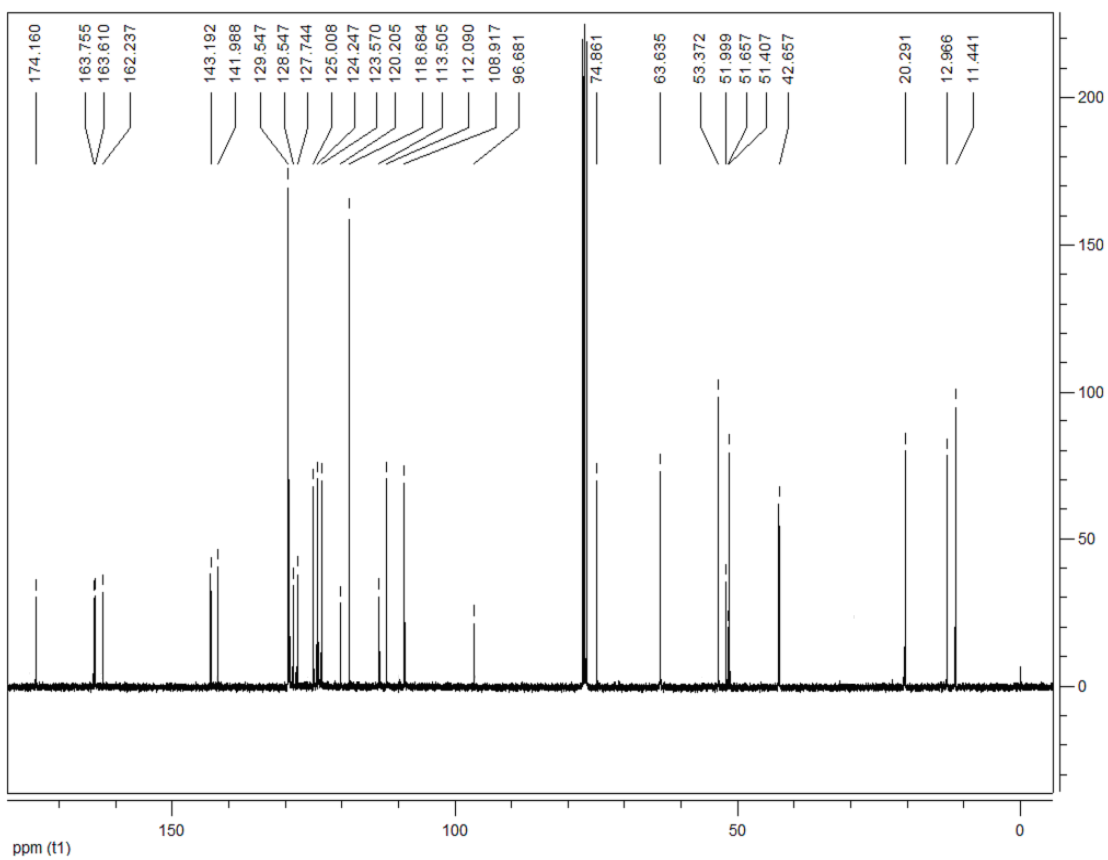
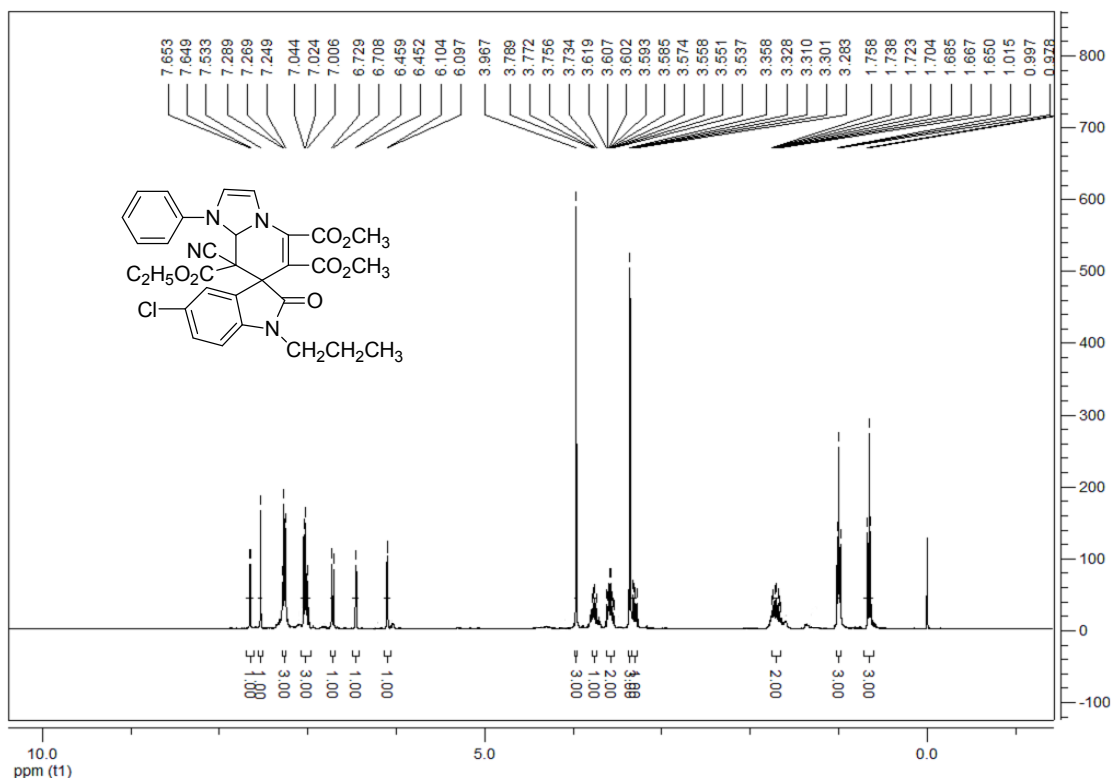
Dimethyl 1'-benzyl-1-butyl-8,8-dicyano-5'-methyl-2'-oxo-8,8a-dihydro-1H-spiro[imidazo[1,2-a]pyridine-7,3'-indoline]-5,6-dicarboxylate (11):



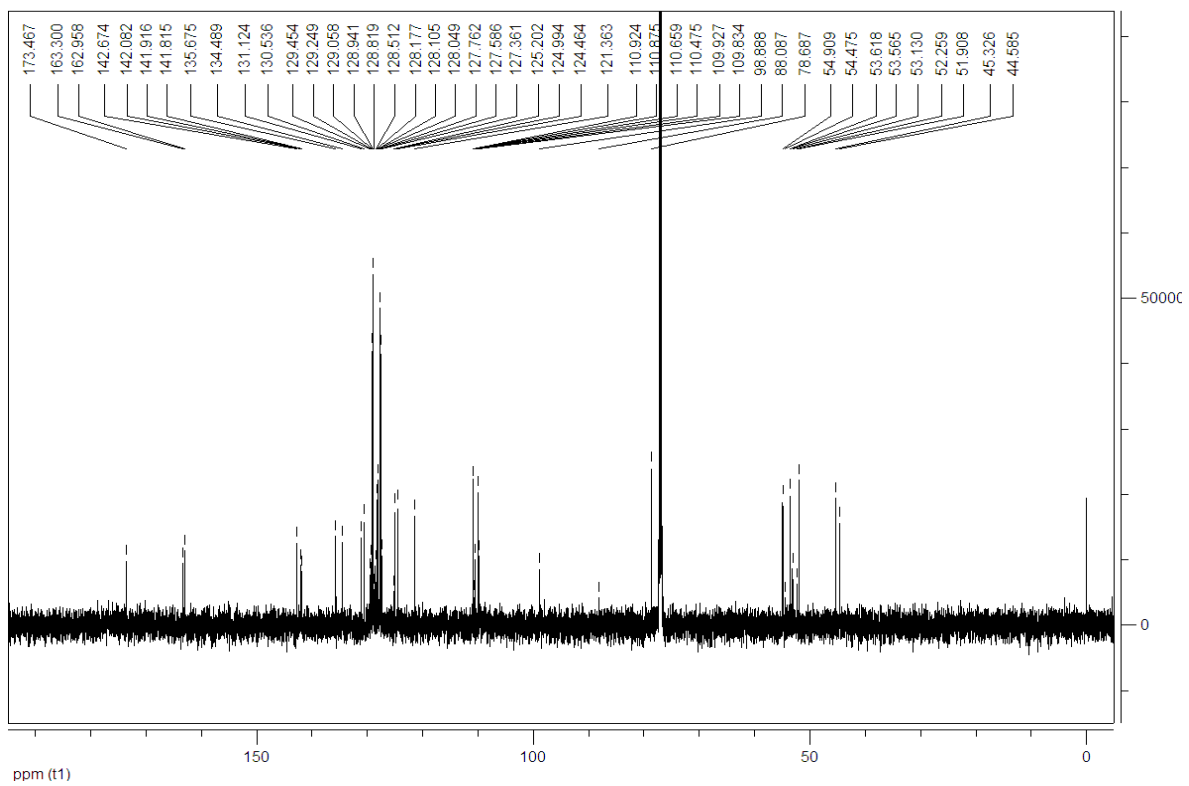
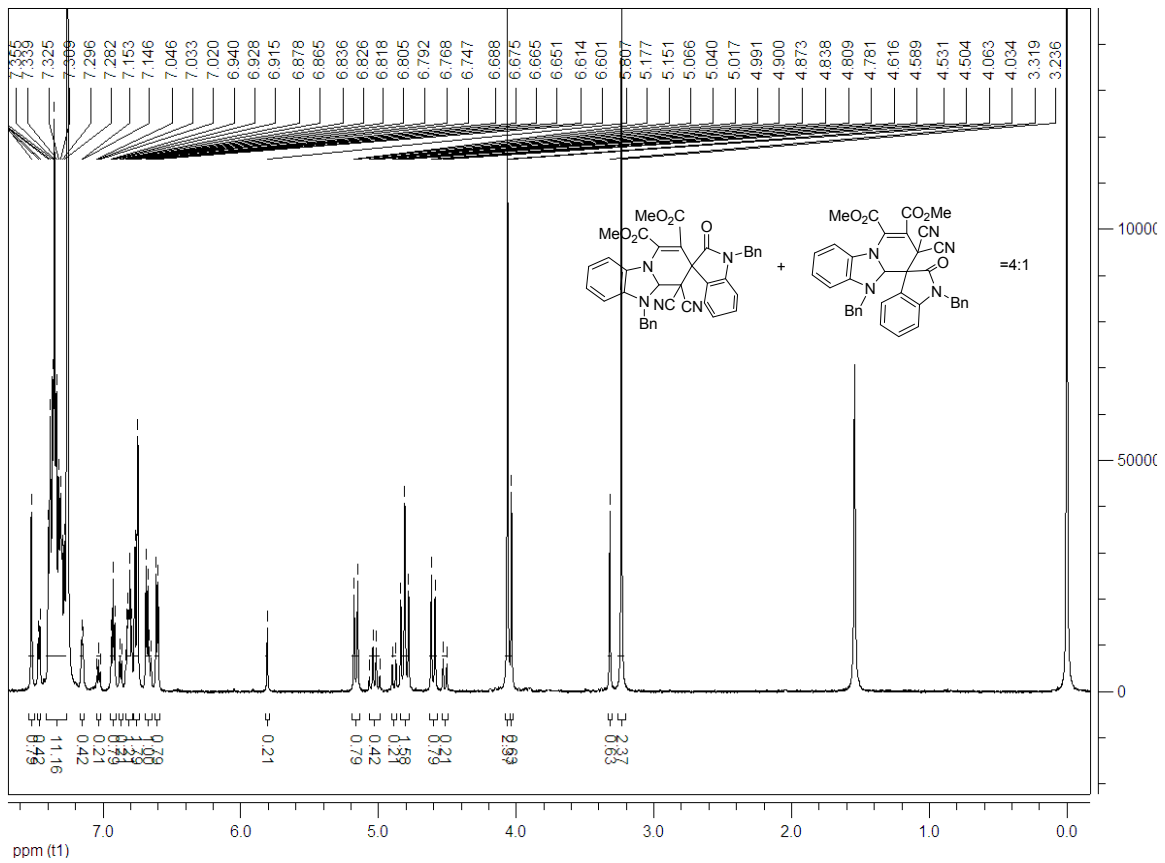
8-Ethyl 5,6-dimethyl 1'-benzyl-8-cyano-2'-oxo-1-phenyl-8,8a-dihydro-1H-spiro[imidazo[1,2-a]pyridine-7,3'-indoline]-5,6,8-tricarboxylate (1m):



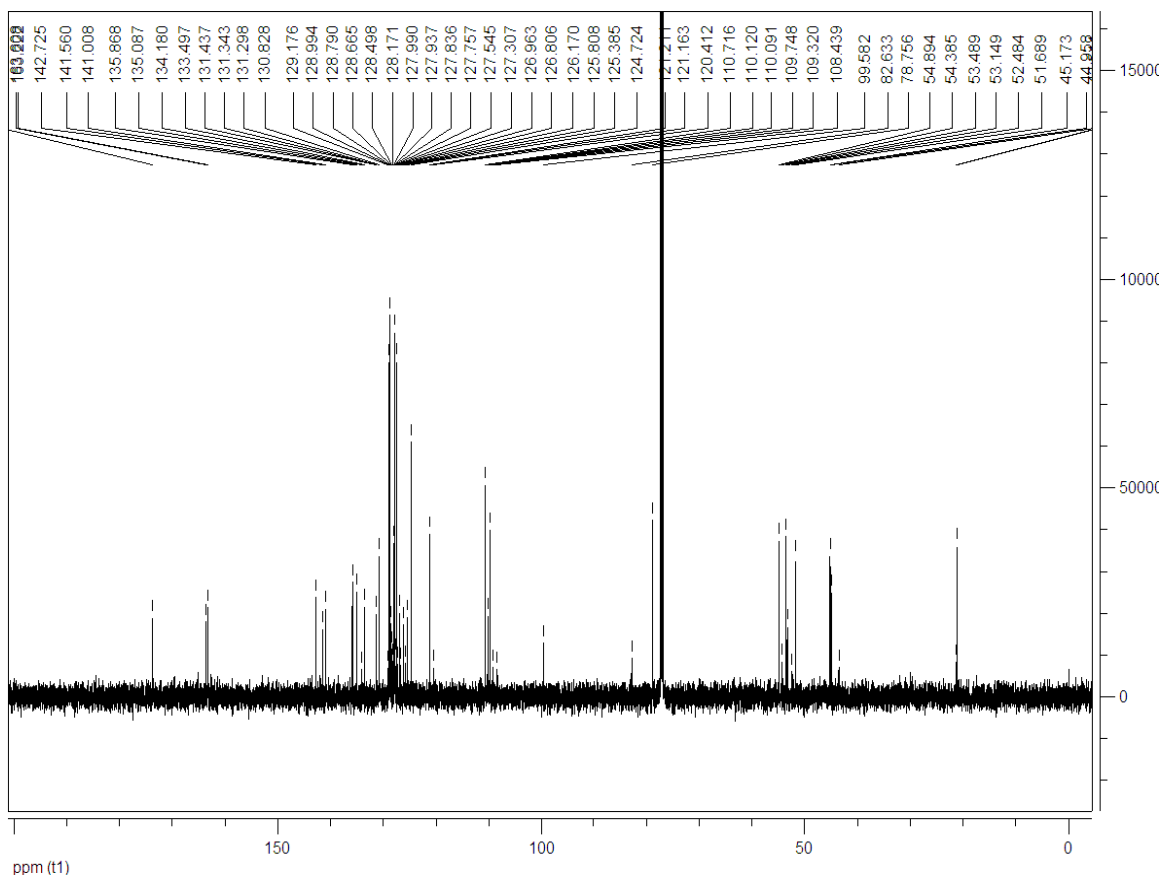
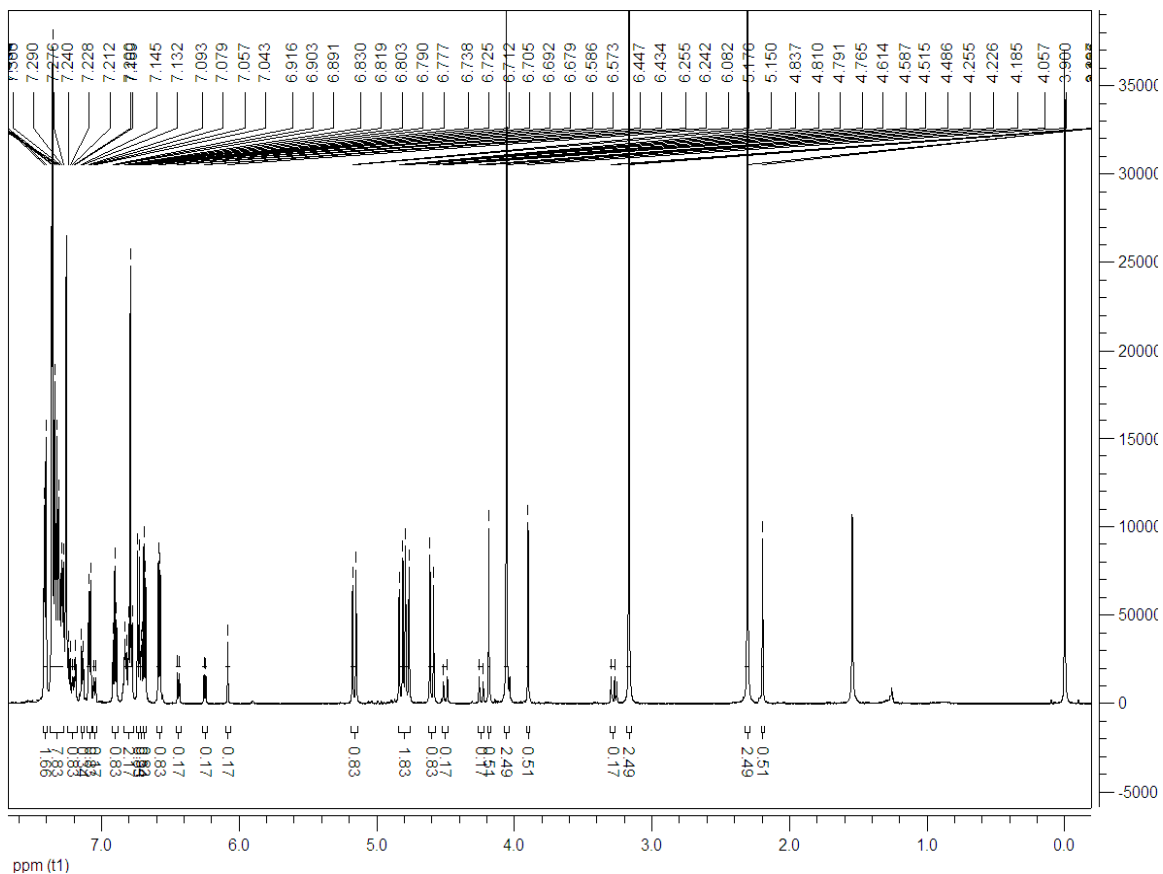
8-Ethyl 5,6-dimethyl 5'-chloro-8-cyano-2'-oxo-1-phenyl-1'-propyl-8,8a-dihydro-1H-spiro[imidazo[1,2-a]pyridine-7,3'-indoline]-5,6,8-tricarboxylate (1n):



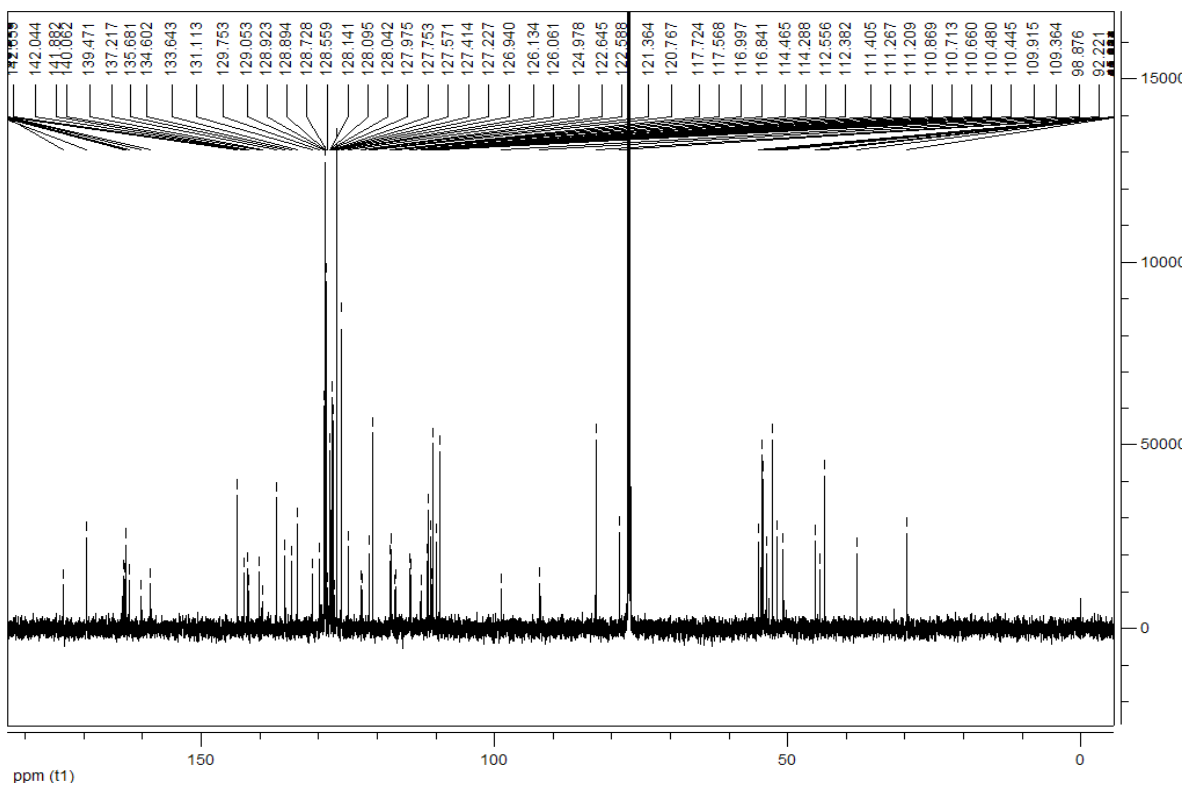
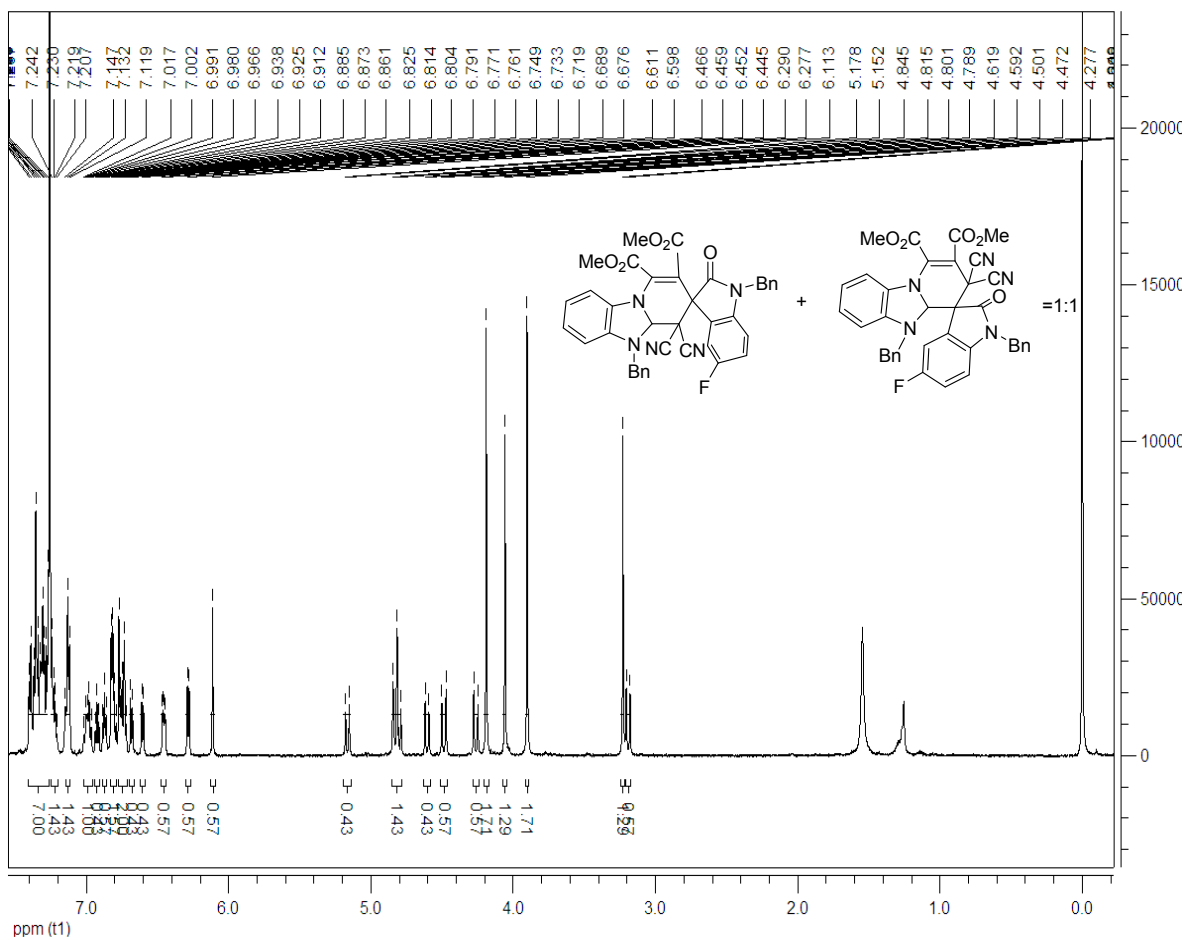
Compounds 2a/2a':



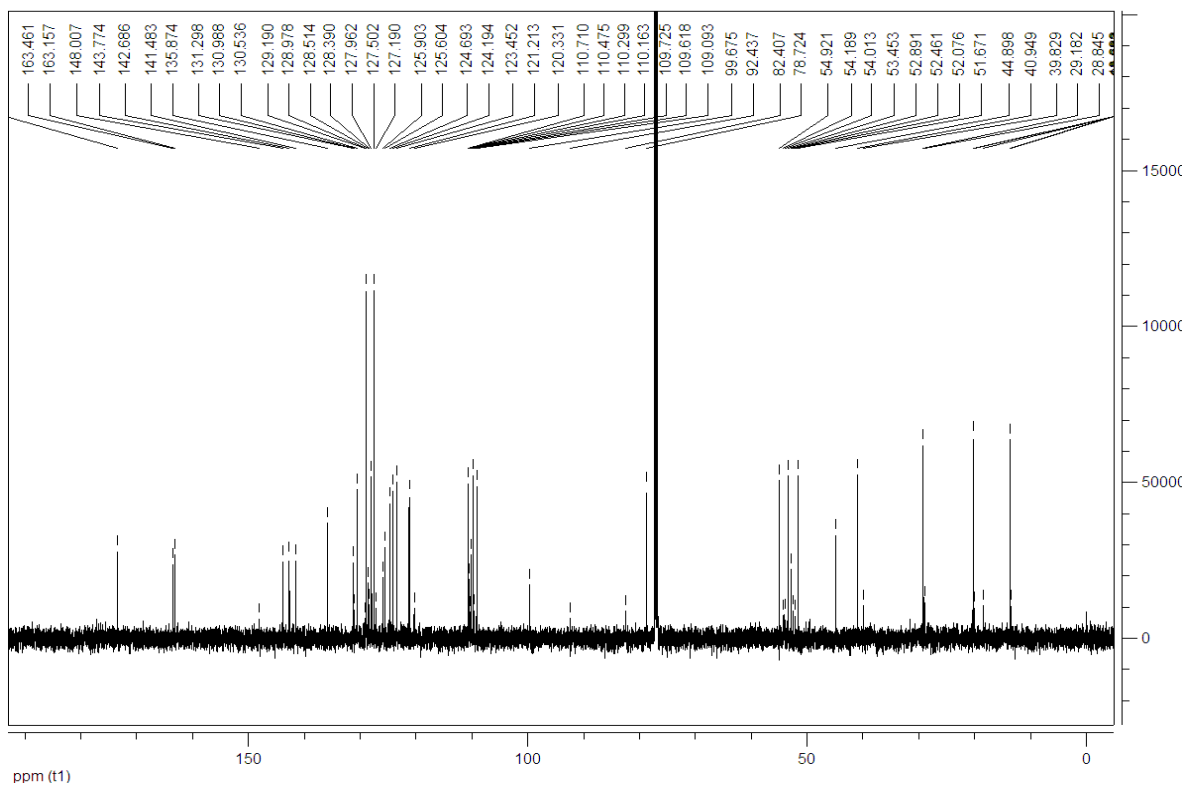
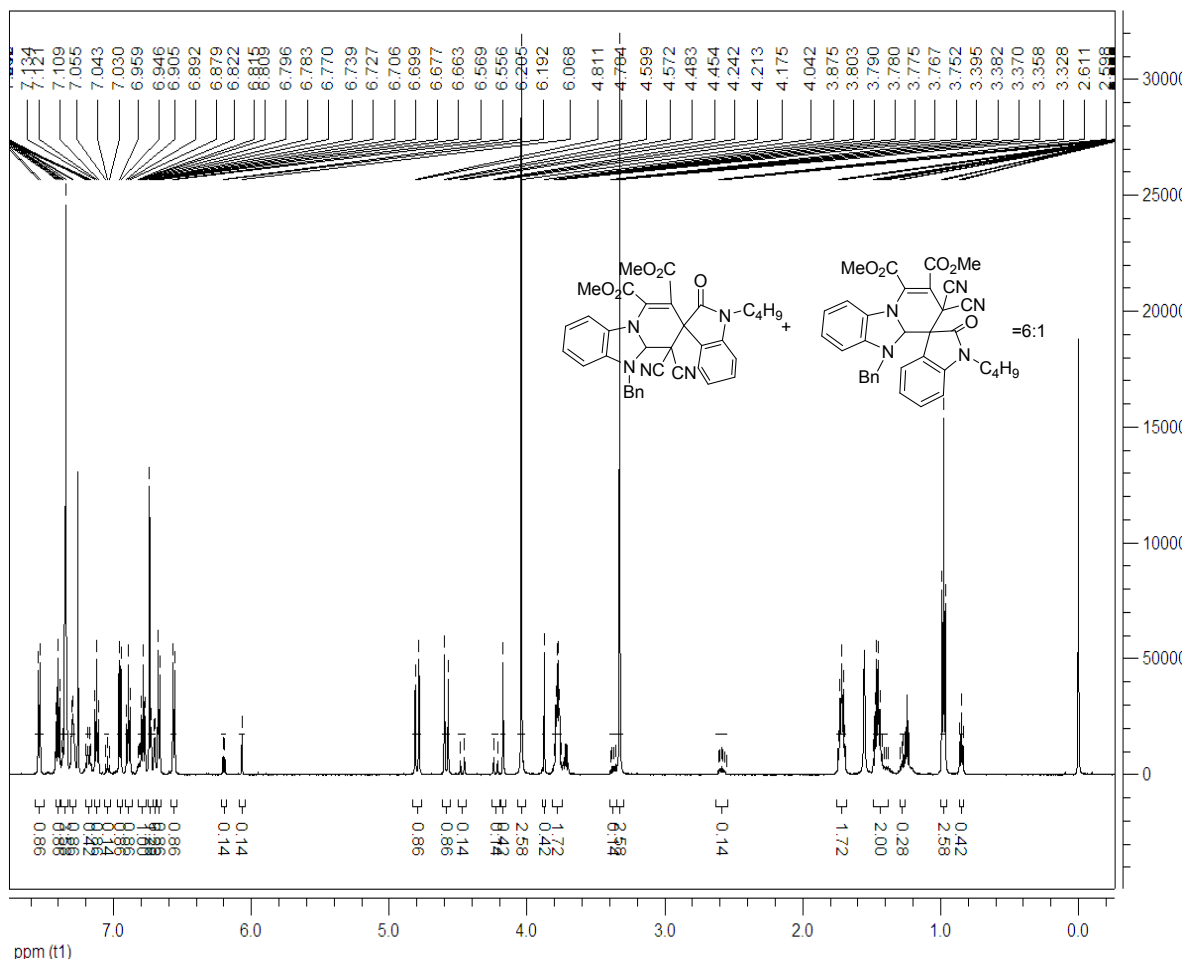
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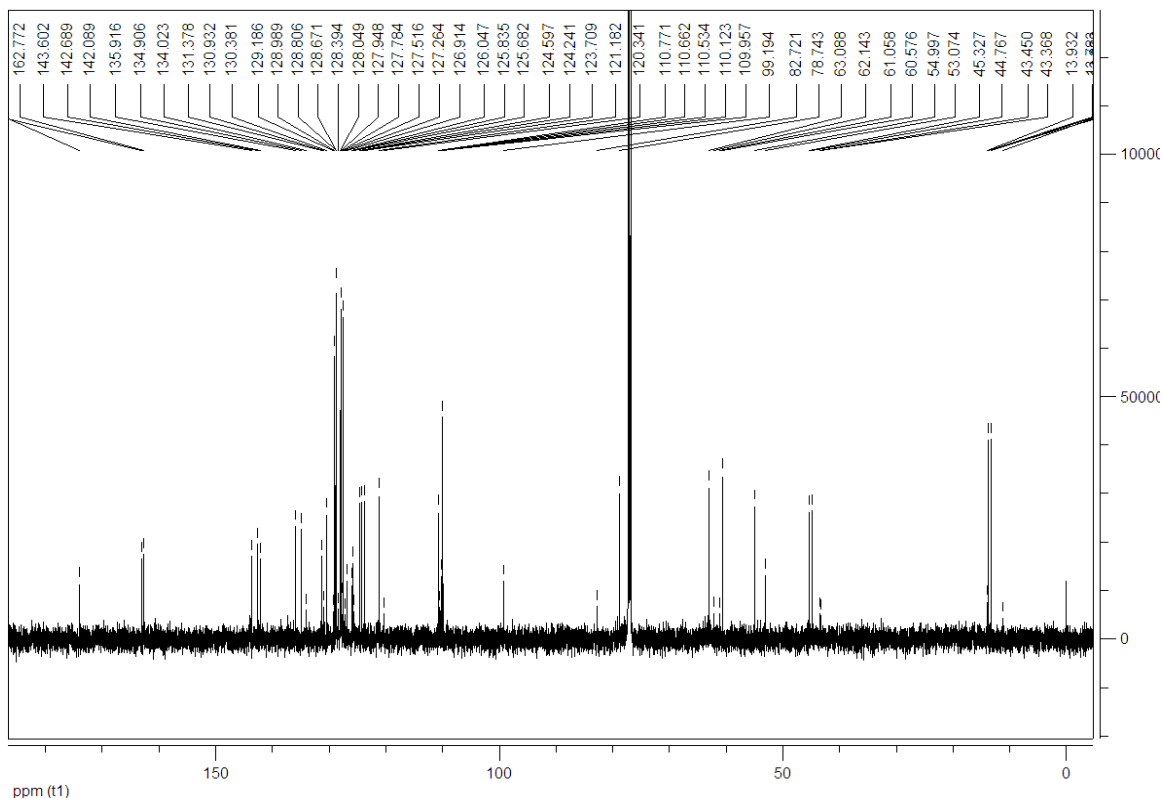
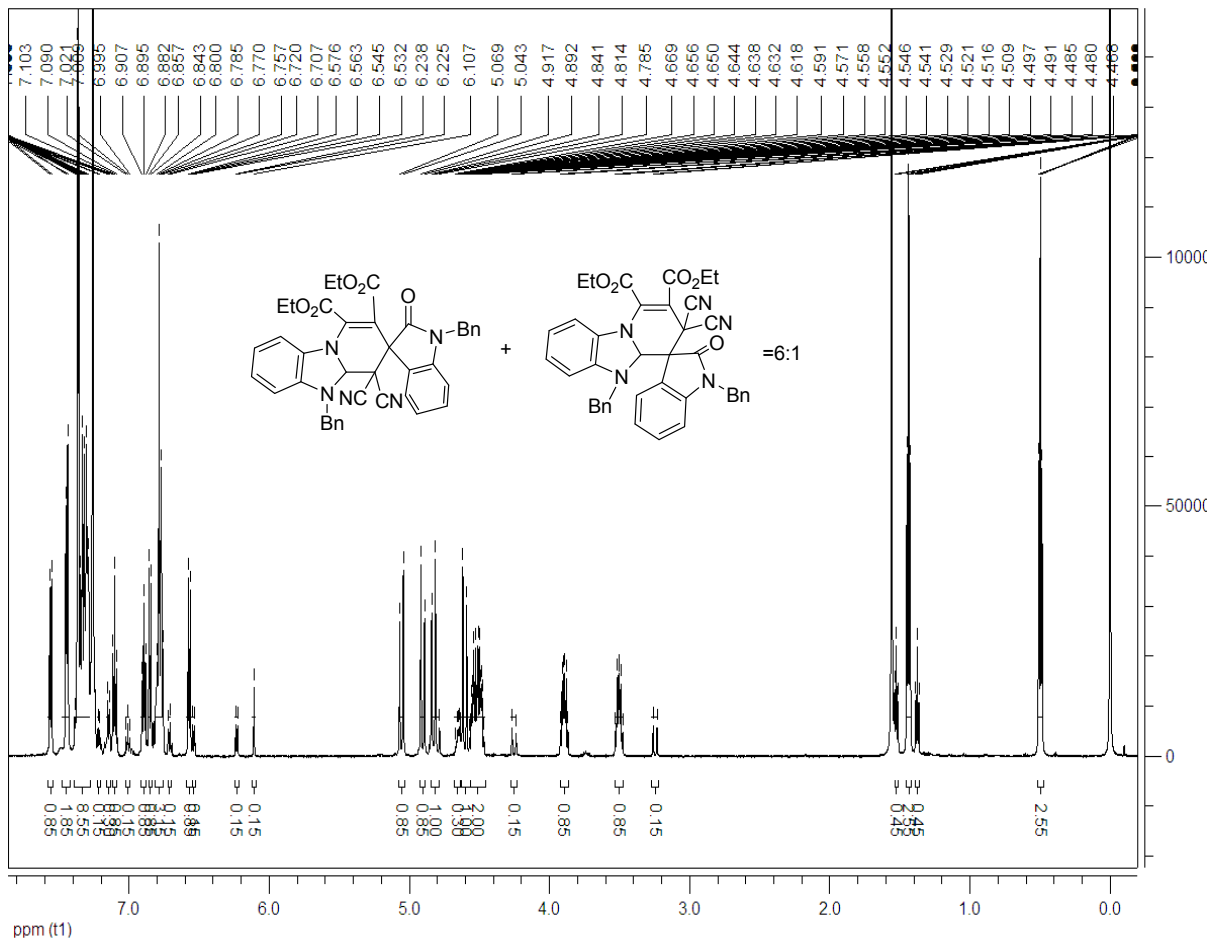
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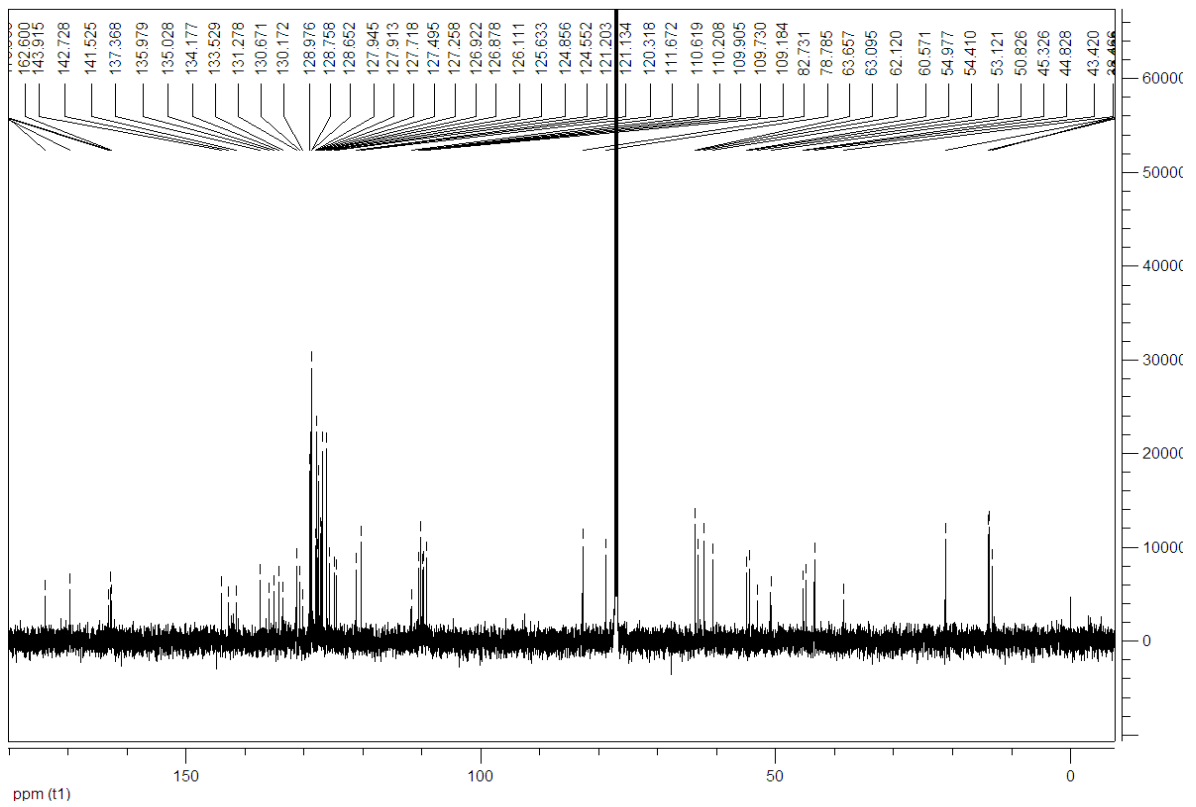
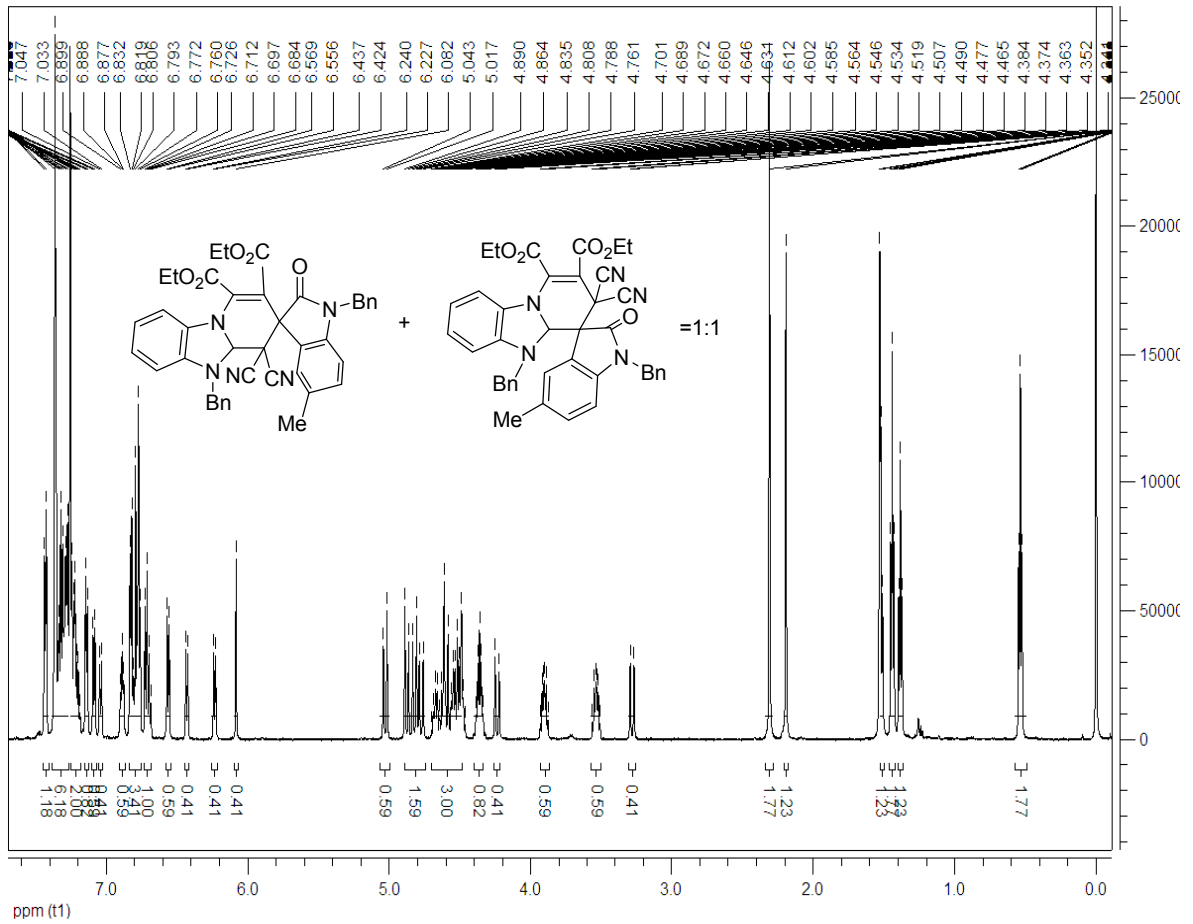
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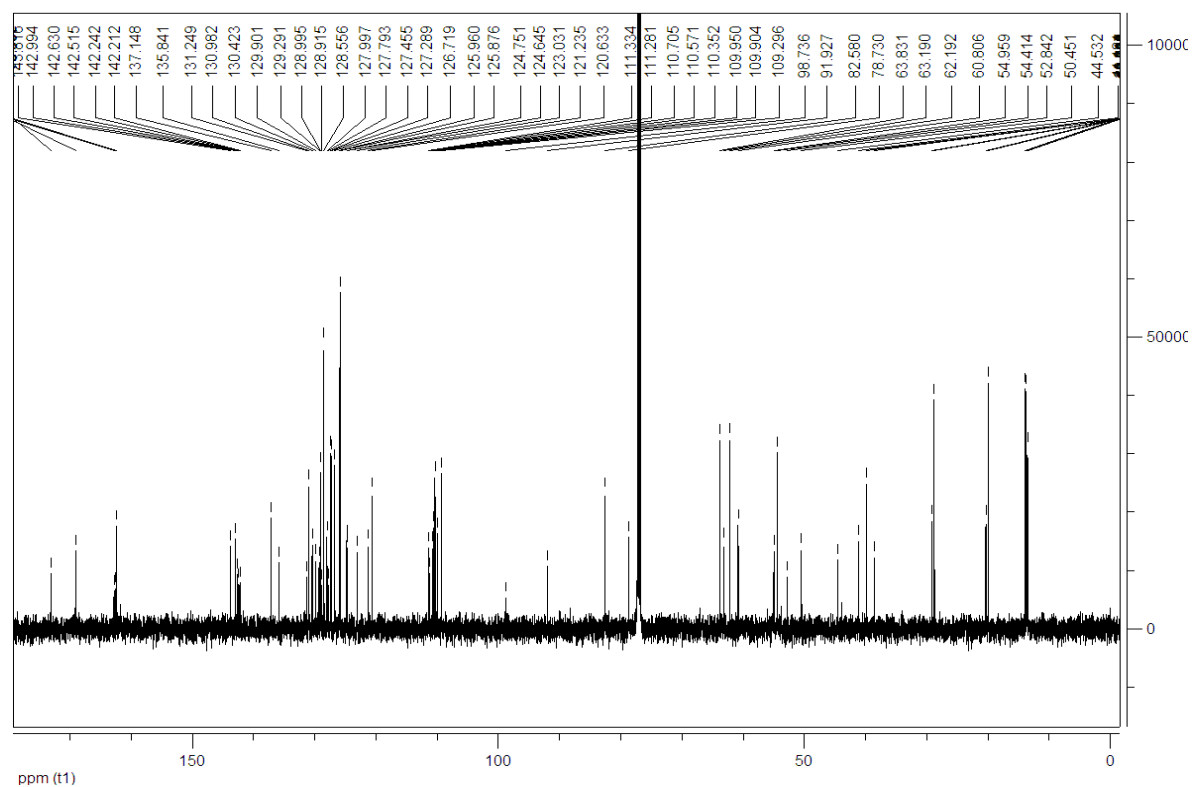
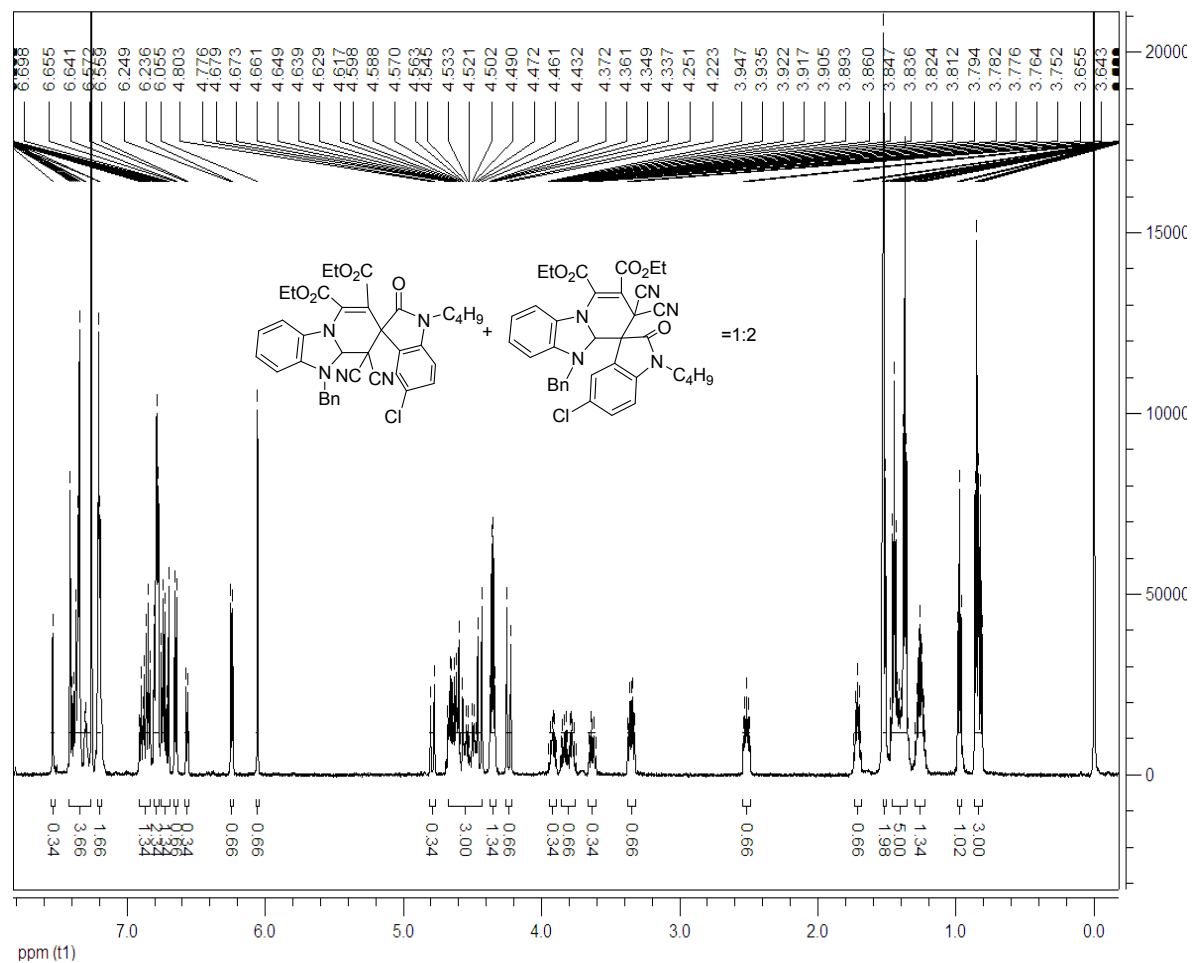
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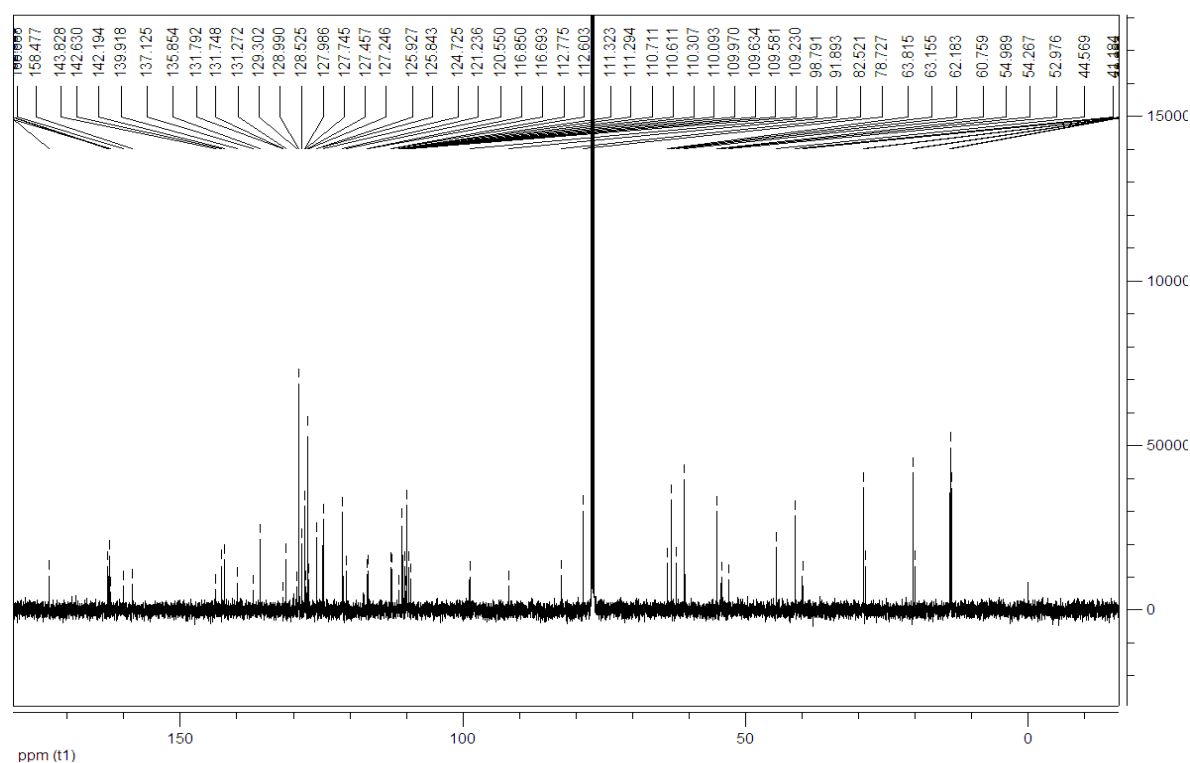
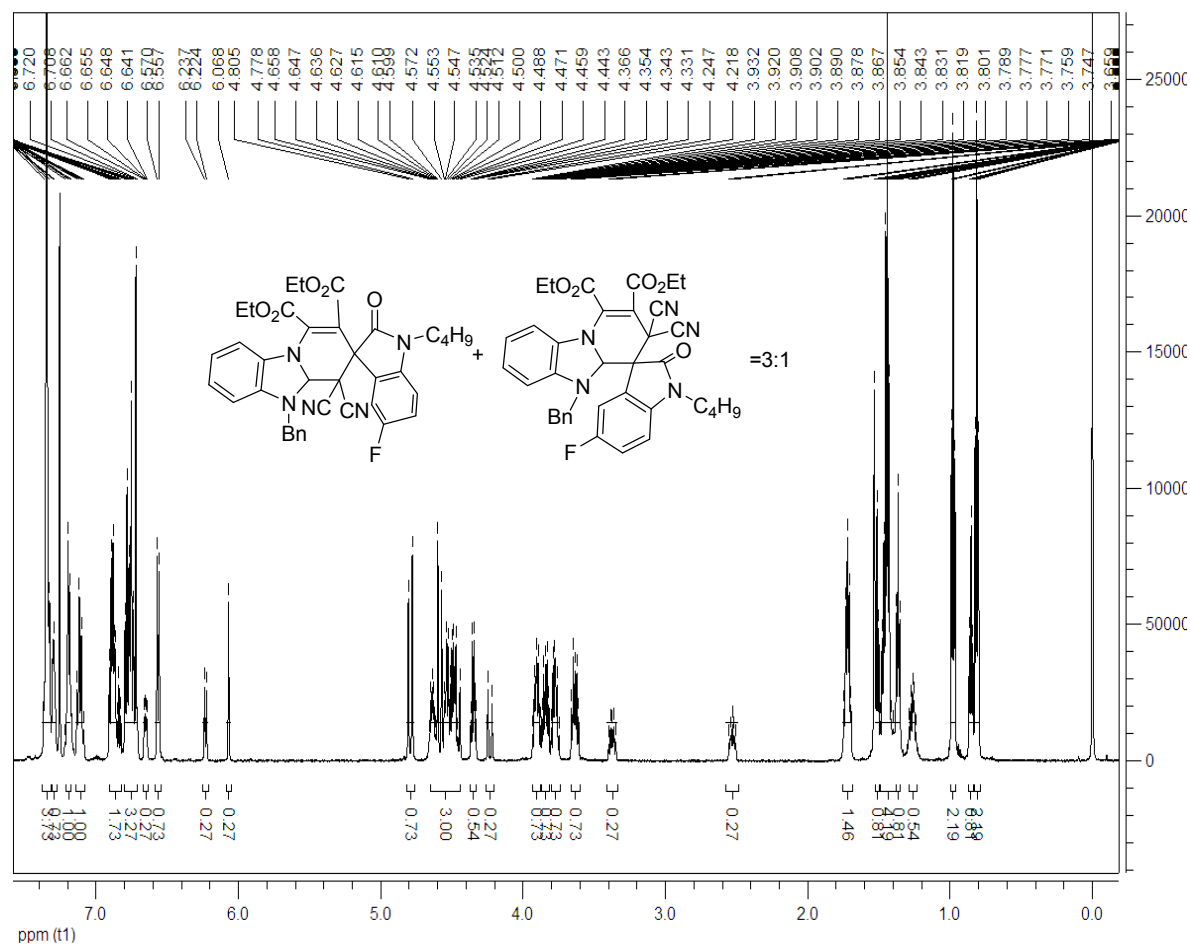
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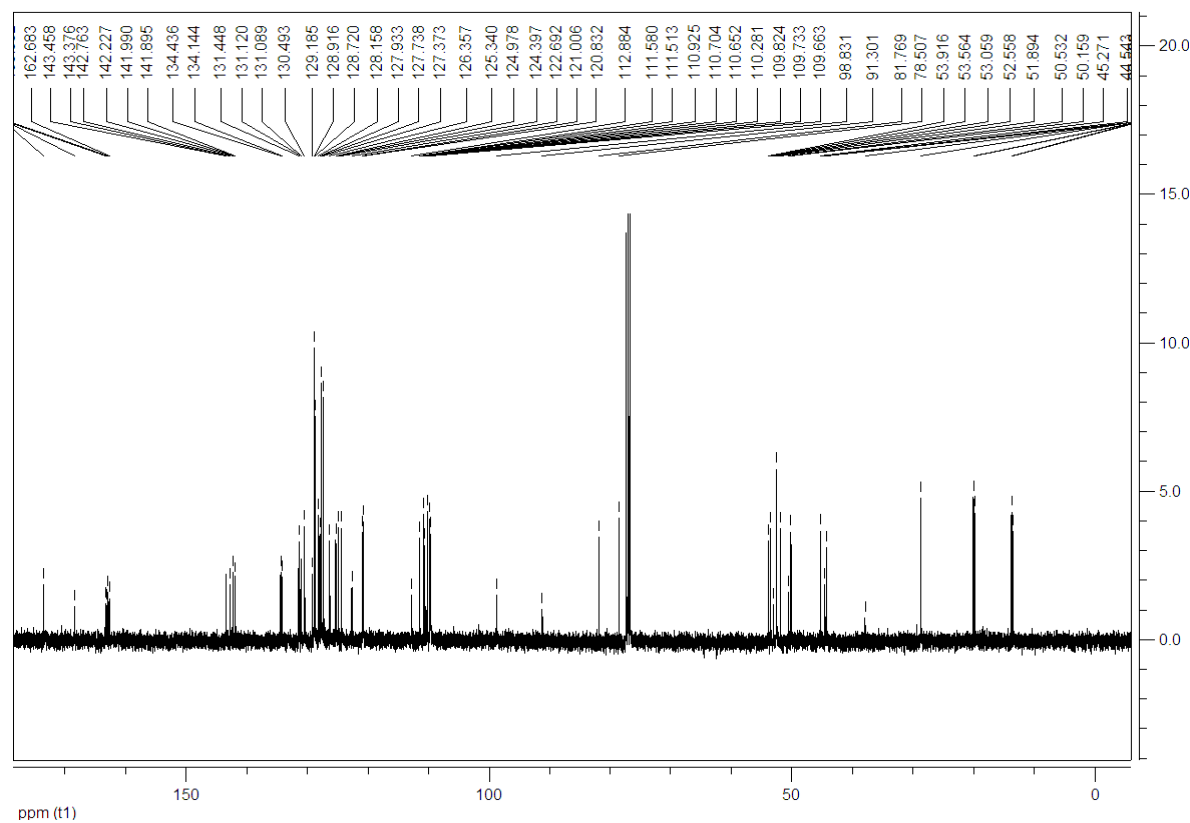
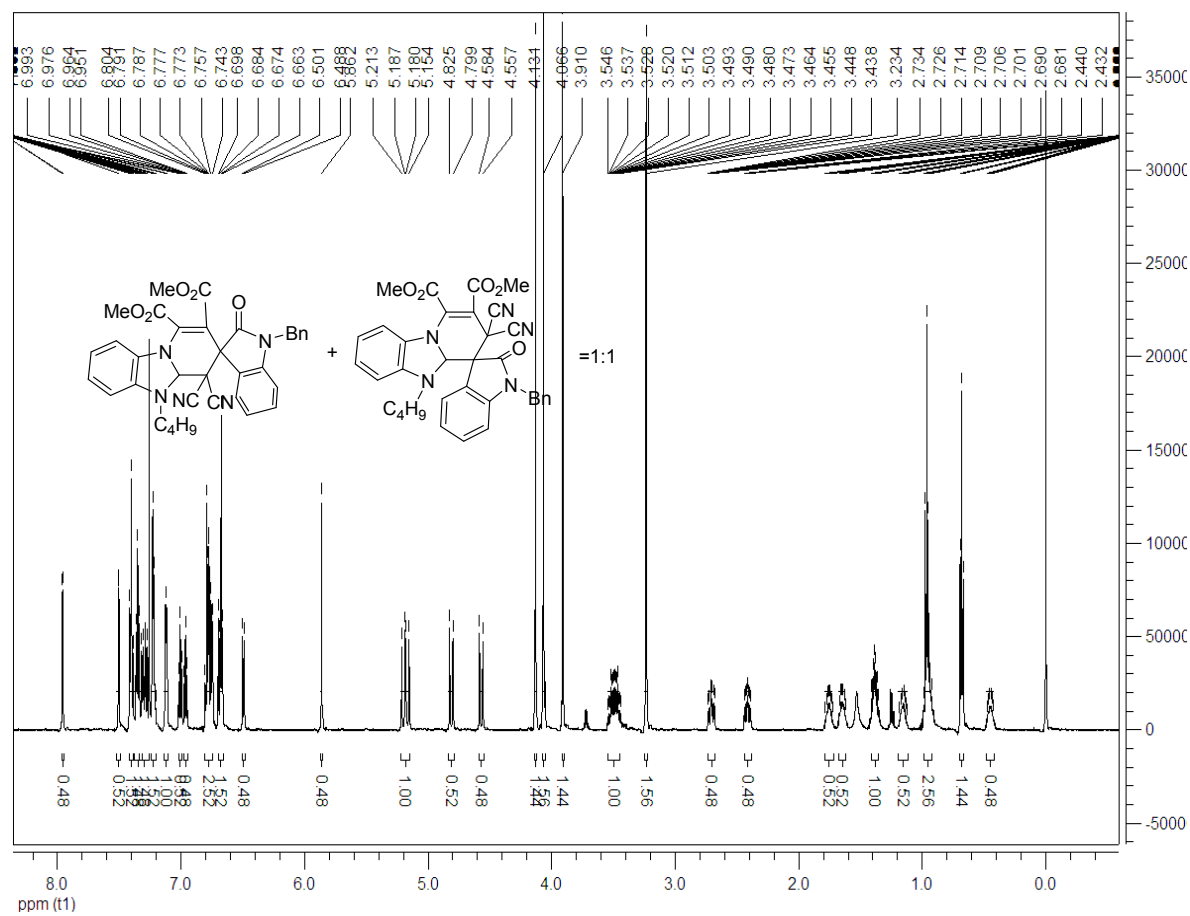
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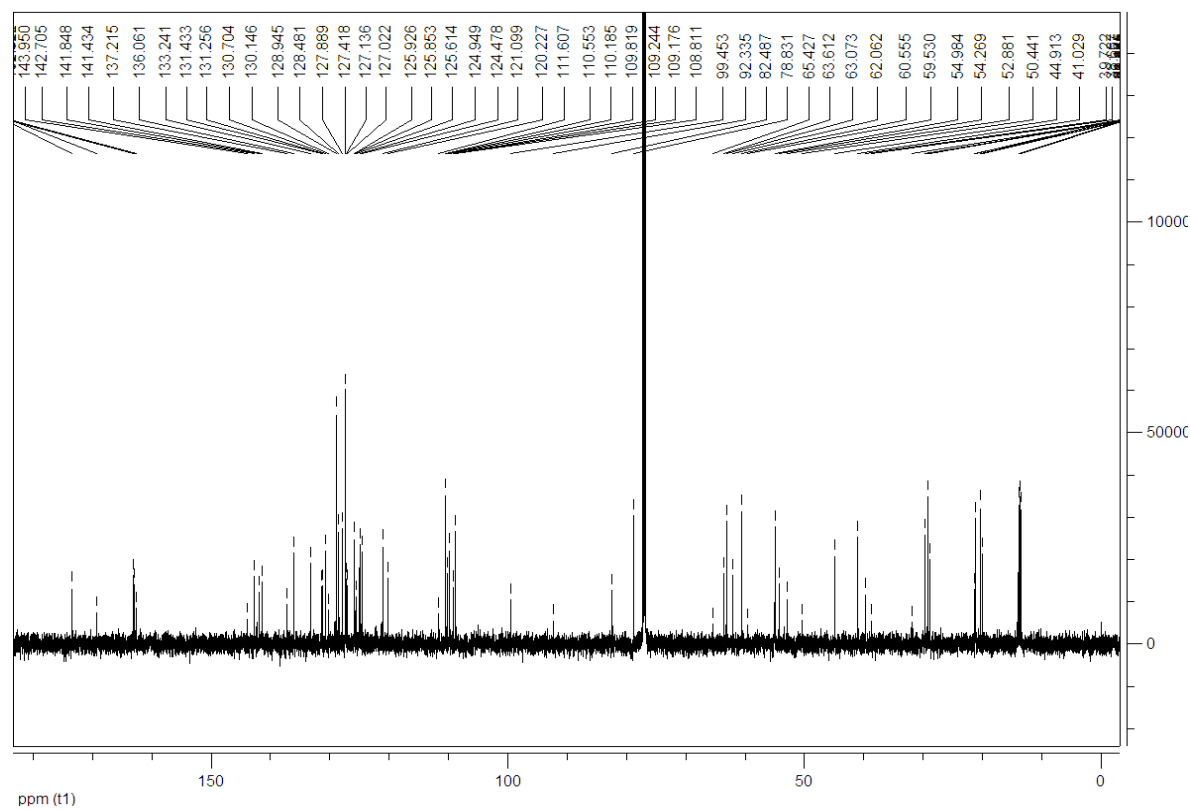
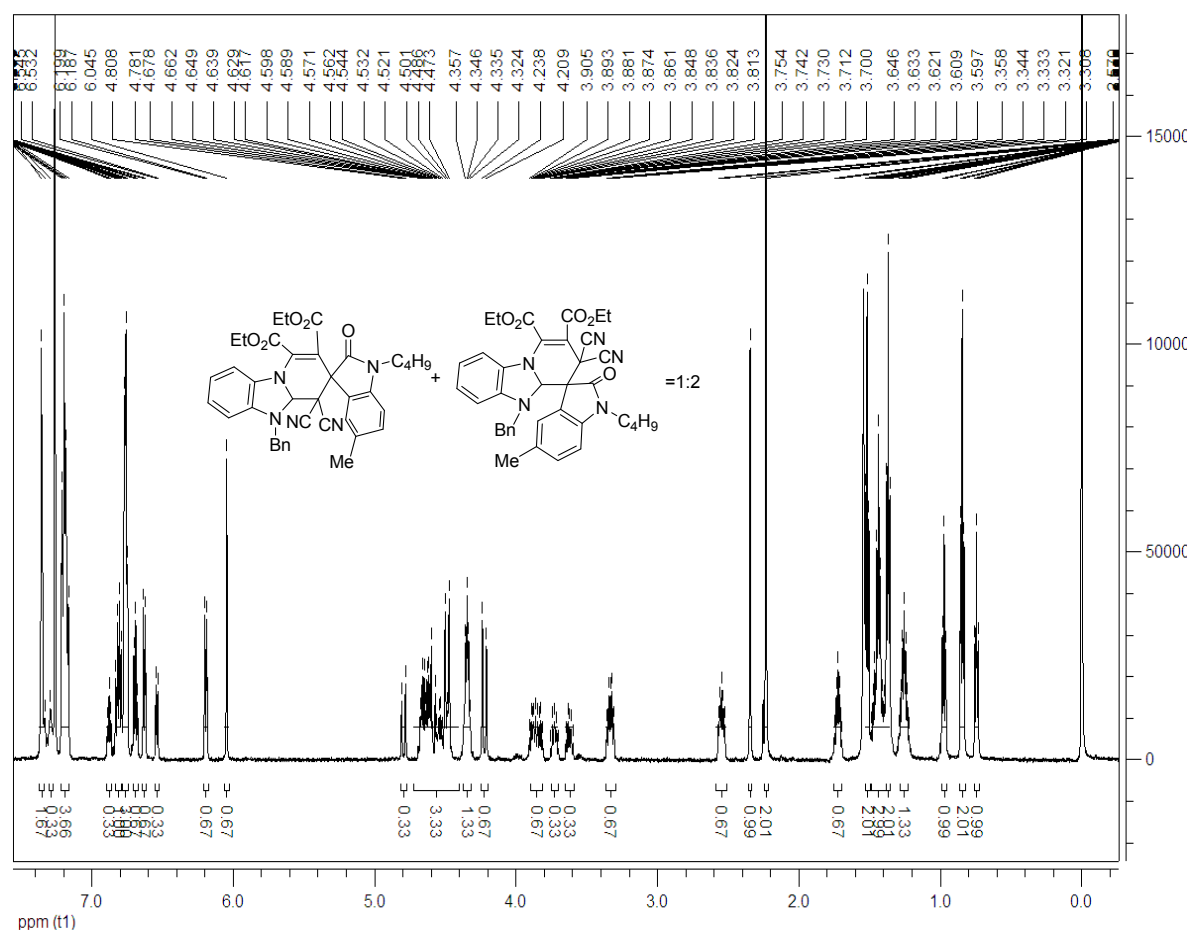
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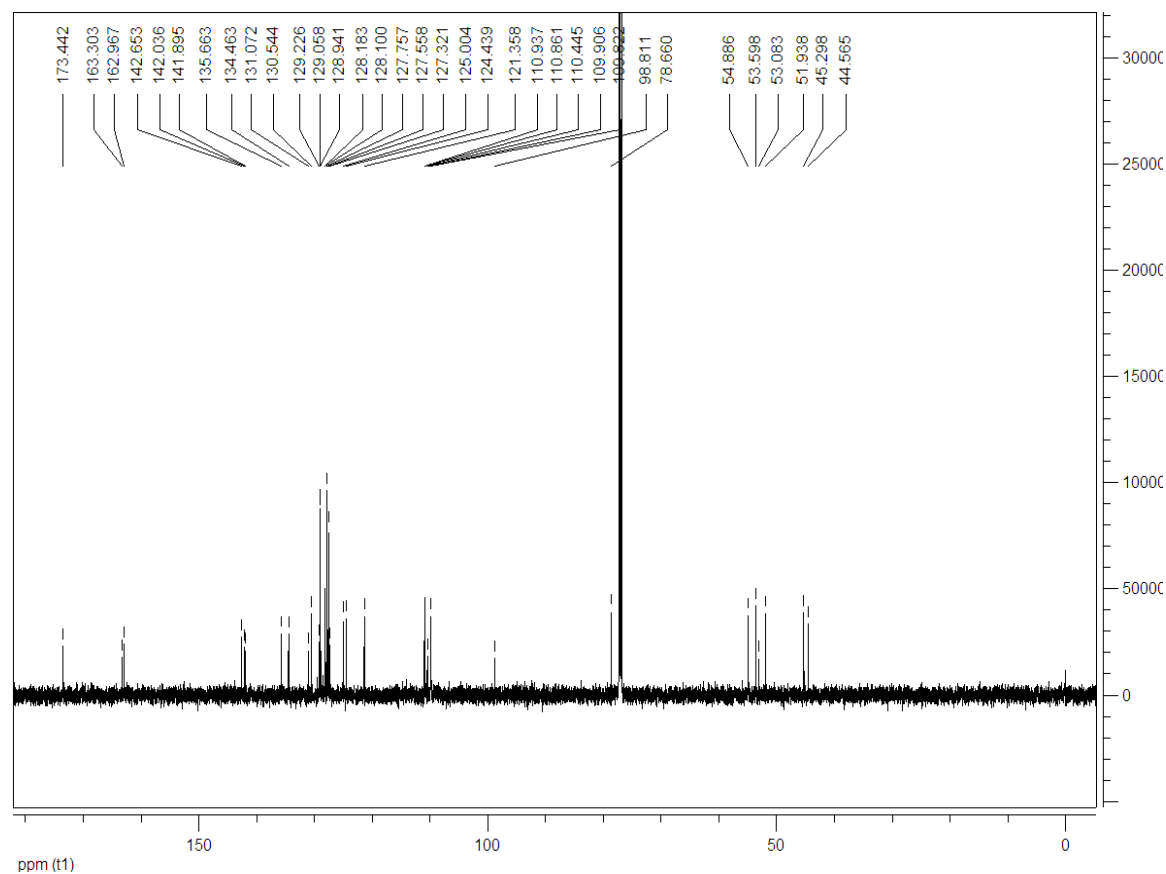
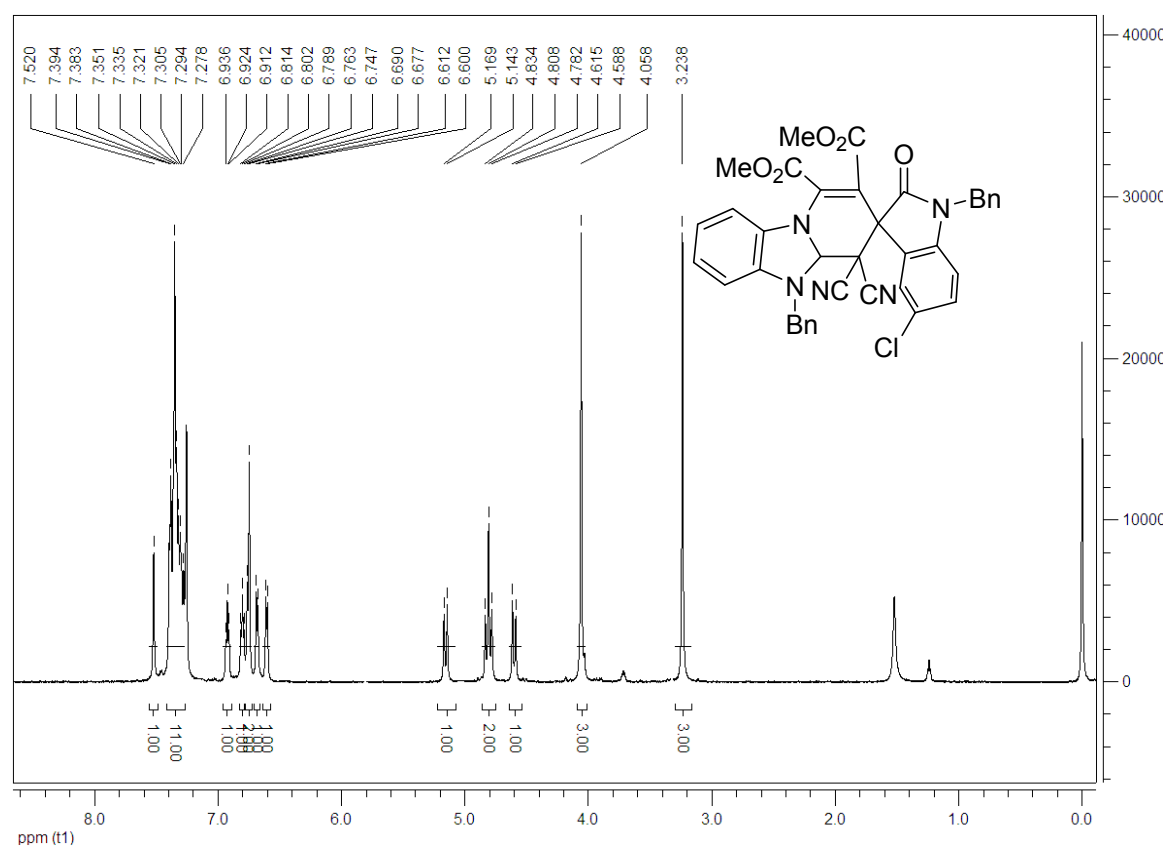
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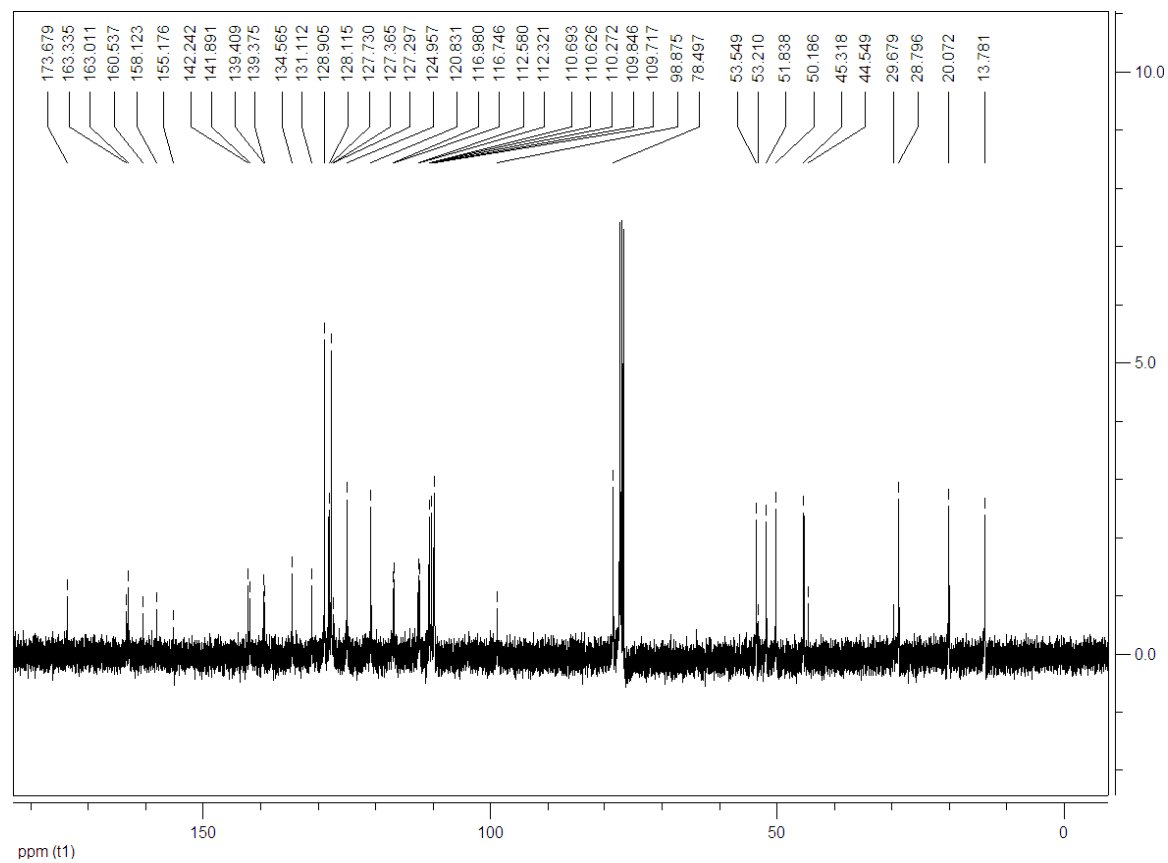
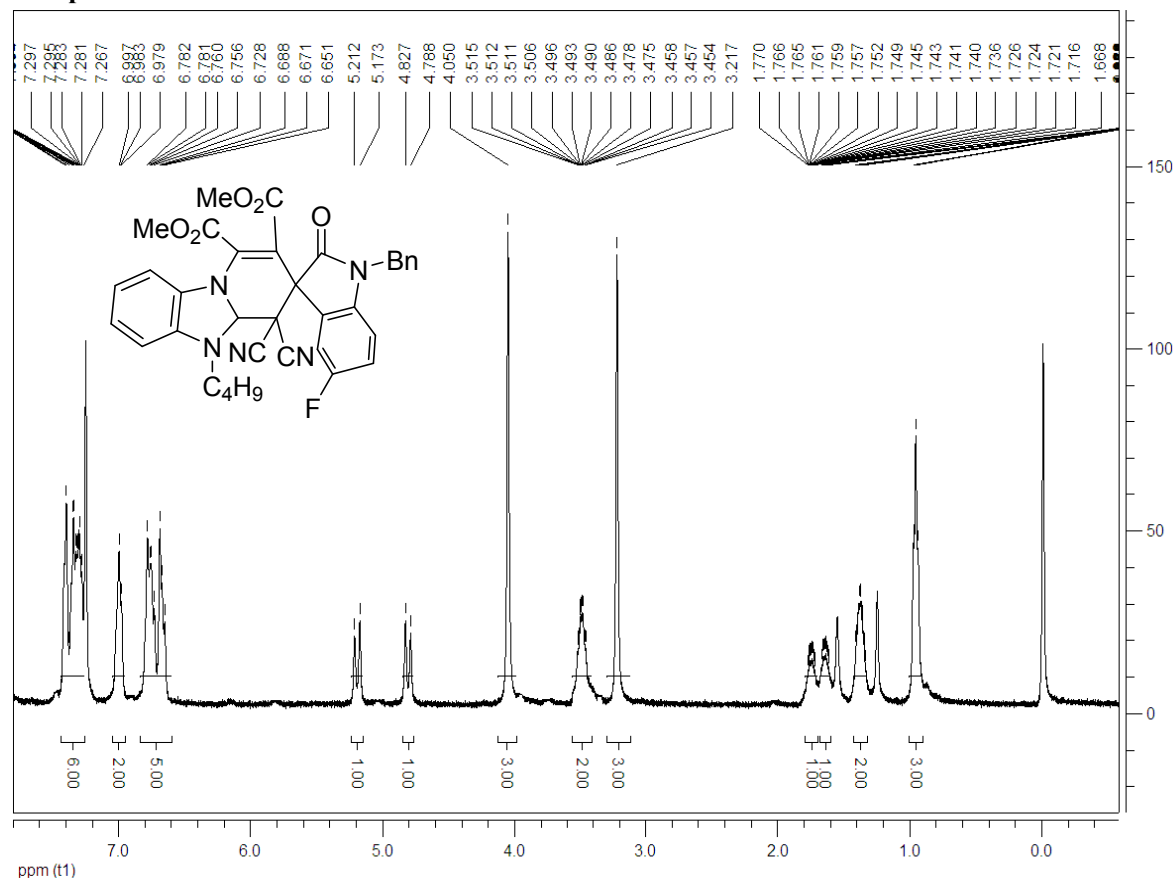
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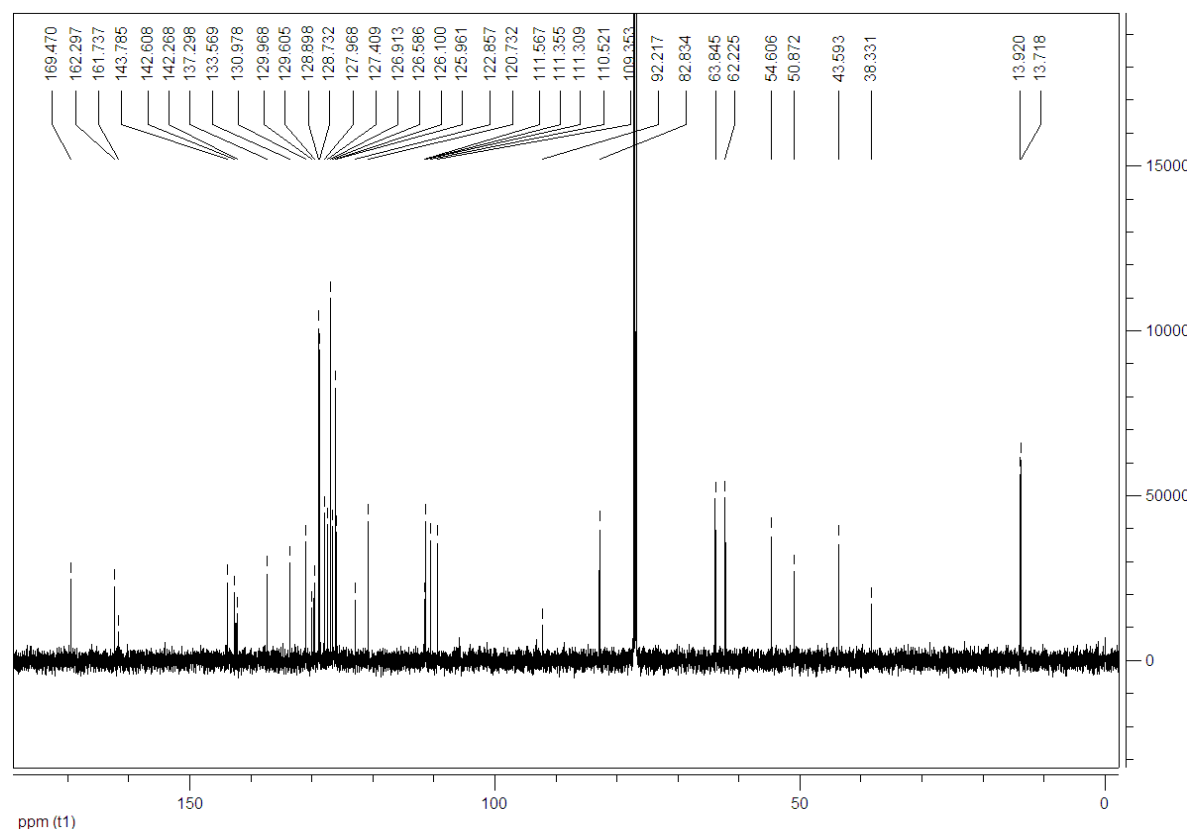
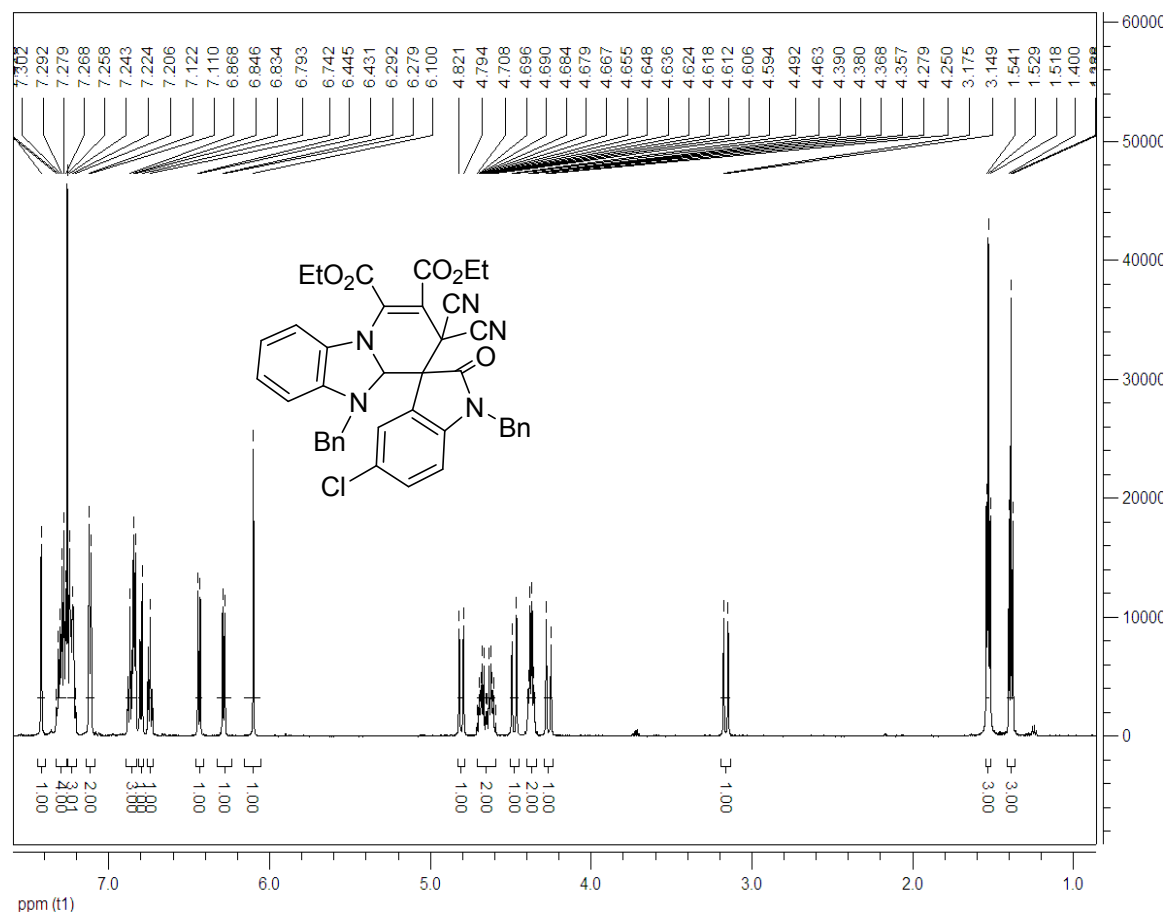
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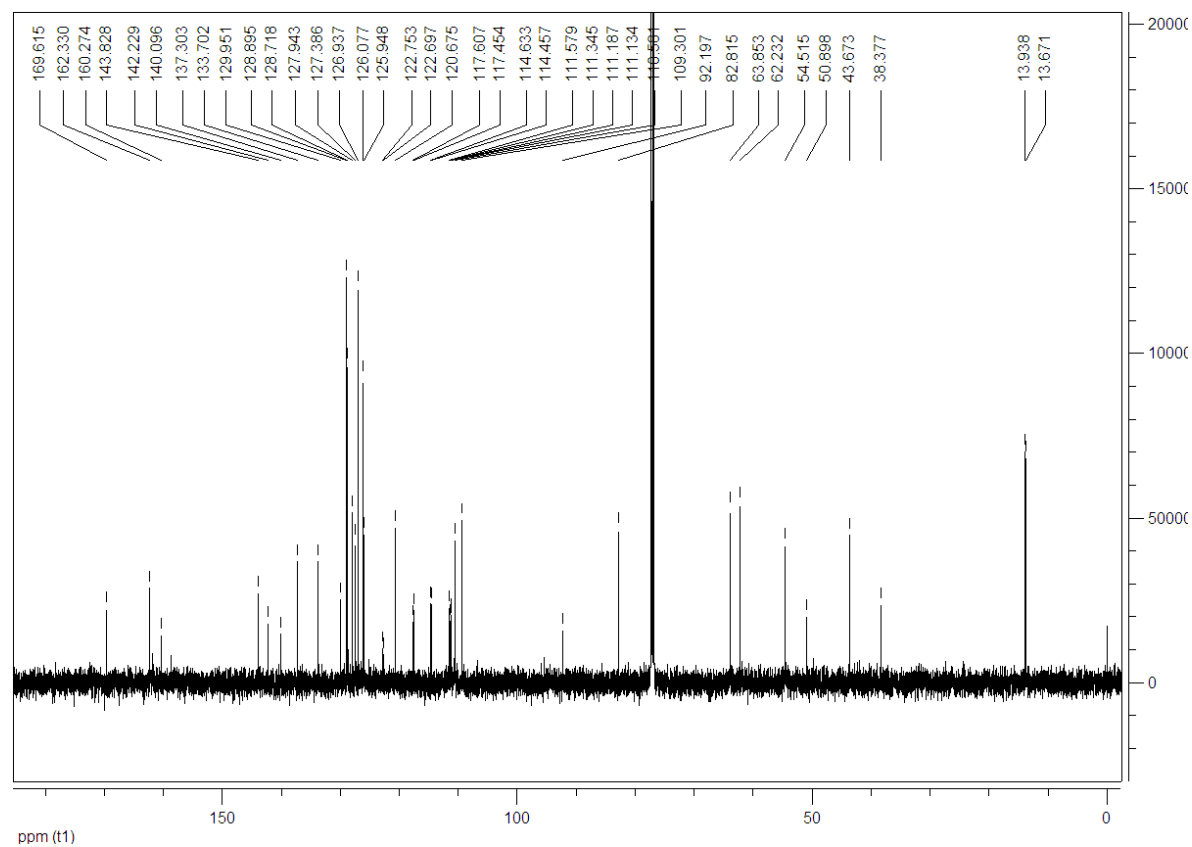
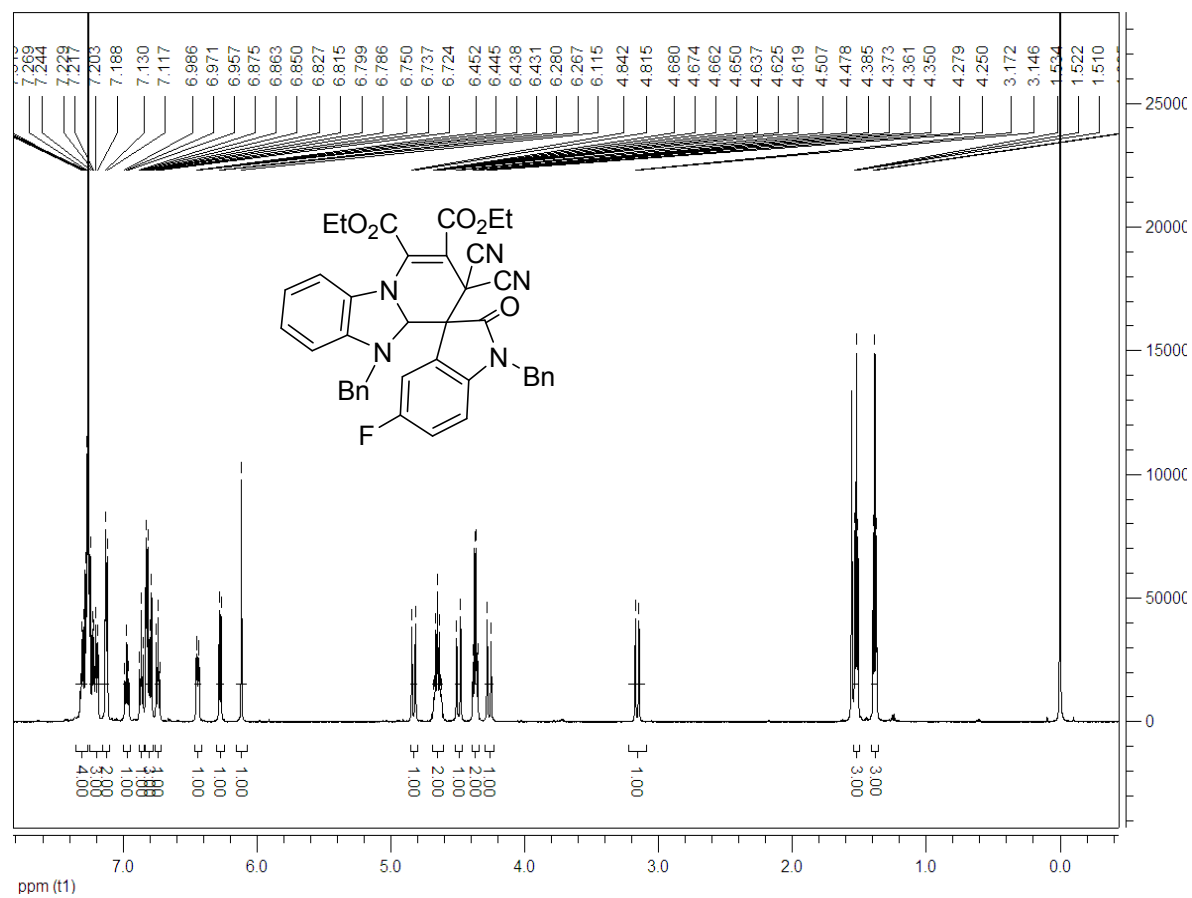
Compound 2l:



Compound 2m':



Compound 2n':



Compound 2o':

