

A new supported manganese-based coordination complex as a nano-catalyst for the fast and green synthesis of indazolophthalazinetriones and investigation of its antibacterial activity

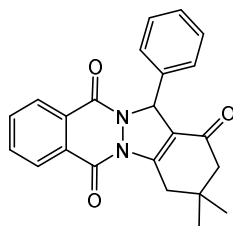
Maryam Ariannezhad,^{a*} Davood Habibi,^a Somayyeh Heydari,^{ab} vahideh khorramabadi,^a

^aDepartment of Organic Chemistry, Faculty of Chemistry, Bu-Ali Sina University, Hamedan, 6517838683, Iran

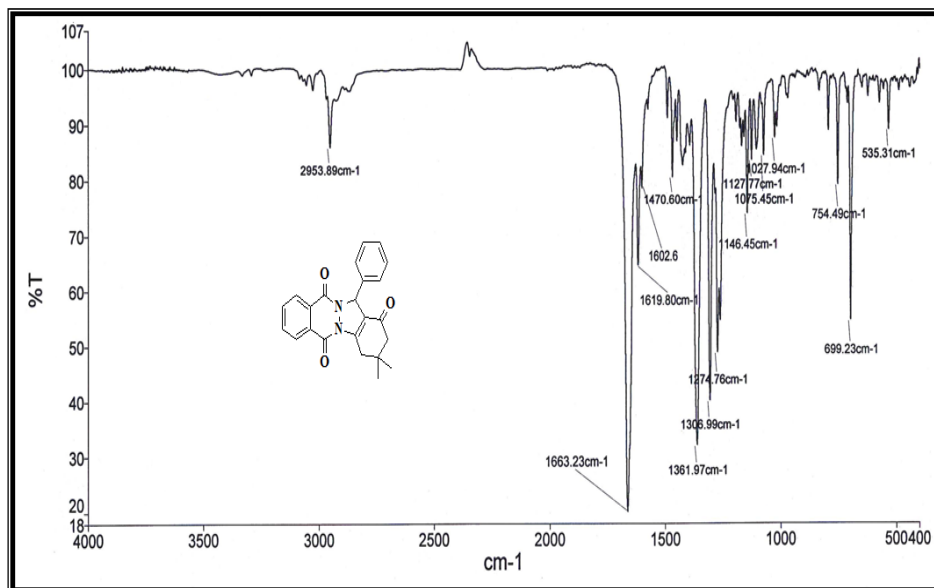
^bDepartment of research and development of the Faran Shimi pharmaceutical company, Tuyserkan, Iran

*Corresponding author e-mail: mary.ariannezhad@yahoo.com

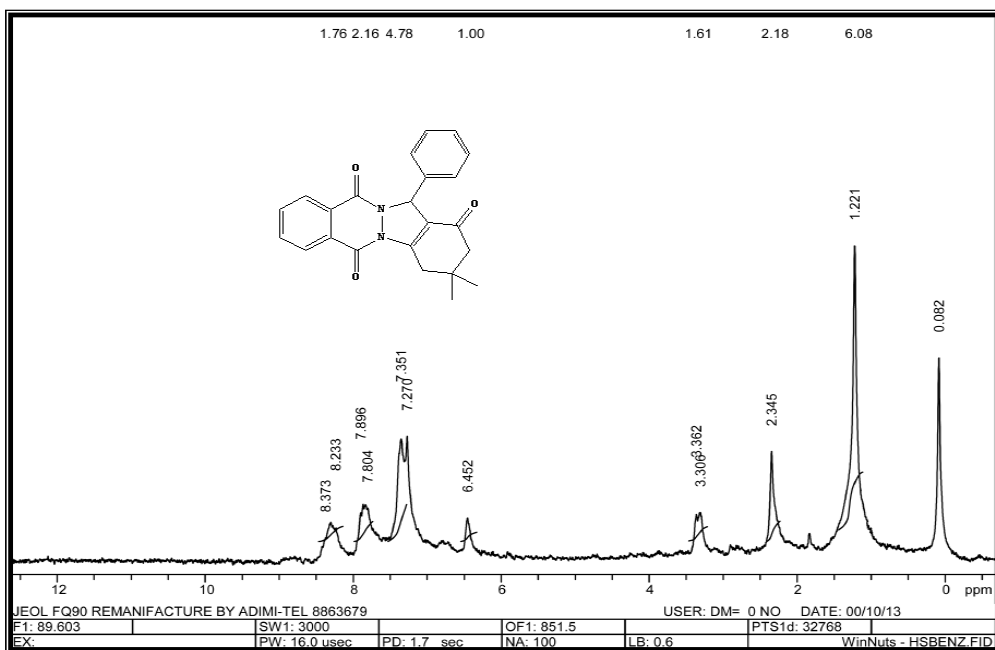
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¹³ CNMR of 2a	4
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¹ HNMR of 2b	6
¹³ CNMR of 2b	6
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¹ HNMR of 2c	8
IR of 2d	9
¹ HNMR of 2d	9
¹³ CNMR of 2d	10
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¹ HNMR of 2e	11
¹³ CNMR of 2e	12
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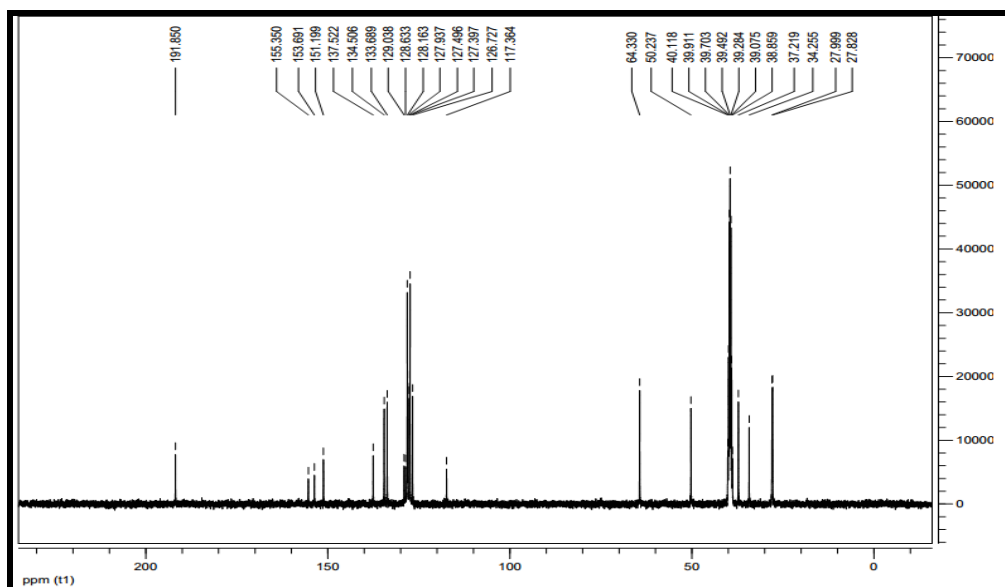
3,4-Dihydro-3,3-Dimethyl-13-(Phenyl)-2H-Indazolo[2,1-b]Phthalazine-1,6,11(13H)-Trione (**2a**)



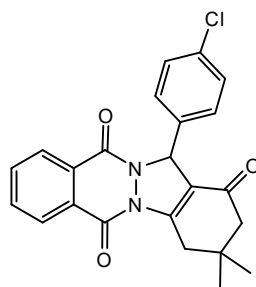
IR of (**2a**)



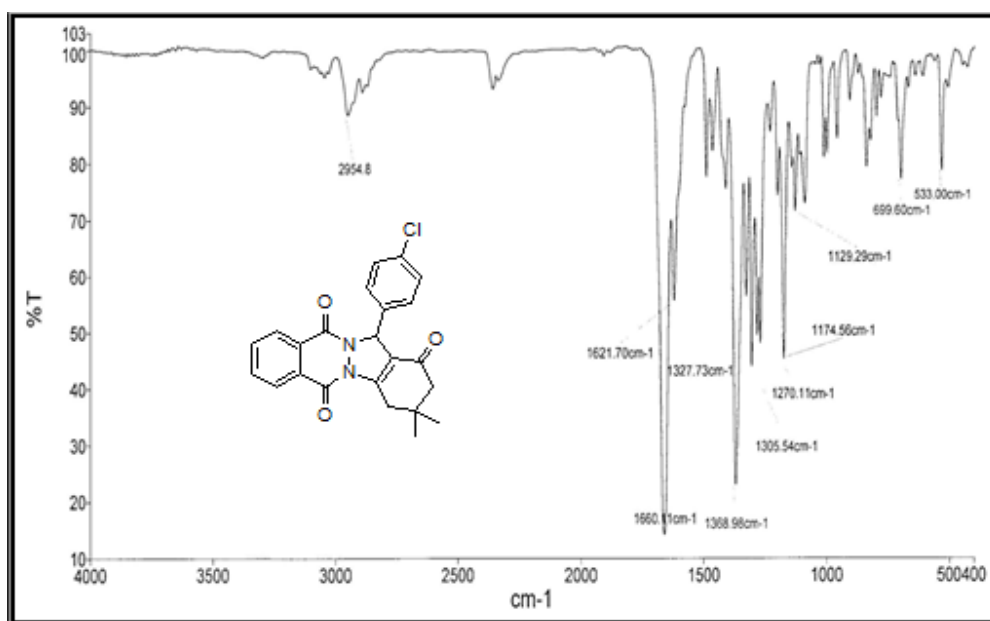
¹H NMR of (**2a**)



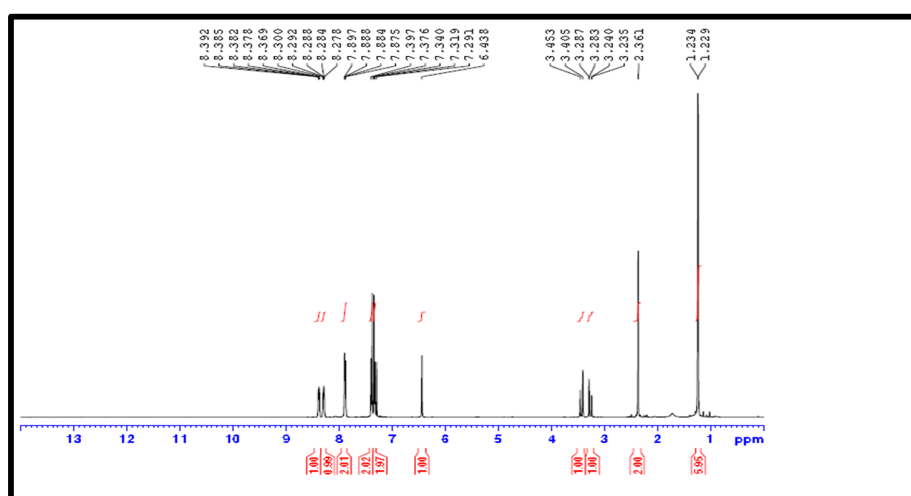
¹³C NMR of (**2a**)



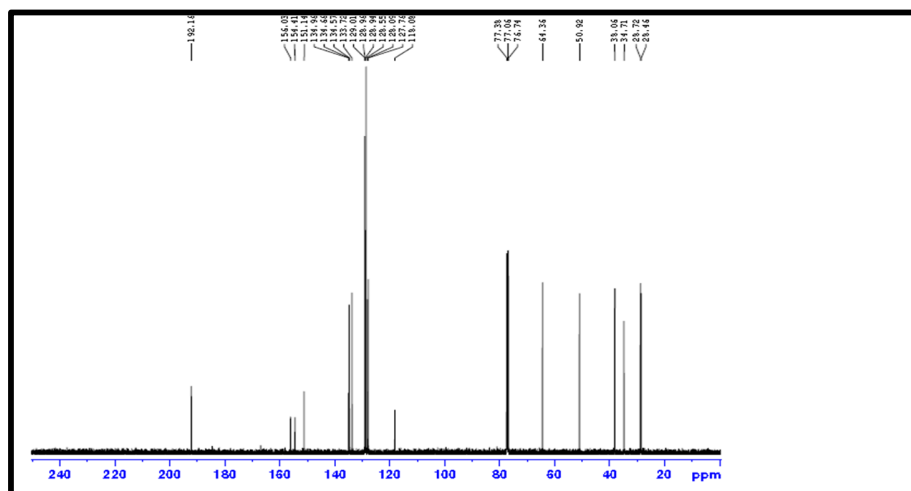
3,4-Dihydro-3,3-Dimethyl-13-(4-Chlorophenyl)-2H-Indazolo[2,1-b]Phthalazine-1,6,11(13H)-Trione (**2b**)



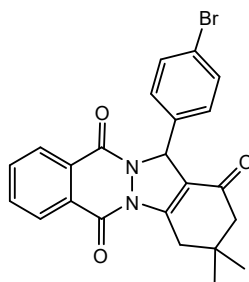
IR of (**2b**)



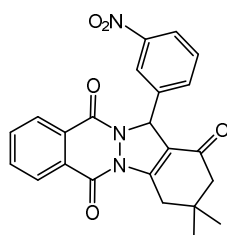
¹HNMR of (**2b**)



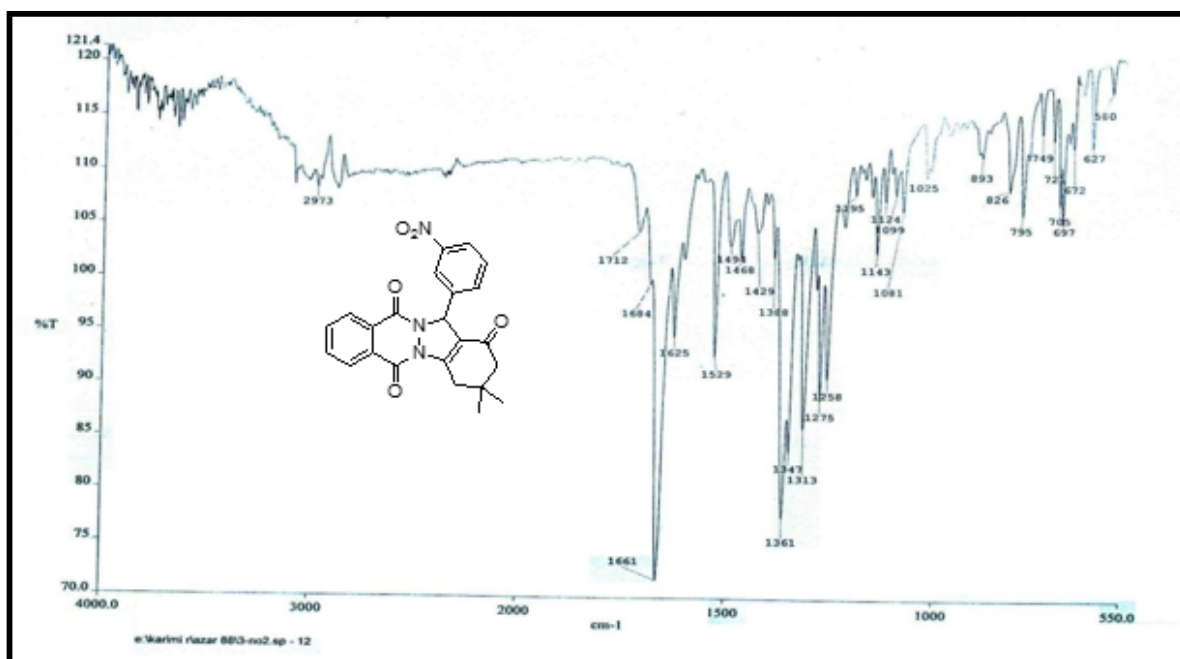
^{13}C NMR of **(2b)**



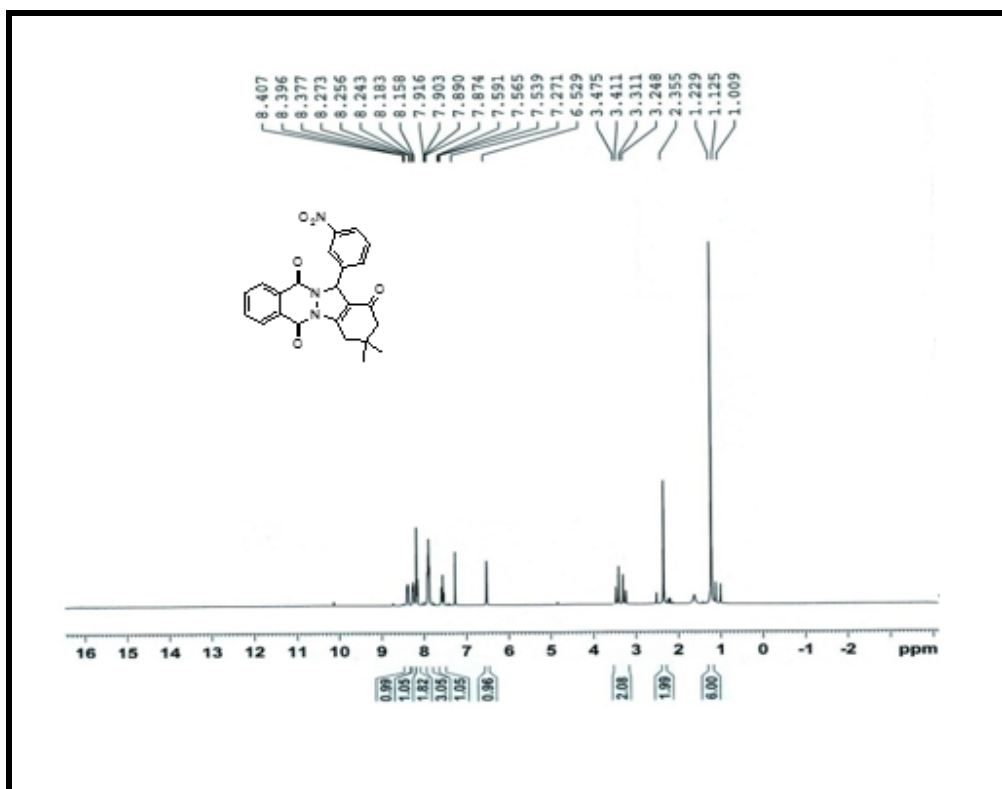
3,4-Dihydro-3,3-Dimethyl-13-(4- Bromo phenyl)-2H-Indazolo[2,1-b]Phthalazine-1,6,11(13H)- Trione (**2c**)



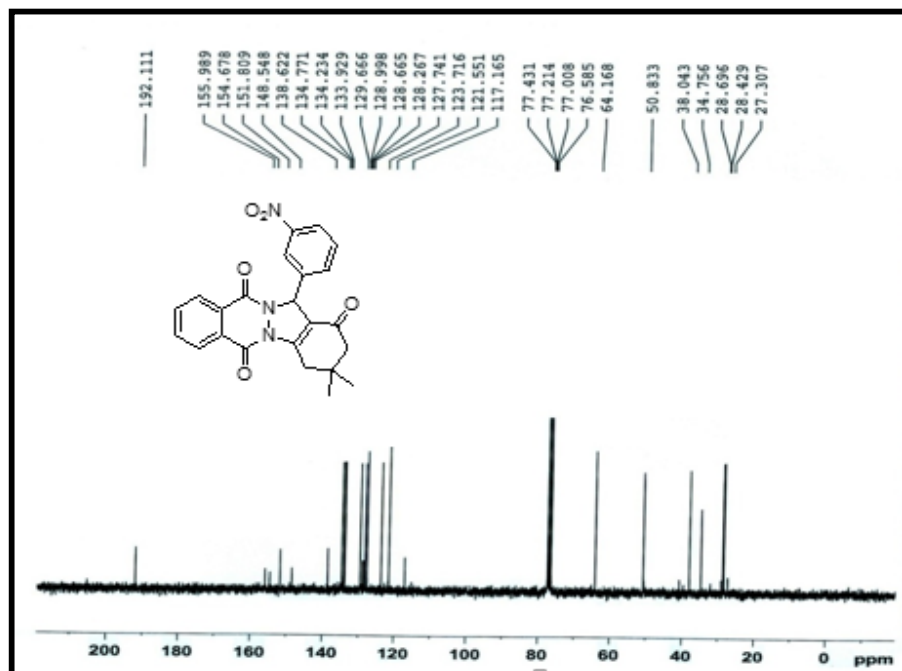
3,4-Dihydro-3,3-Dimethyl-13-(3-Nitrophenyl)-2H-Indazolo[2,1-b]Phthalazine-1,6,11(13H)- Trione (**2d**)



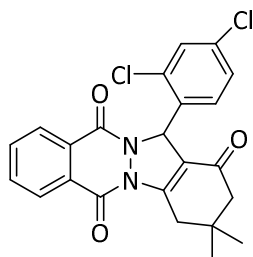
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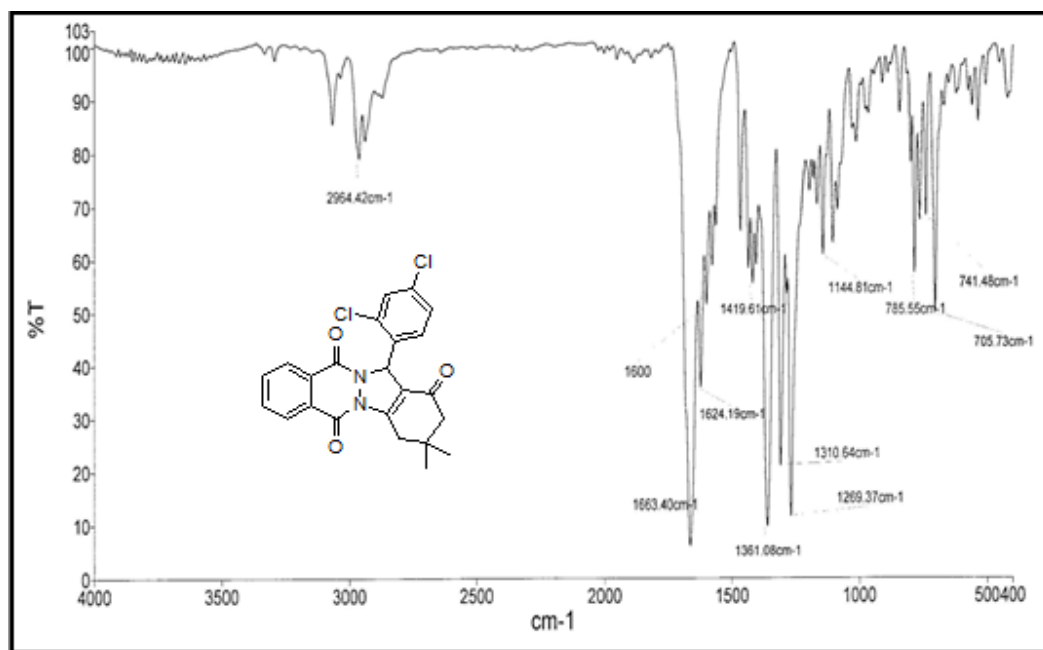
¹H NMR of (**2d**)



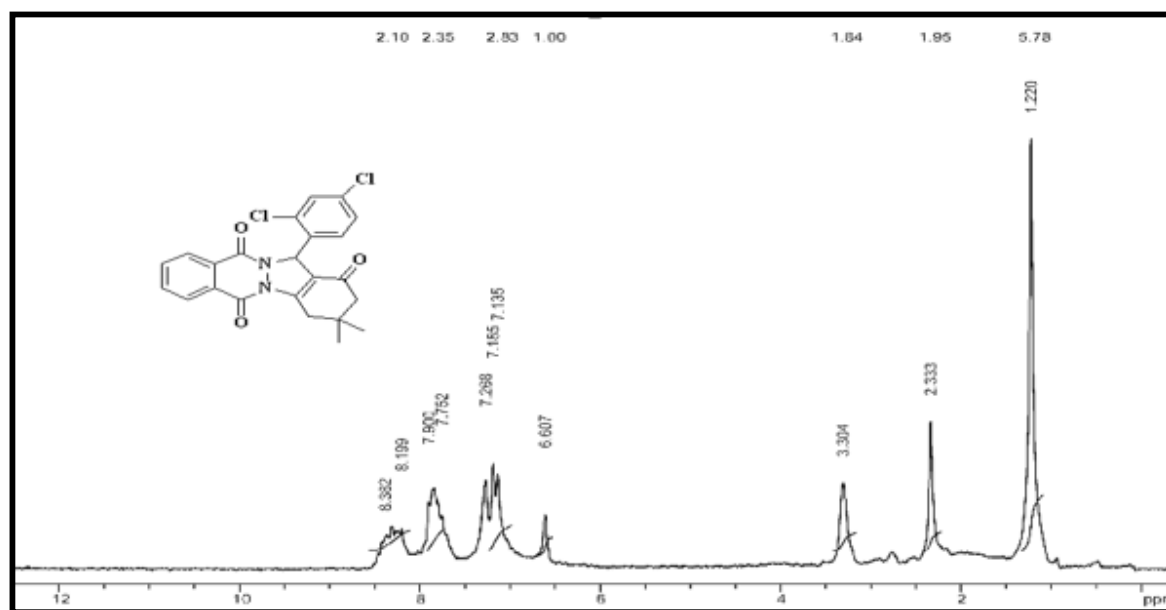
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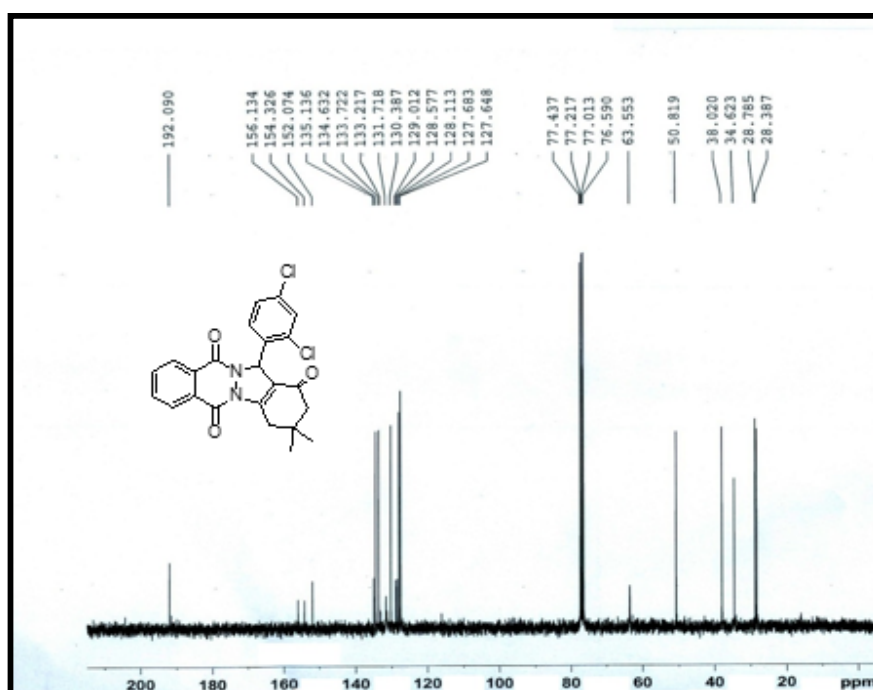
3,4-Dihydro-3,3-Dimethyl-13-(2,4- diChlorophenyl)-2H-Indazolo[2,1-b]Phthalazine-1,6,11(13H)- Trione (**2e**)



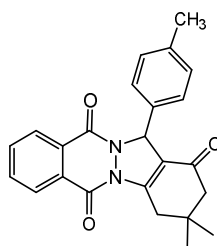
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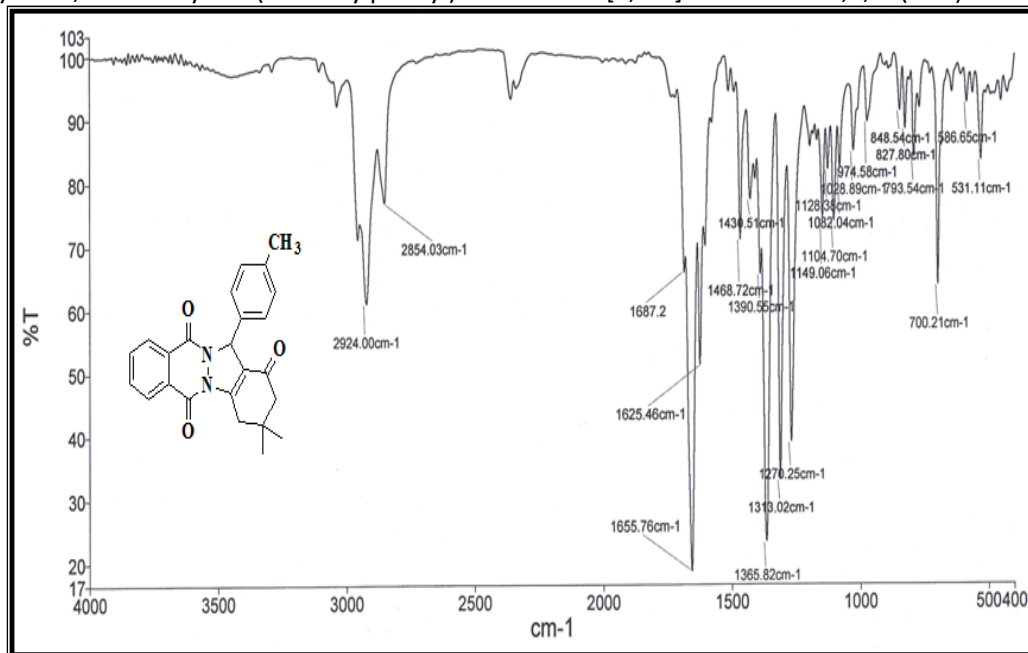
¹H NMR of (2e)



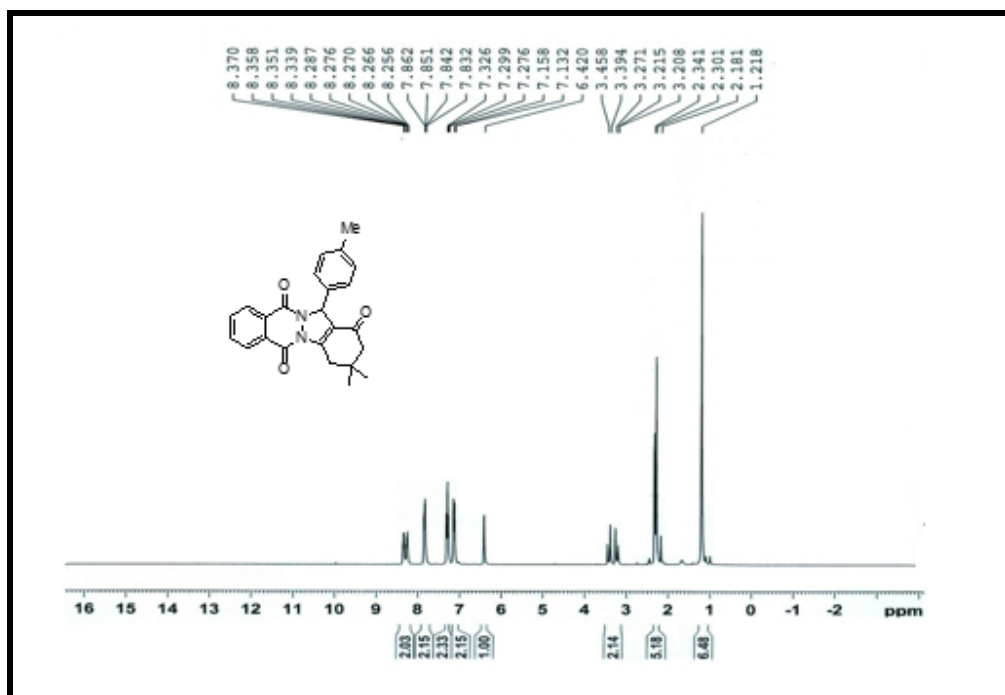
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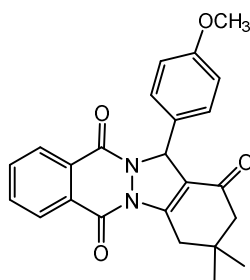
3,4-Dihydro-3,3-Dimethyl-13-(4-Methylphenyl)-2H-Indazolo[2,1-b]Phthalazine-1,6,11(13H)-Trione (**2f**)



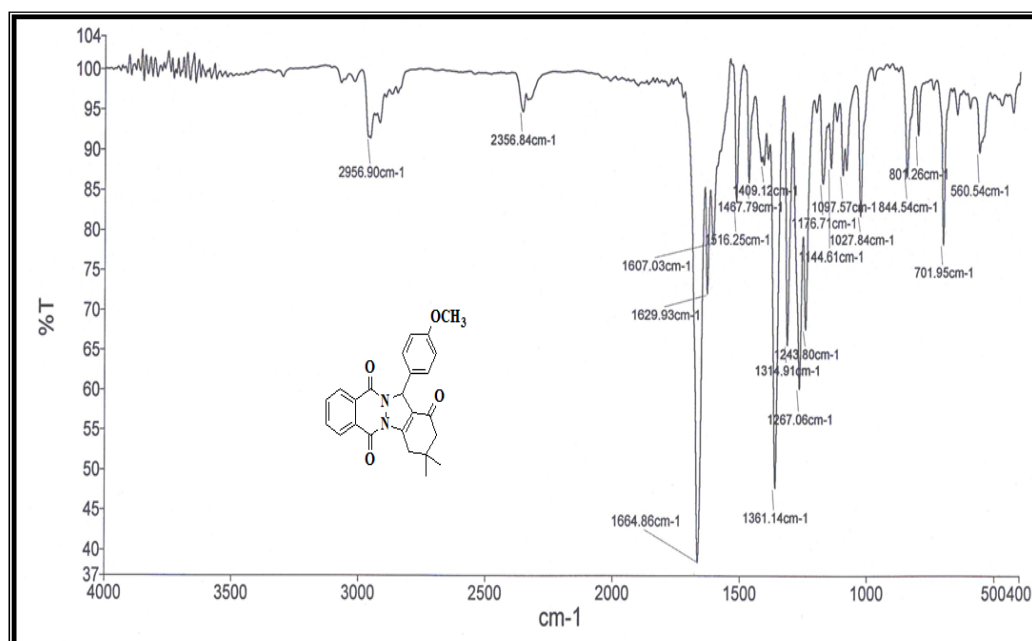
IR of (**2f**)



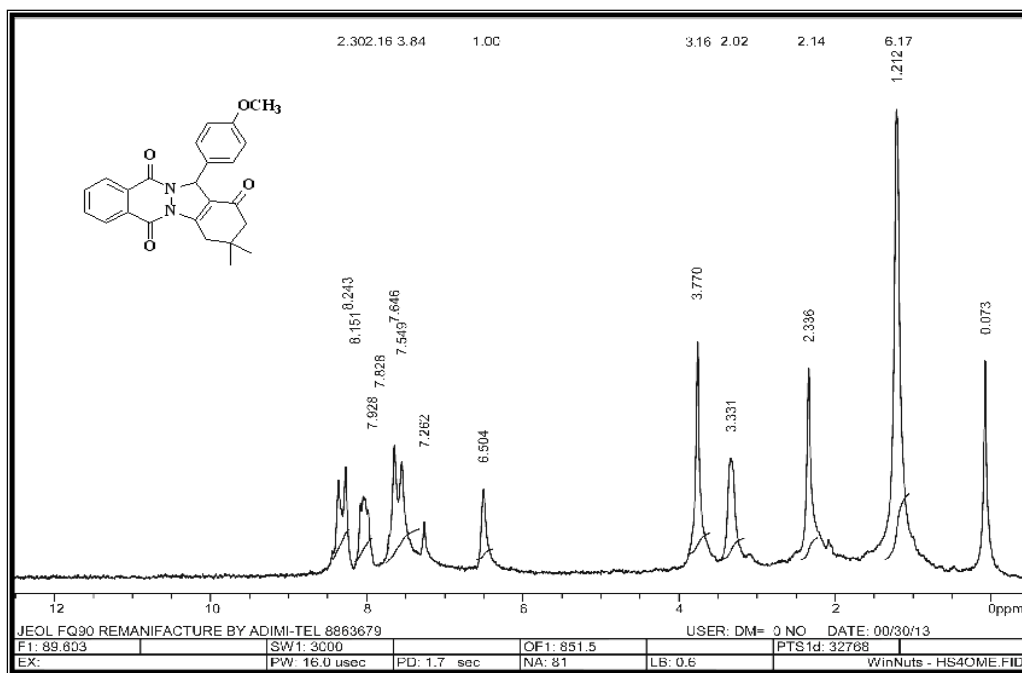
^1H NMR of (2f)



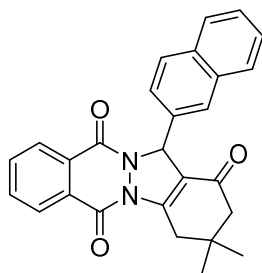
3,4-Dihydro-3,3-Dimethyl-13-(4-Methoxyphenyl)-2H-Indazolo[2,1-b]Phthalazine-1,6,11(13H)-Trione (**2g**)



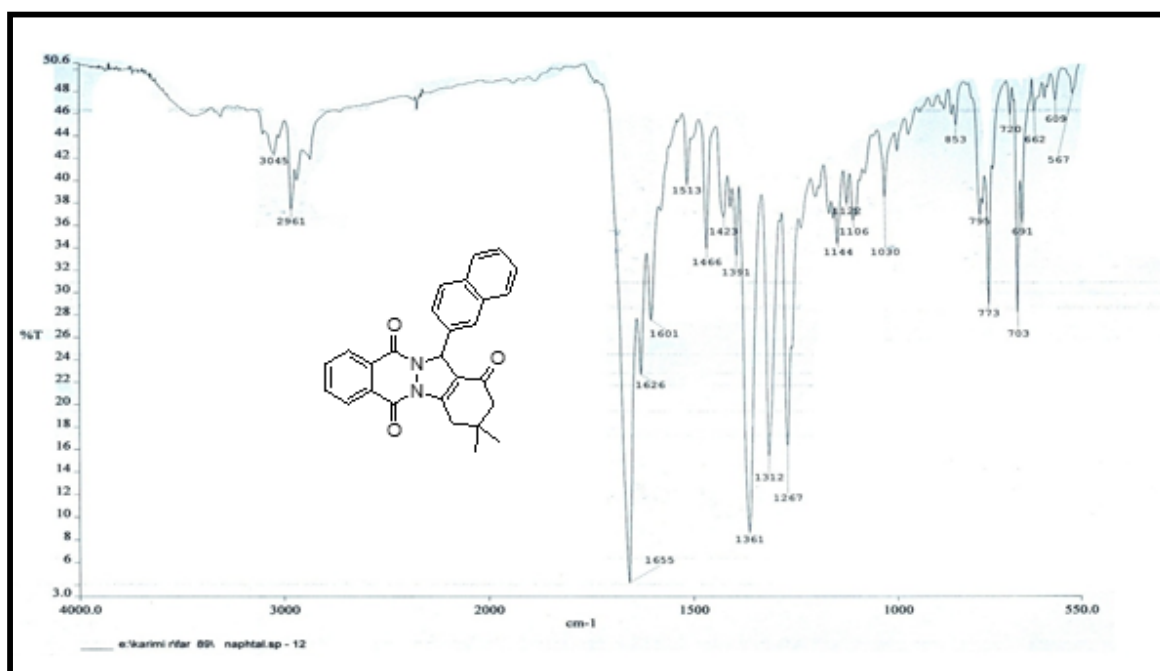
IR of (**2g**)



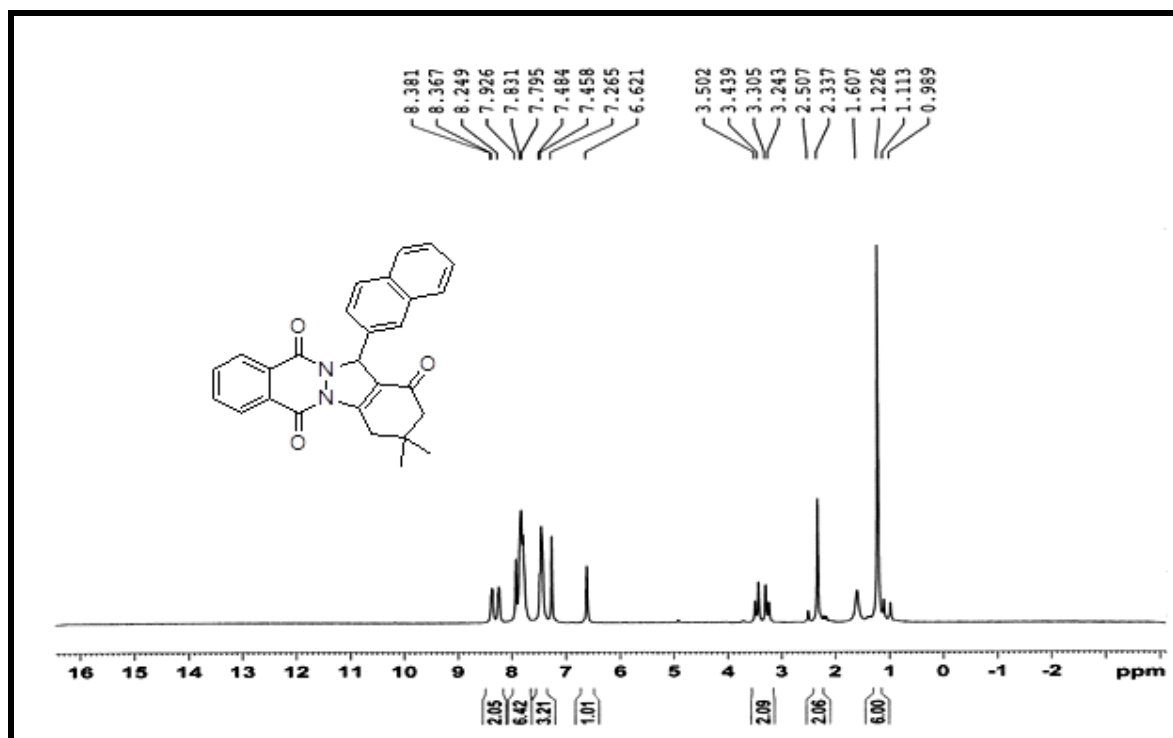
¹H NMR of (2g)



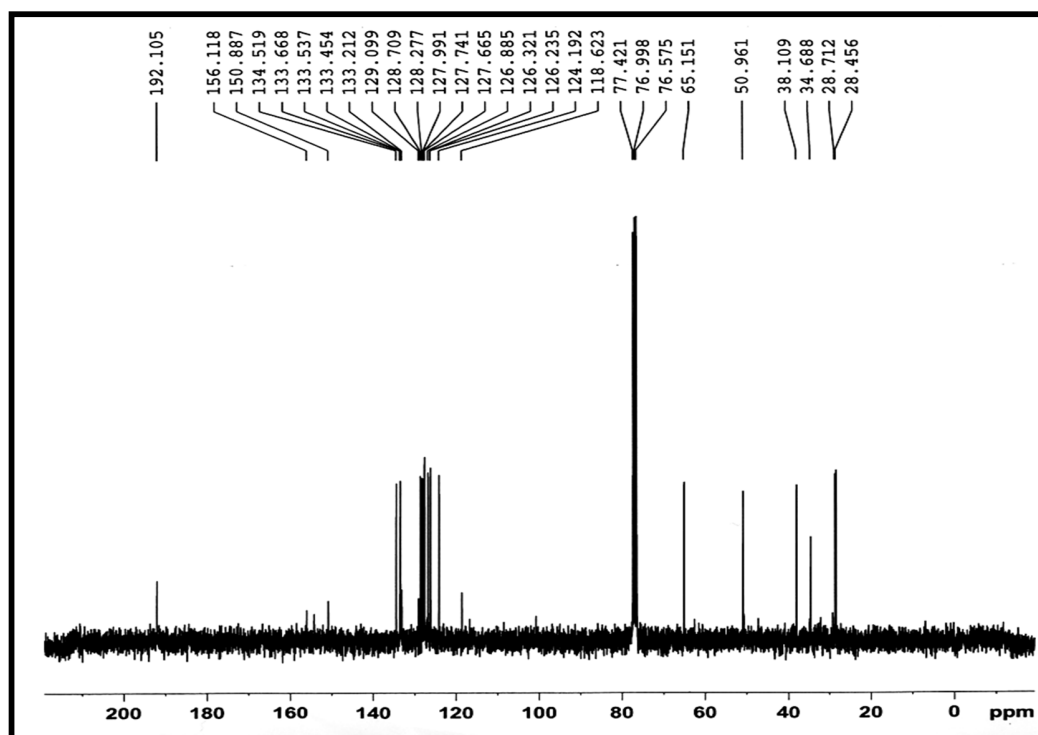
3,4-Dihydro-3,3-Dimethyl-13-(2-eylnaphtalene)-2H-Indazolo[2,1-b]Phthalazine-1,6,11(13H)-Trione (**2h**)



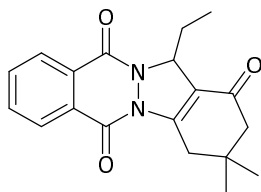
IR of (**2h**)



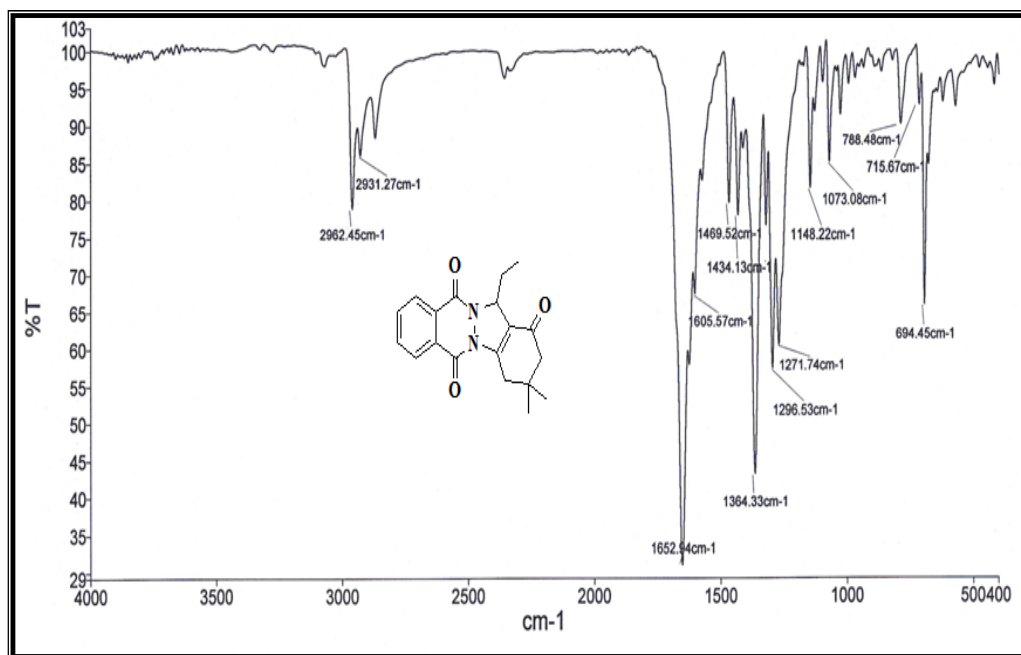
¹H NMR of (2h)



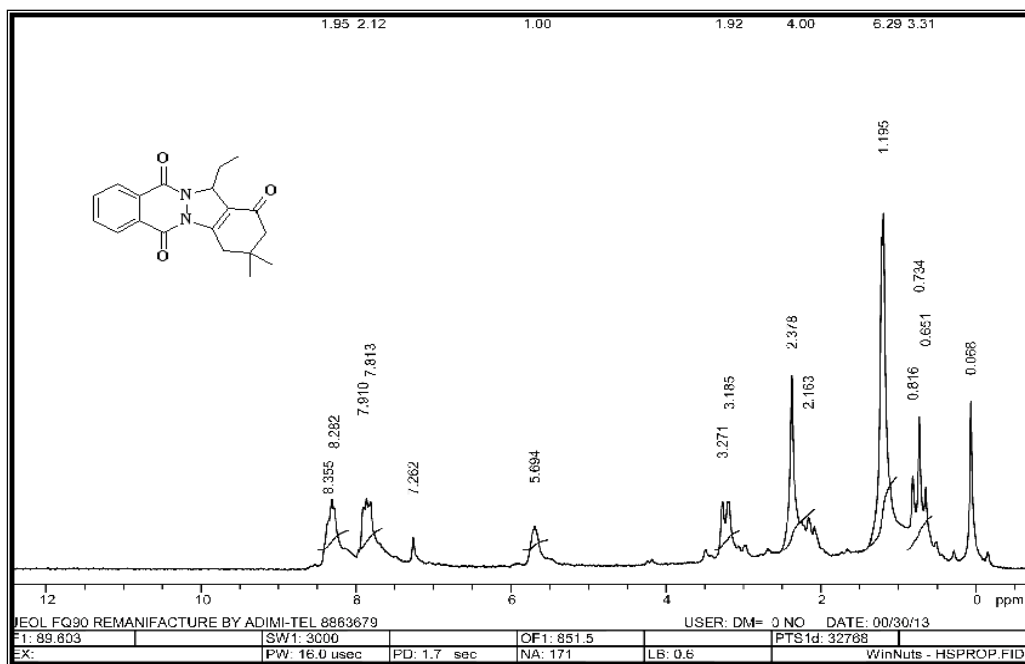
¹³C NMR of (2h)



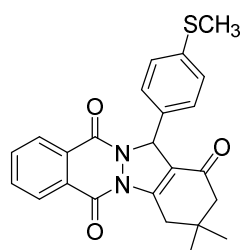
13-Ethyl-3,3-dimethyl-3,4-dihydro-1H-indazolo[1,2-b]phthalazine-1,6,11(2H,13H)-trione(**2i**)



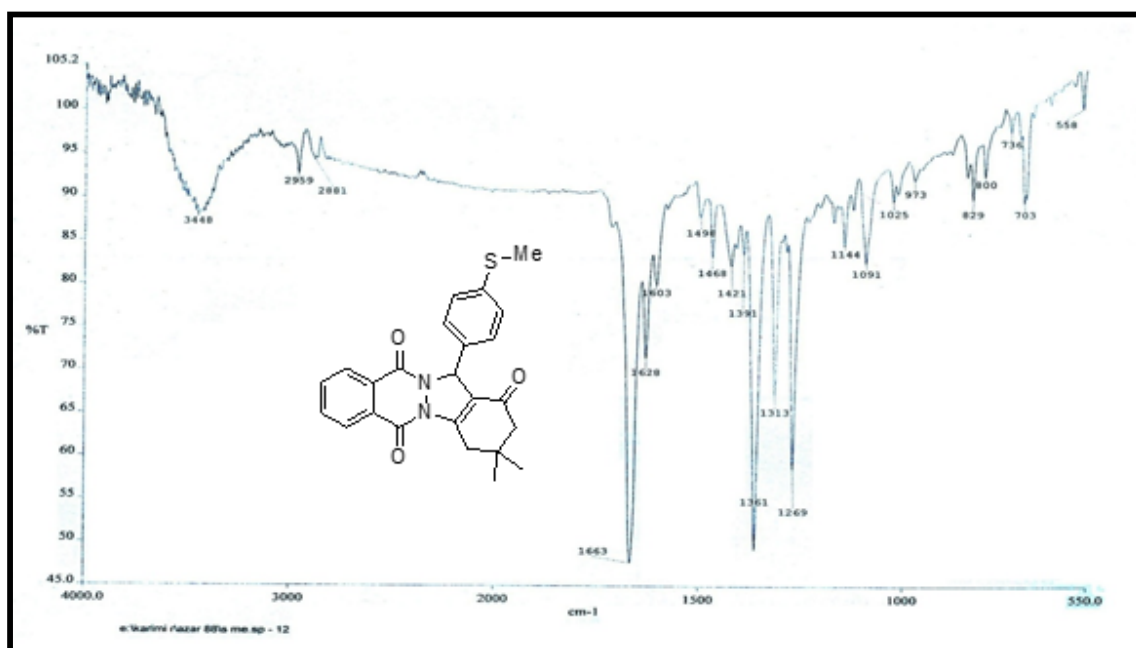
IR of (**2i**)



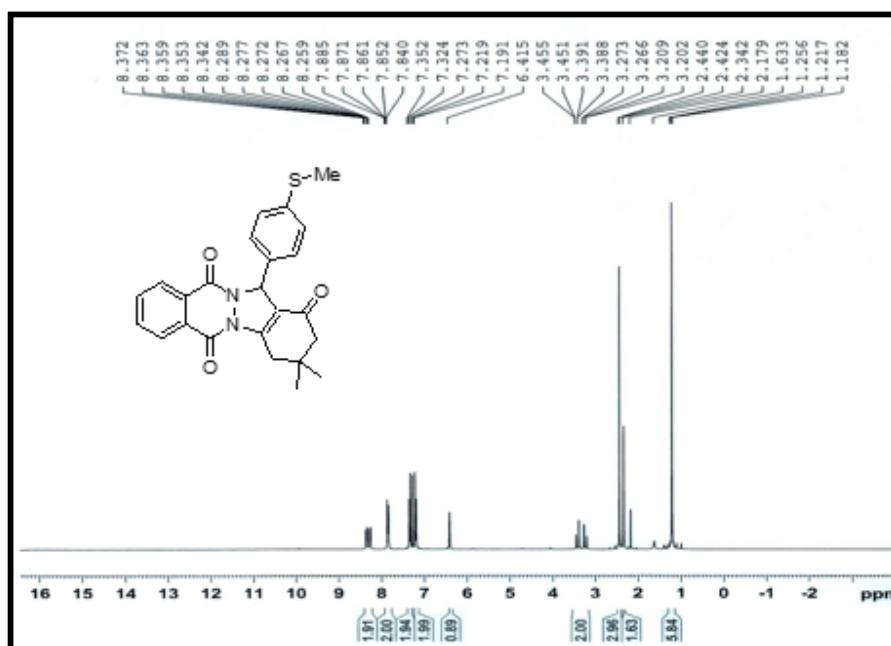
¹HNMR of (2i)



3,4-Dihydro-3,3-Dimethyl-13-(4-thiomethylphenyl)-2H-Indazolo[2,1-b]Phthalazine-1,6,11(13H)-Trione(**2j**)



IR of (**2j**)



¹H NMR of (2j)