

Electronic Supplementary Information

Effective singlet oxygen sensitizers based on phenazine skeleton as efficient light absorbers in dye photoinitiating systems for radical polymerization of acrylates

Ilona Pyszka ^{1,*}, Zdzisław Kucybała ¹ and Beata Jędrzejewska ^{1,*}

¹*UTP University of Science and Technology, Faculty of Chemical Technology and Engineering
Seminarnyjna 3, 85-326 Bydgoszcz, Poland*

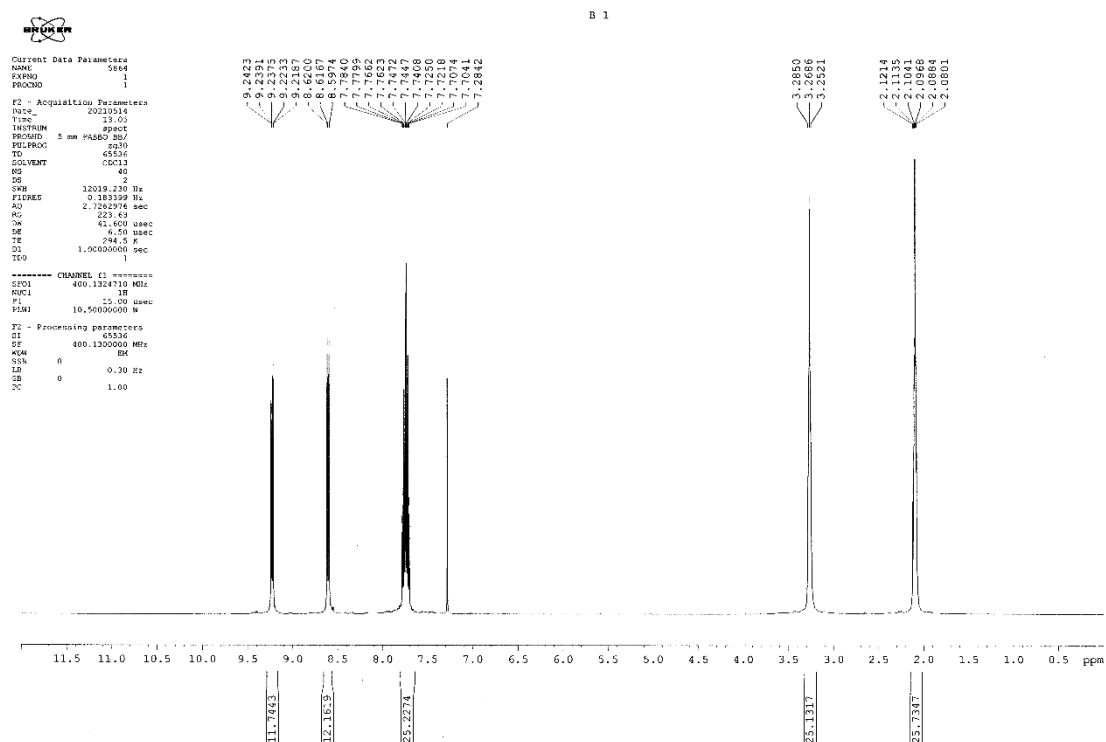
**Corresponding authors:*

I. Pyszka: e-mail address: Ilona.Pyszka@utp.edu.pl; Tel.: +48-52-374-9039 (IP)

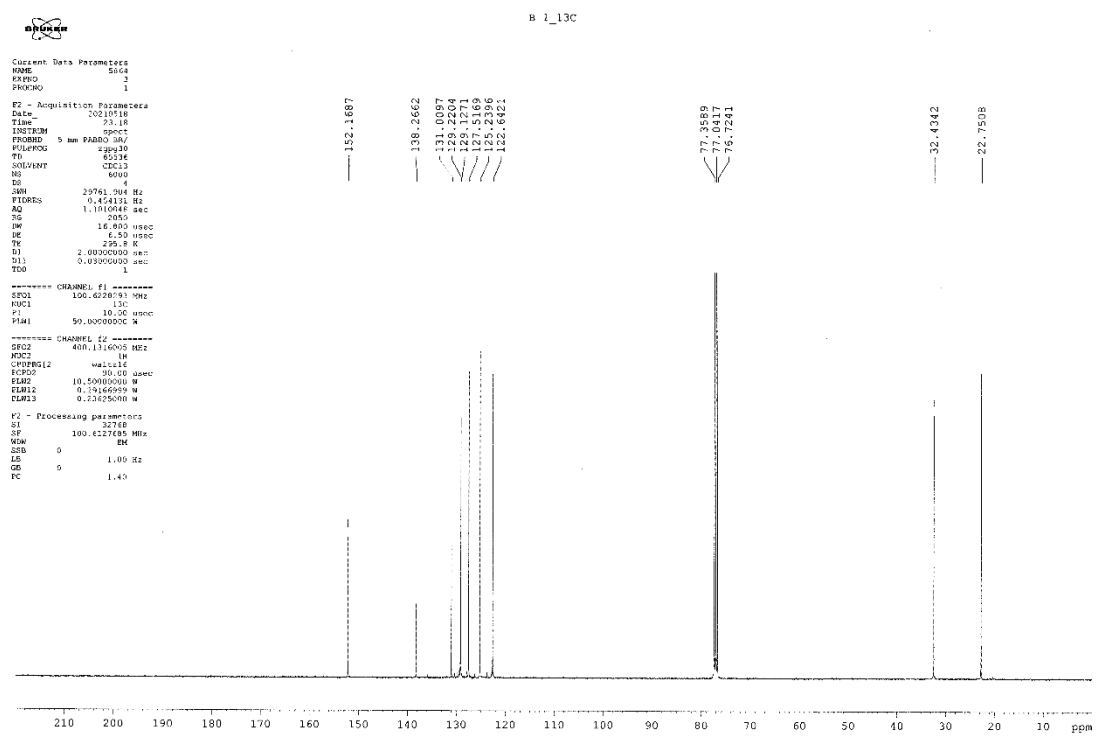
B. Jędrzejewska: e-mail address: beata@utp.edu.pl; Tel.: +48-52-374-9046 (BJ)

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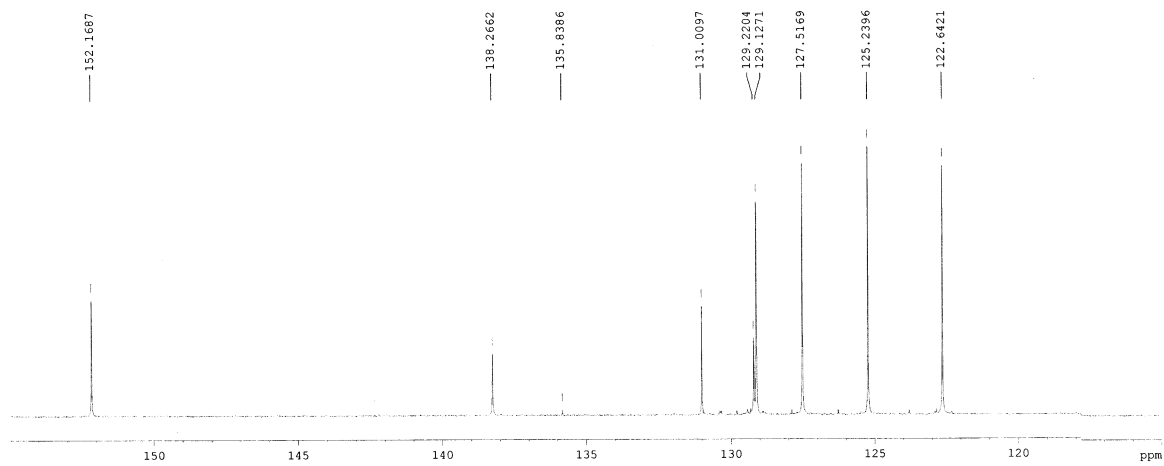
¹H spectrum of FN1



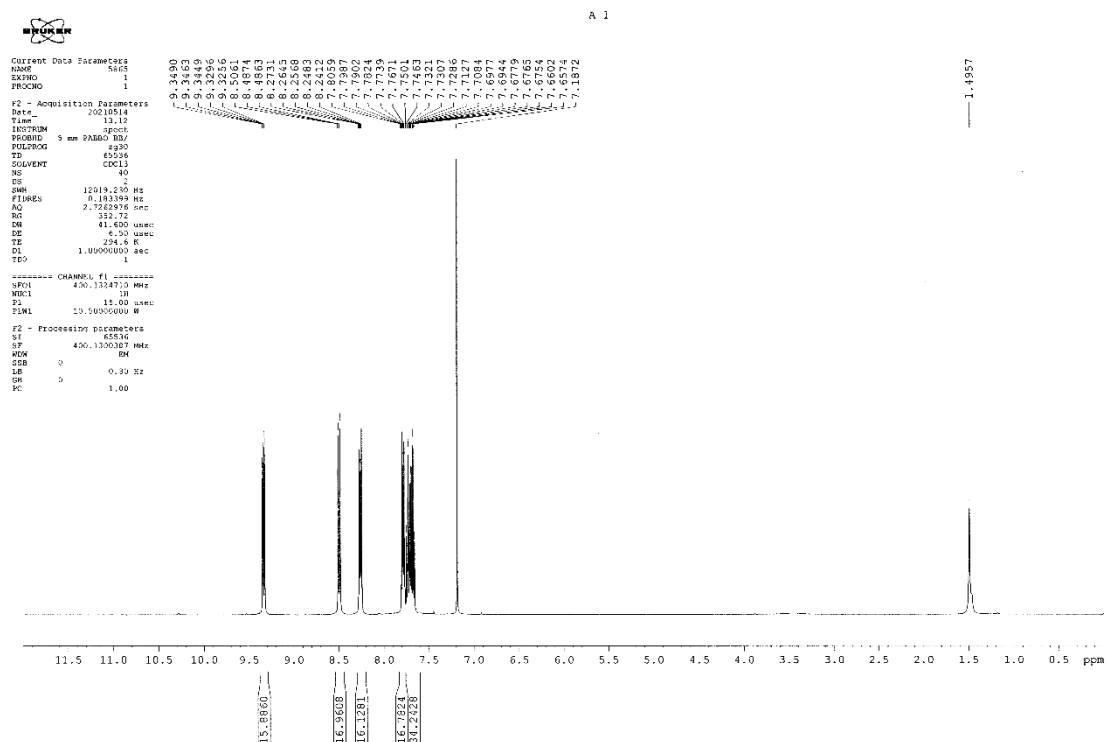
¹³C spectrum of FN1



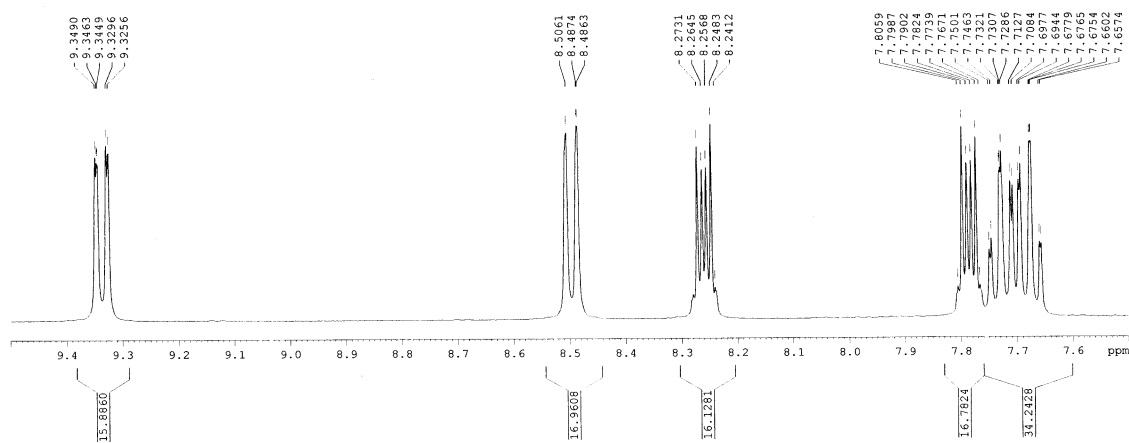
Enlarged spectrum in the range of 120-160 ppm.



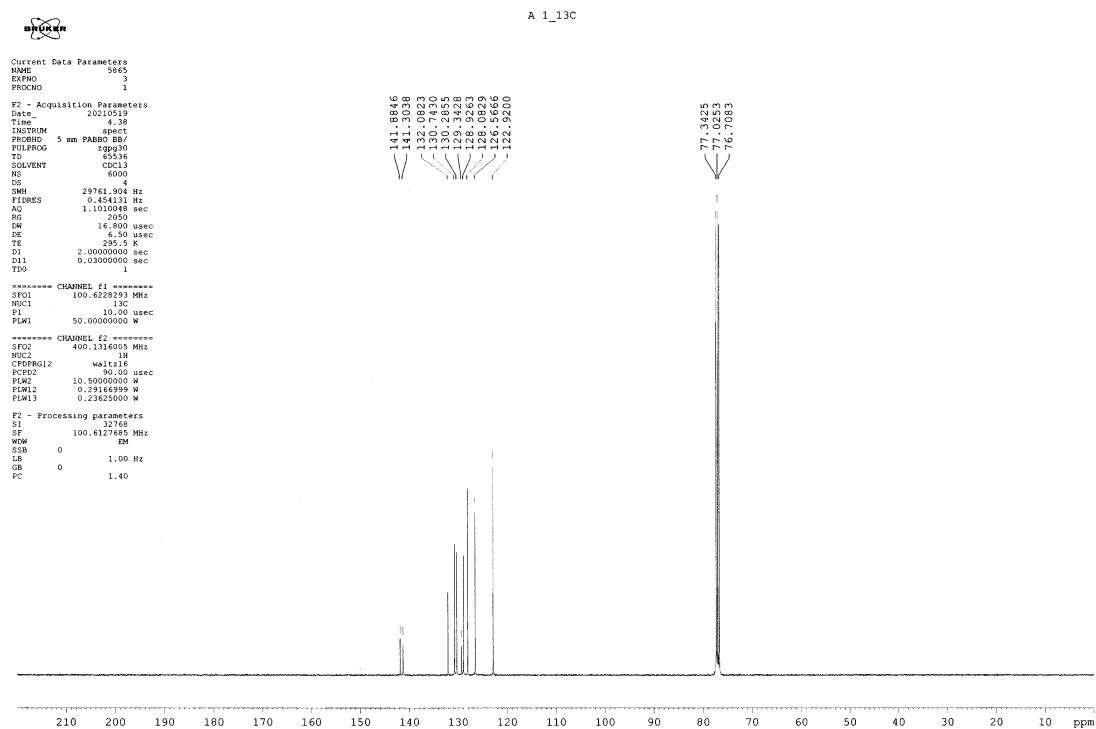
¹H spectrum of FN2



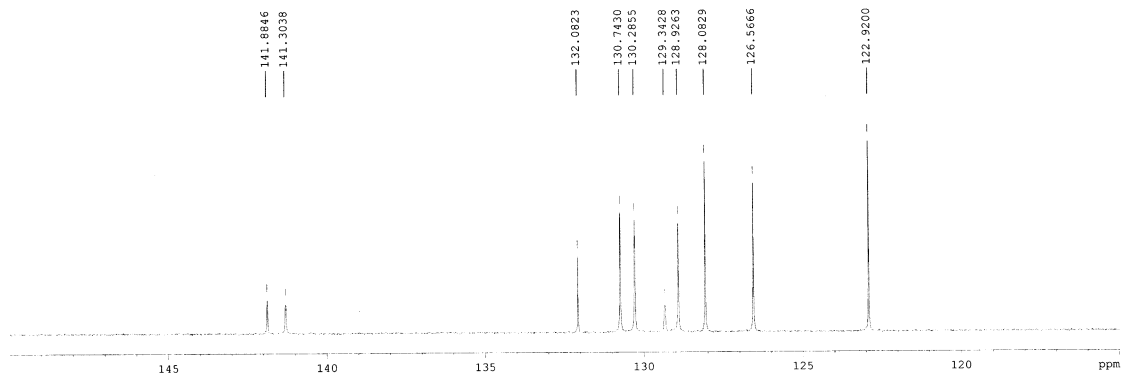
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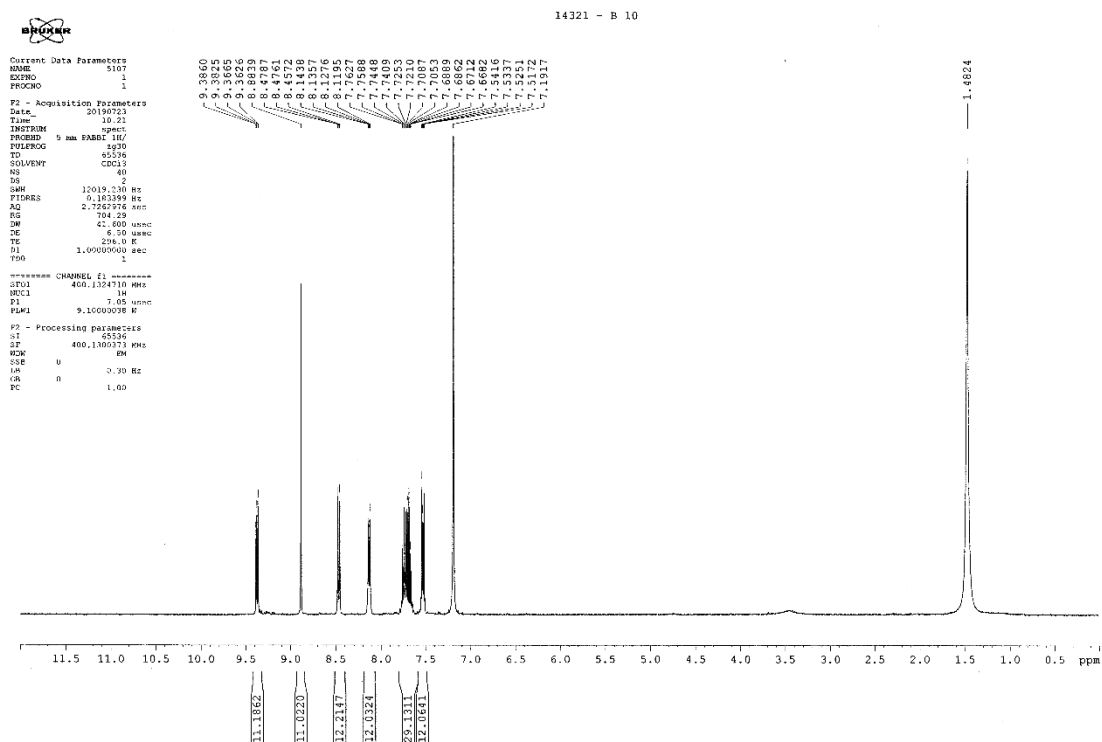
¹³C spectrum of FN2



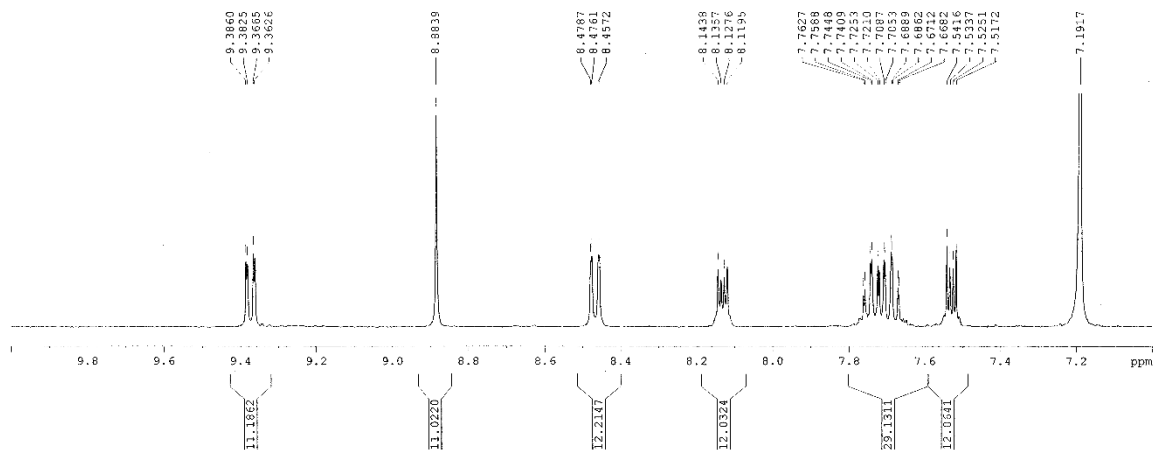
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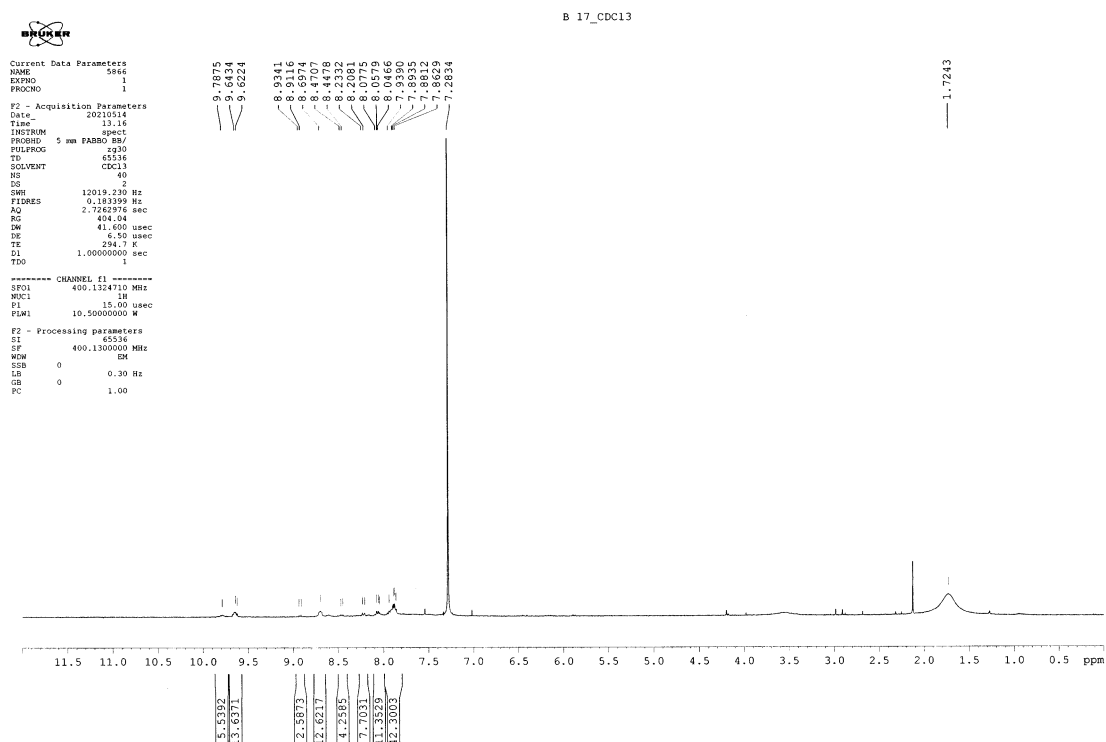
¹H spectrum of FN3



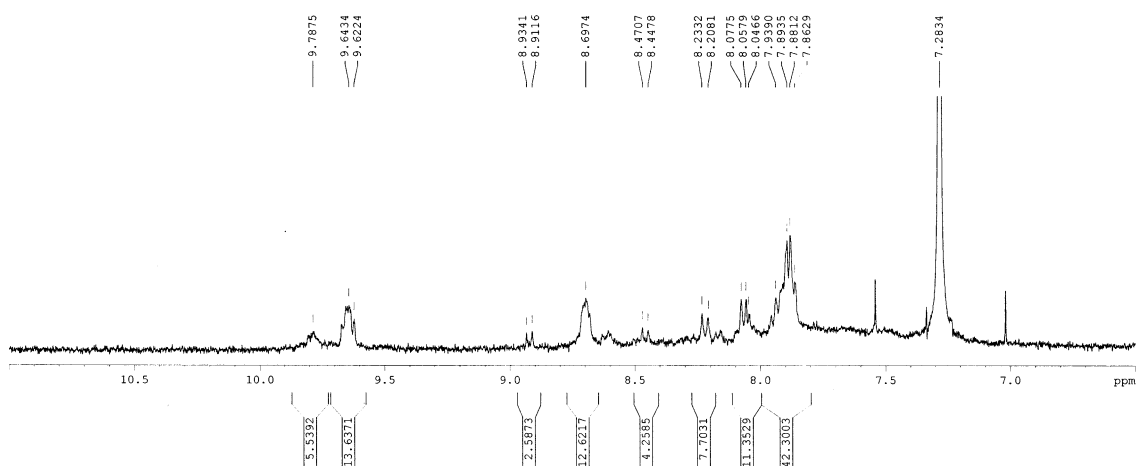
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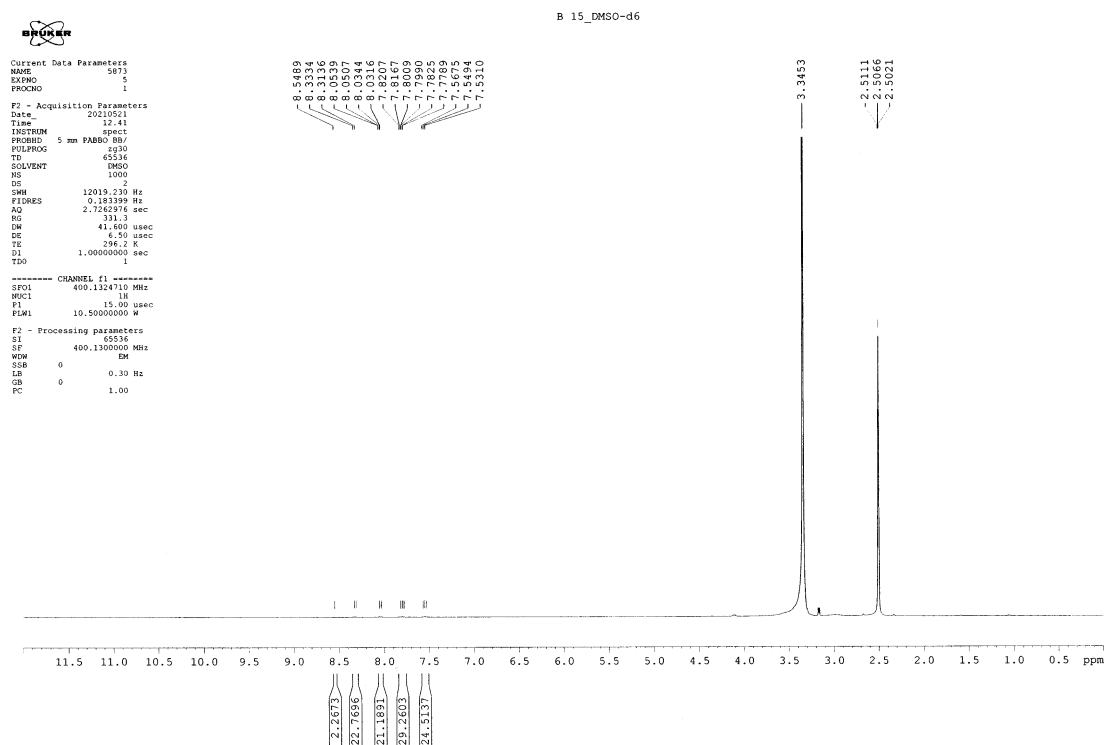
¹H spectrum of FN4



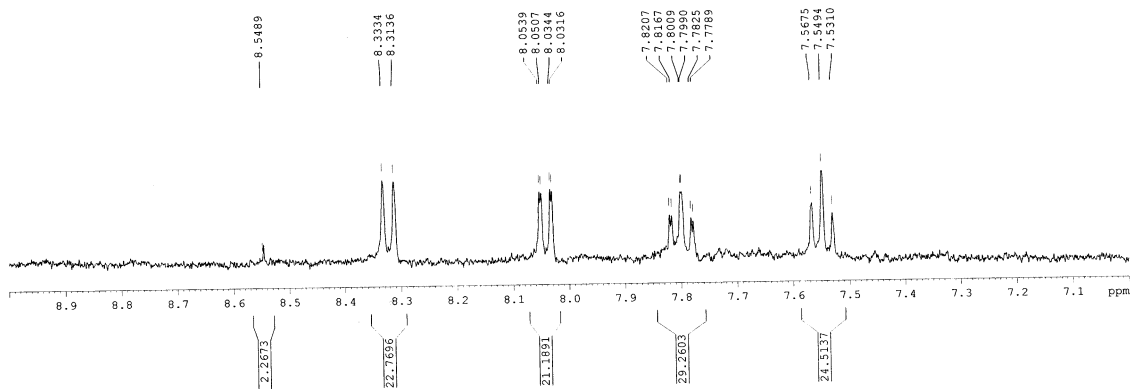
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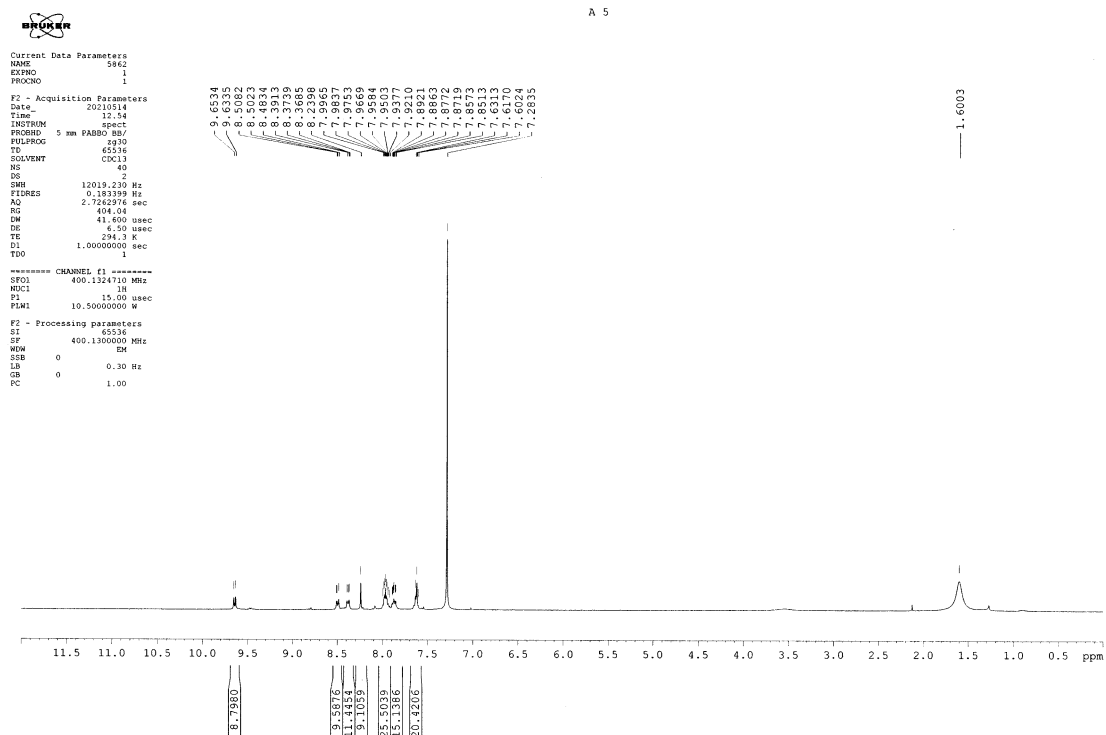
¹H spectrum of FN5



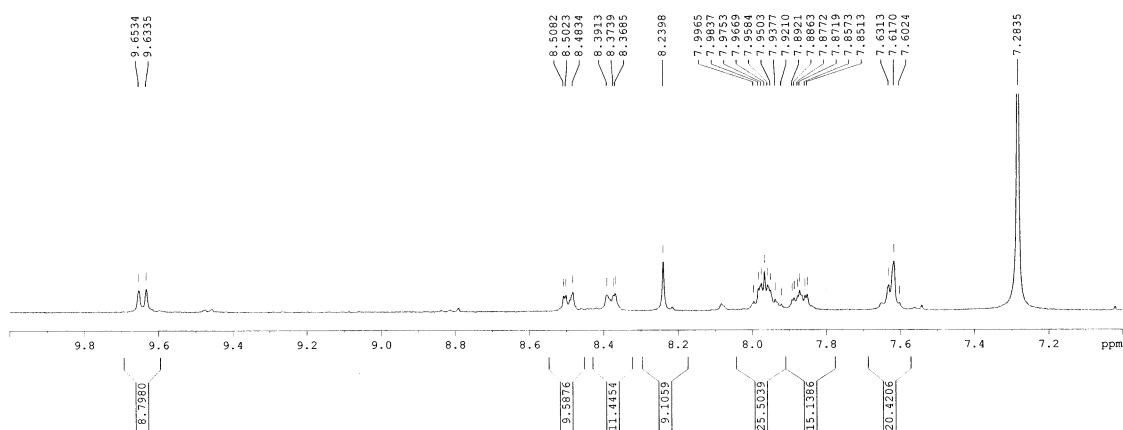
Enlarged spectrum in the range of 6-9 ppm.



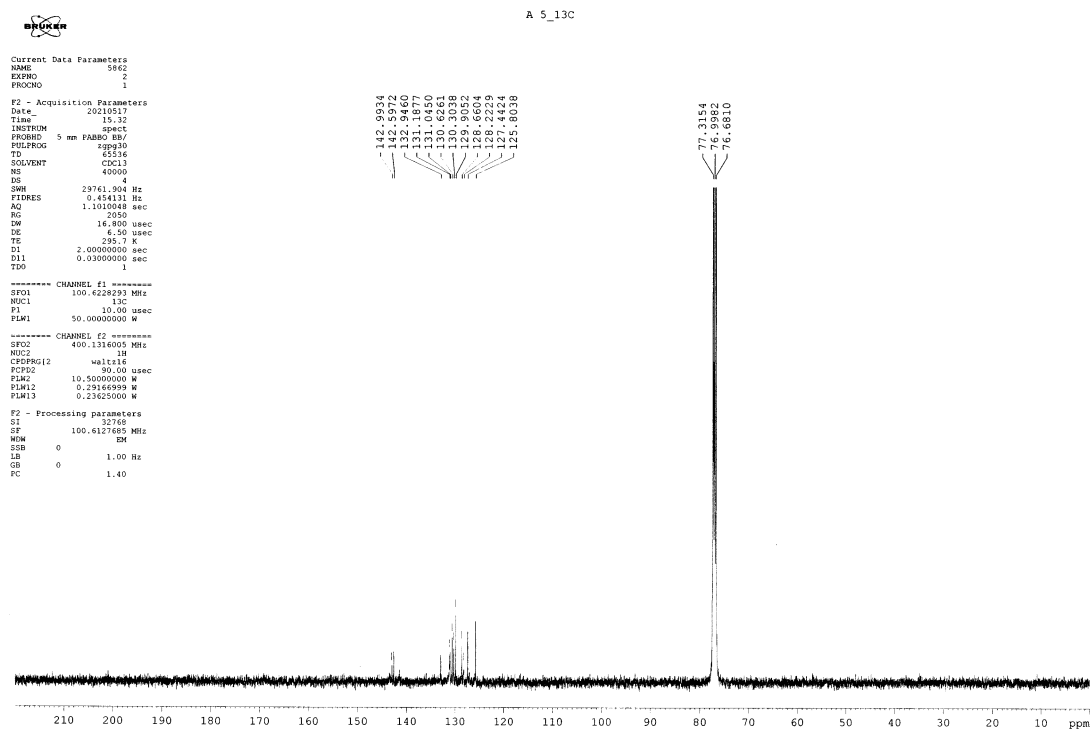
¹H spectrum of FN6



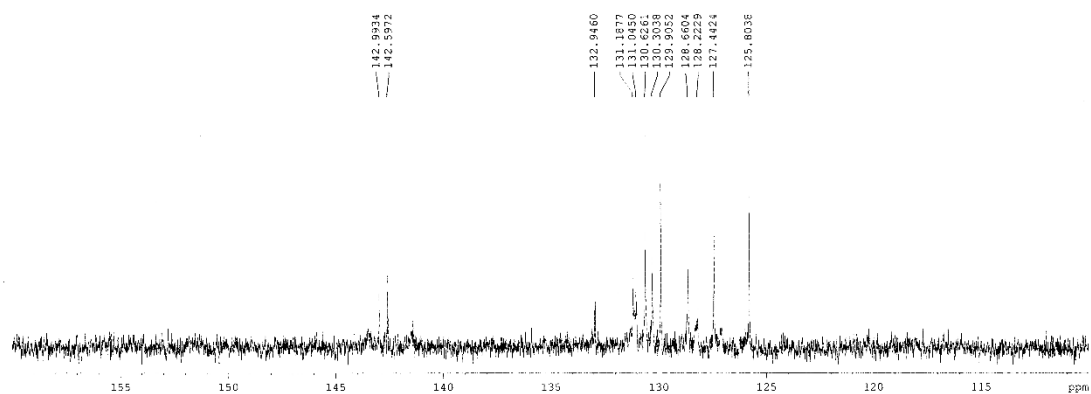
Enlarged spectrum in the range of 6-9 ppm.



¹³C spectrum of FN6

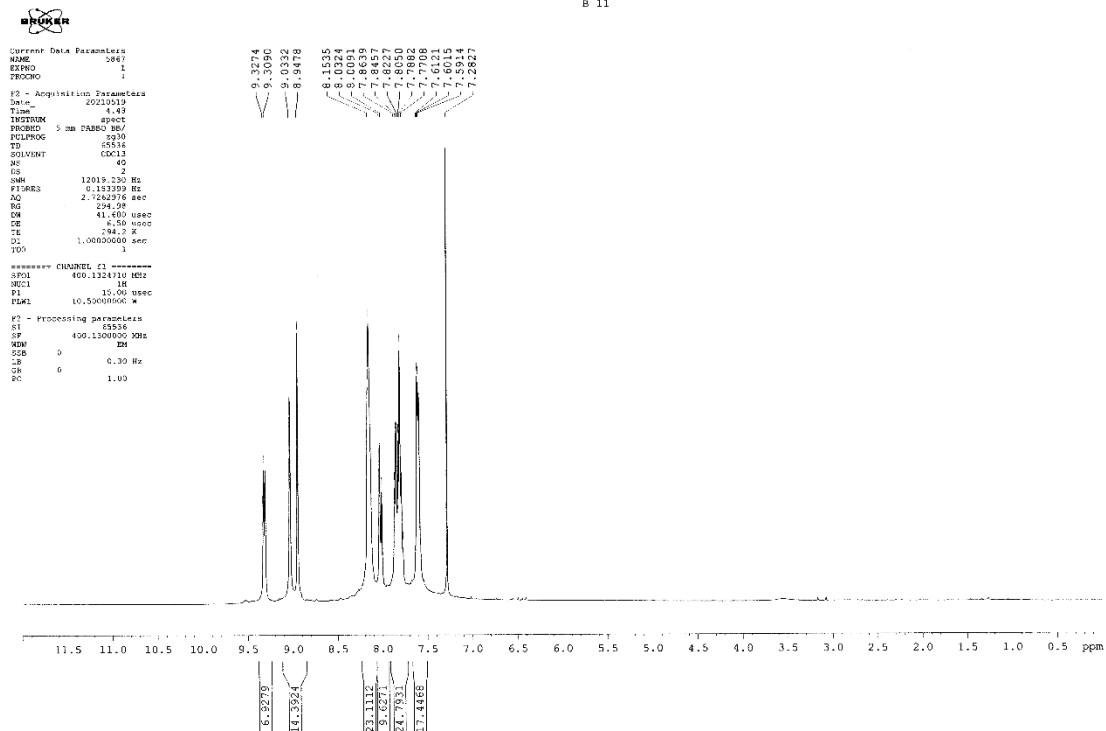


Enlarged spectrum in the range of 110-160 ppm.

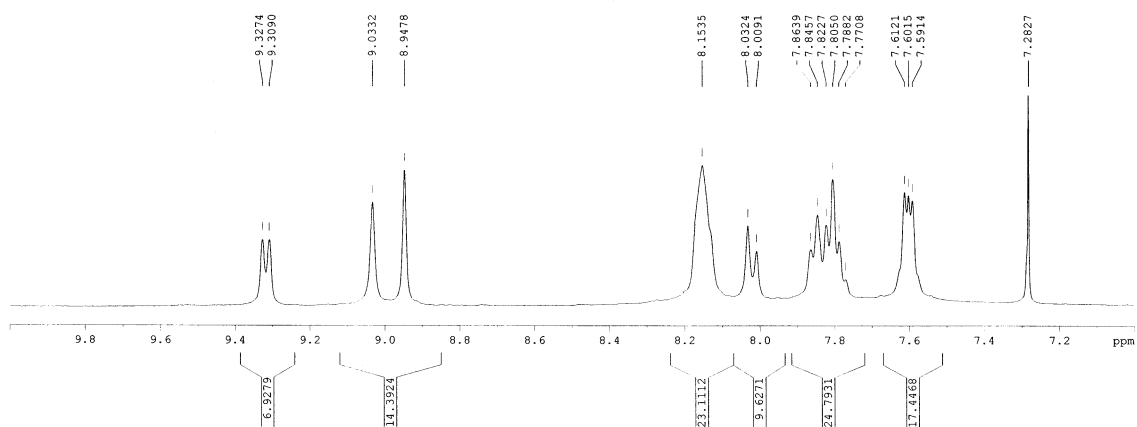


¹H spectrum of FN7

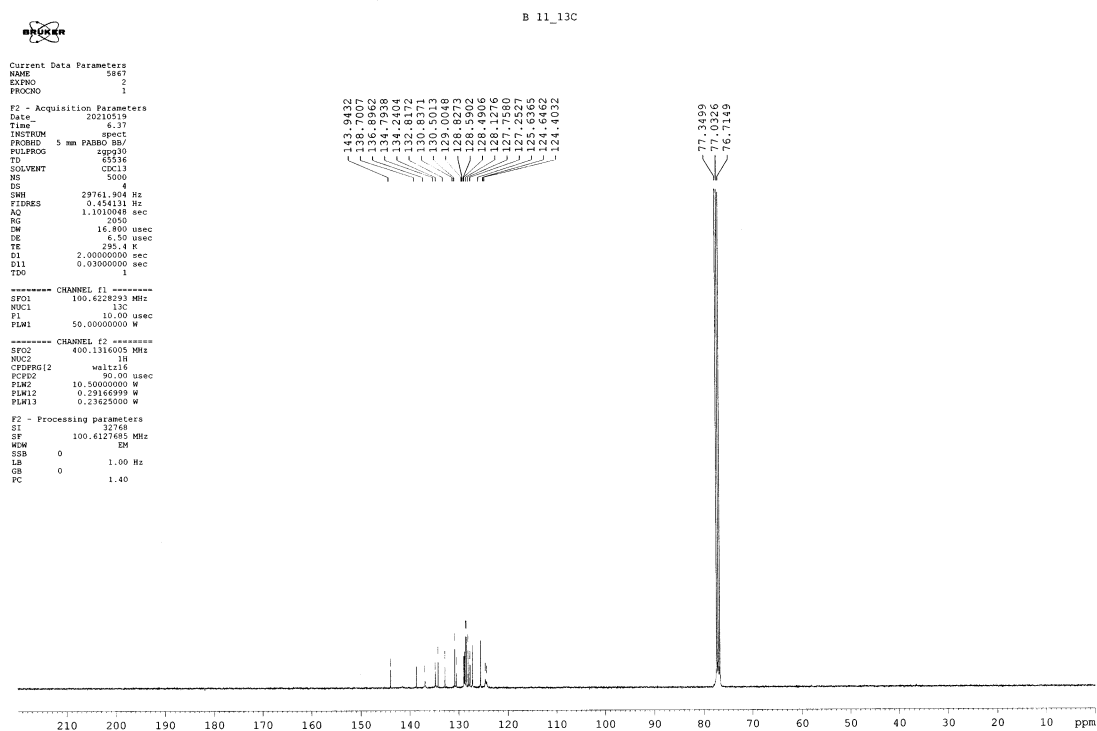
B 11



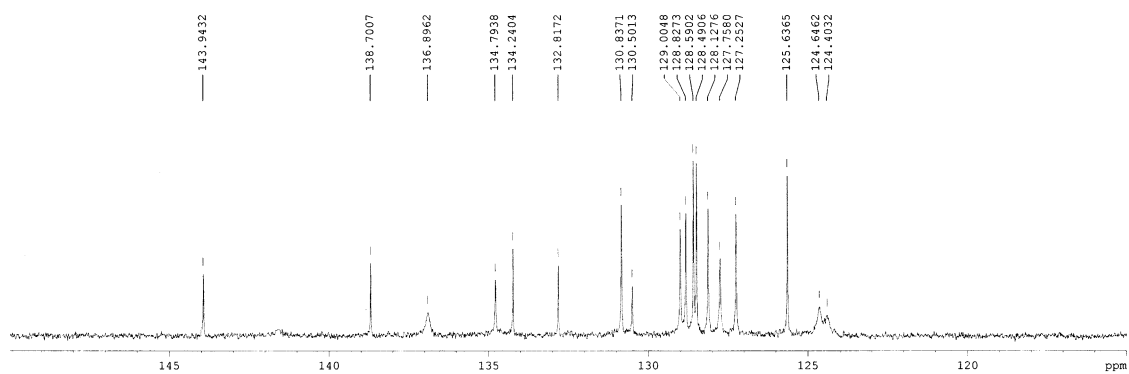
Enlarged spectrum in the range of 6-9 ppm.



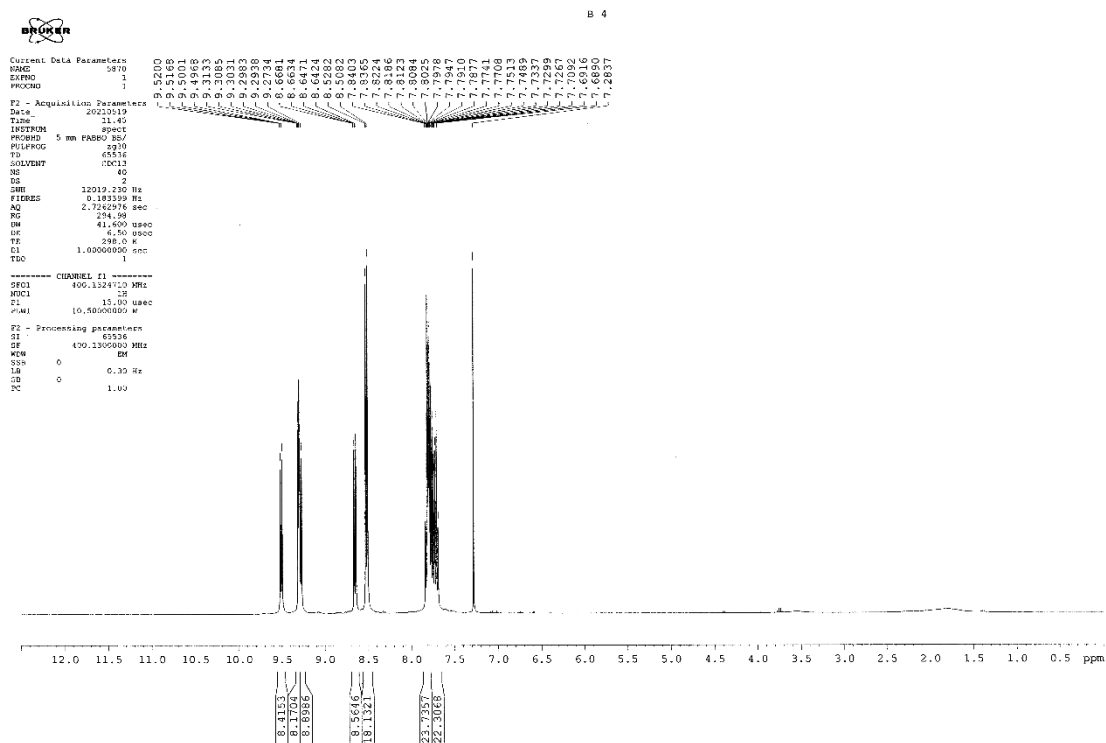
^{13}C spectrum of FN7



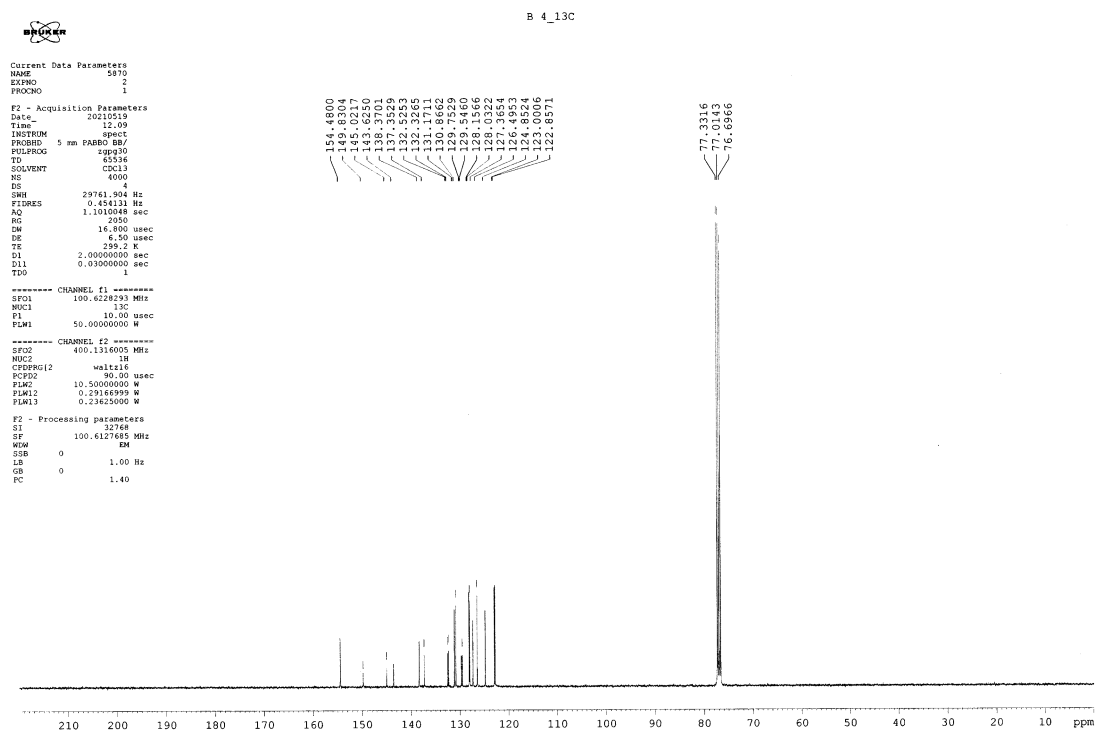
Enlarged spectrum in the range of 110-160 ppm.



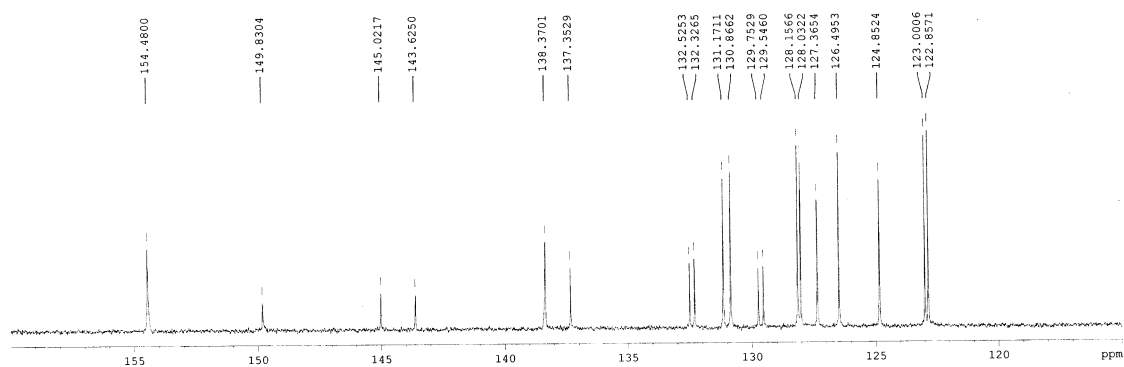
¹H spectrum of FN8



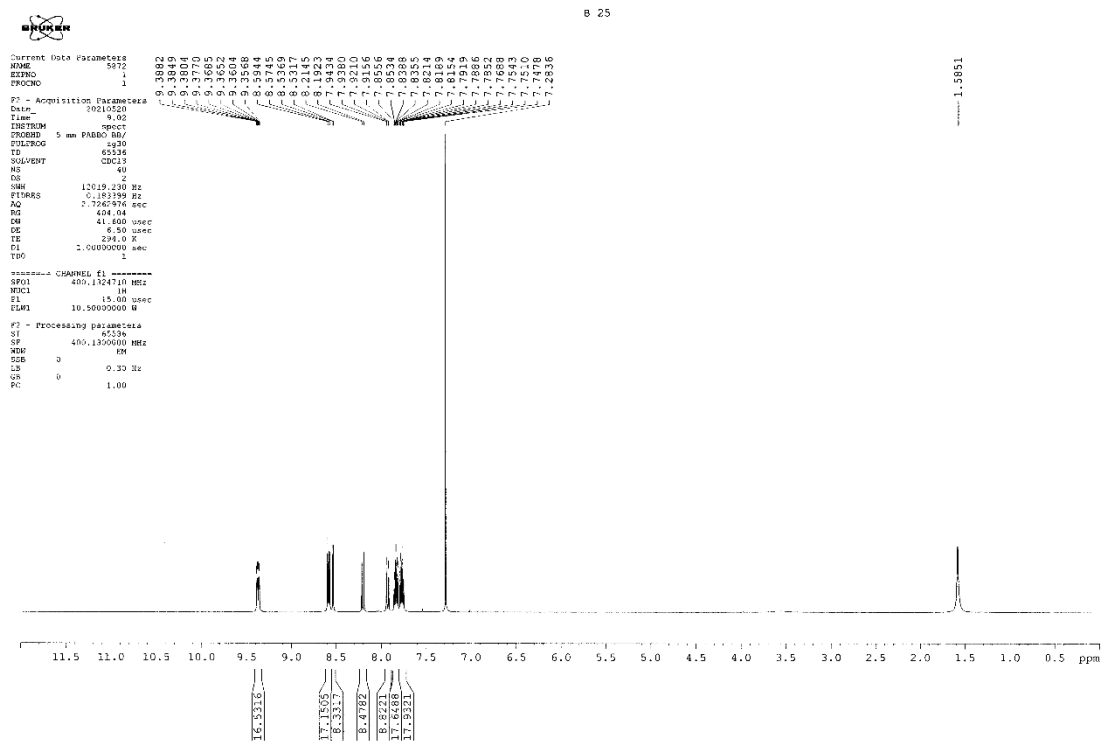
¹³C spectrum of FN8



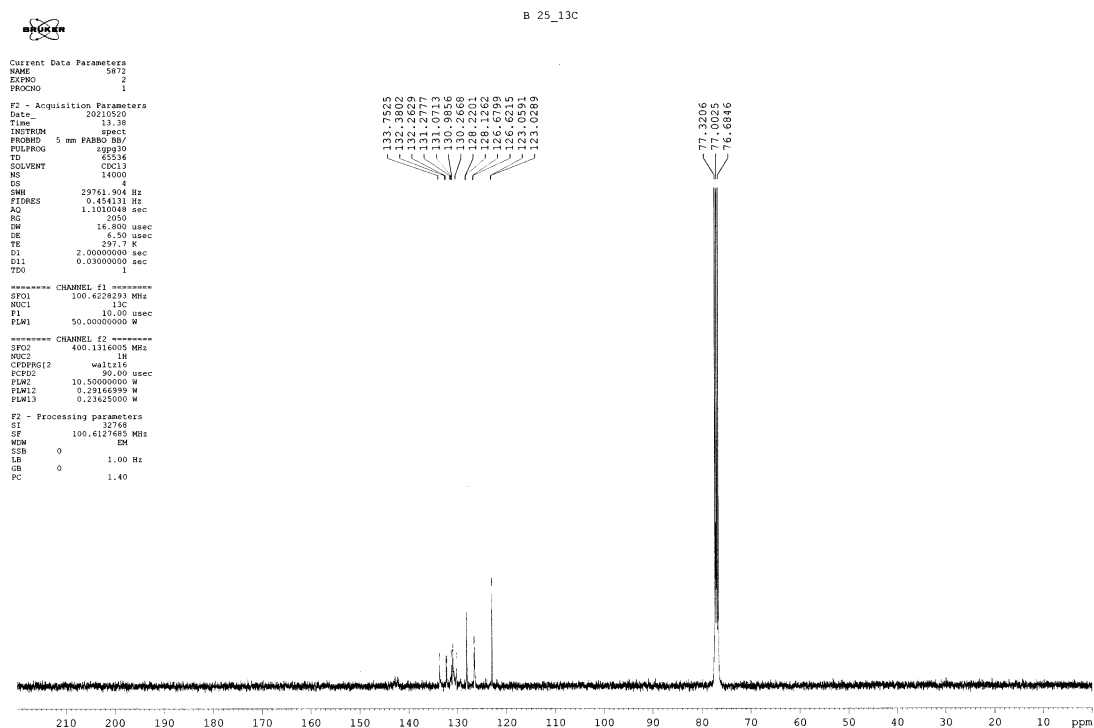
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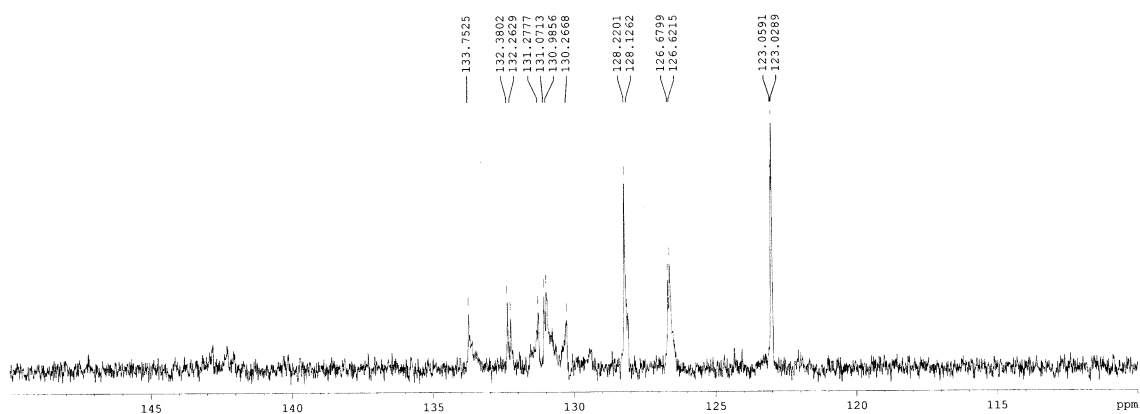
¹H spectrum of FN9



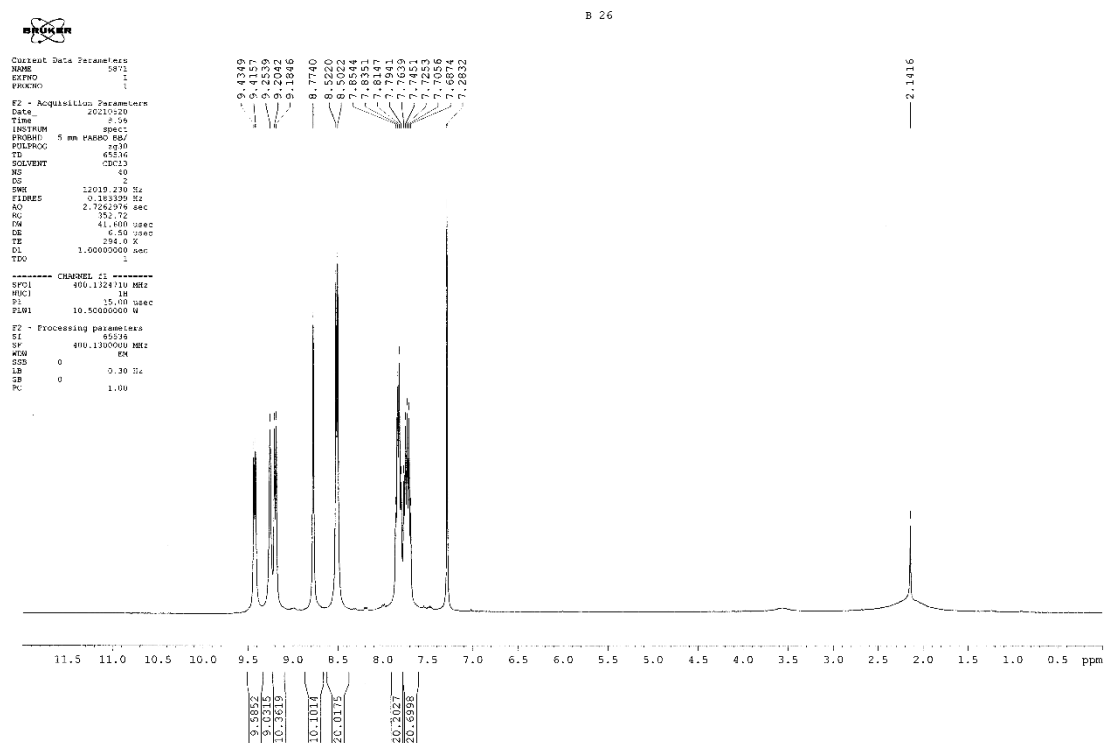
¹³C spectrum of FN9



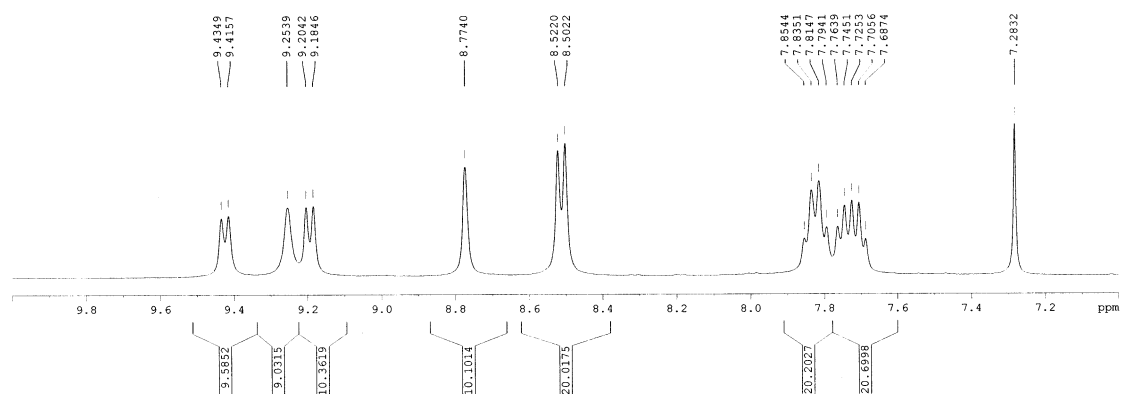
Enlarged spectrum in the range of 110-150 ppm.



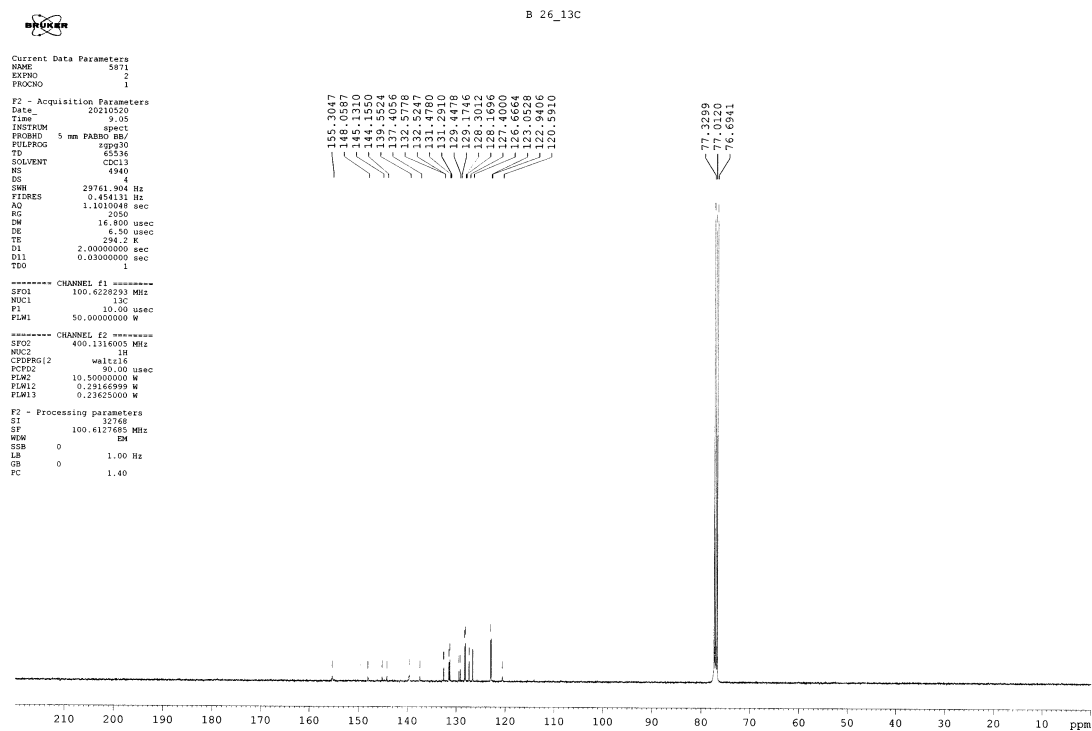
¹H spectrum of FN10



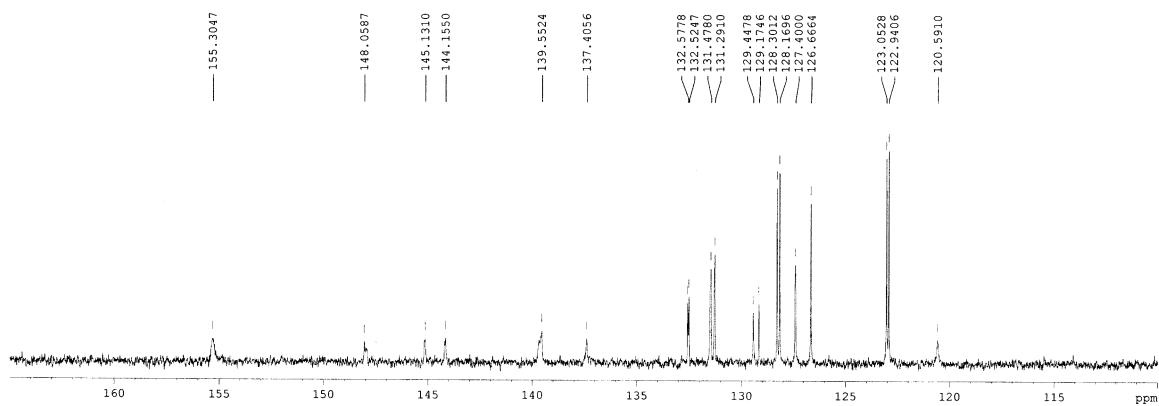
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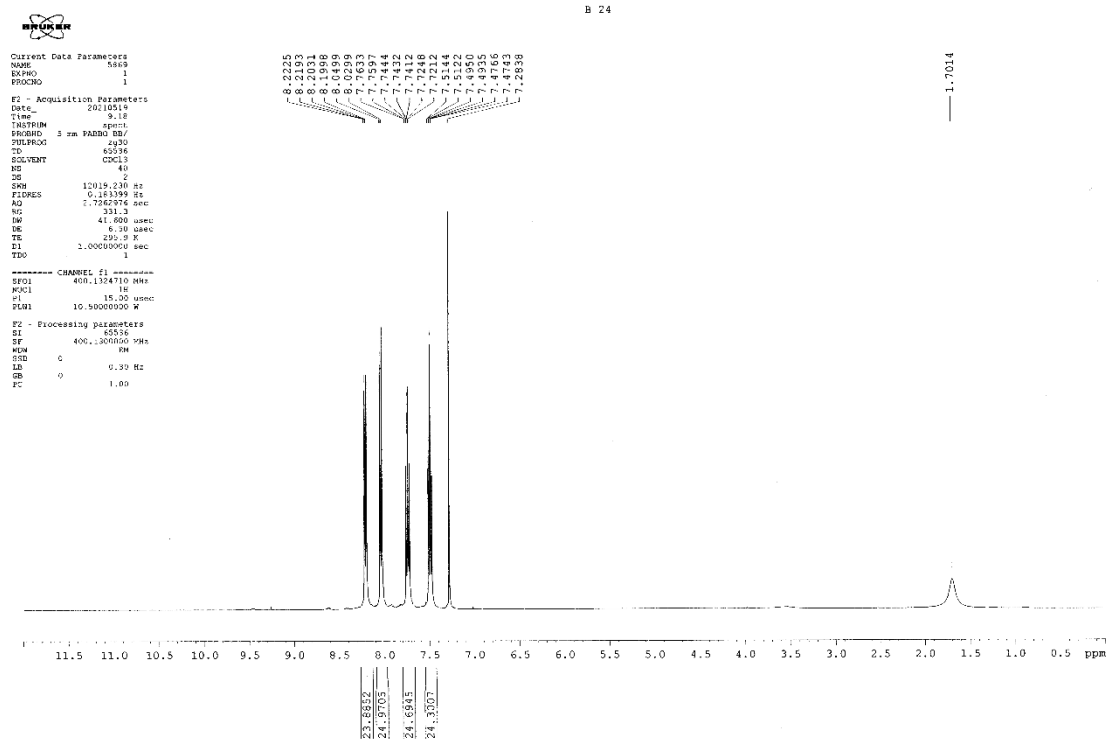
¹³C spectrum of FN10



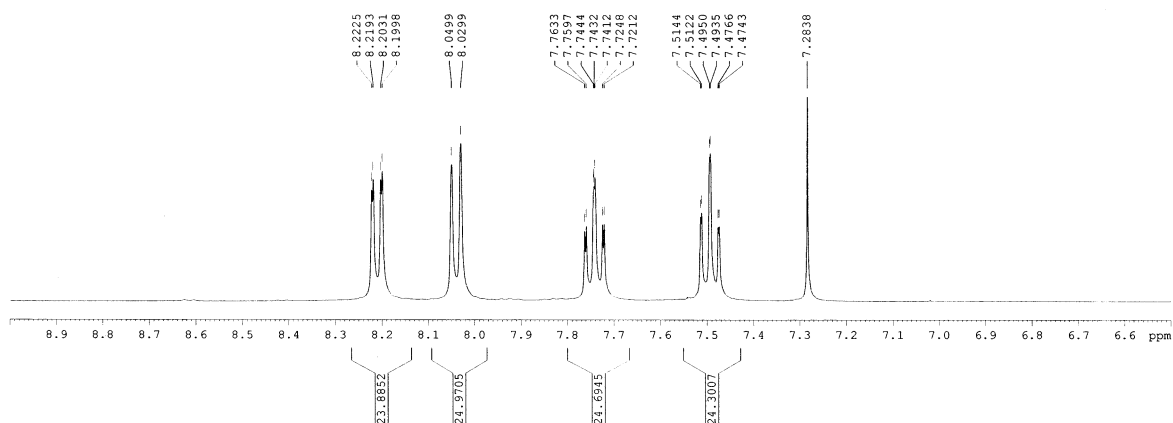
Enlarged spectrum in the range of 110-150 ppm.



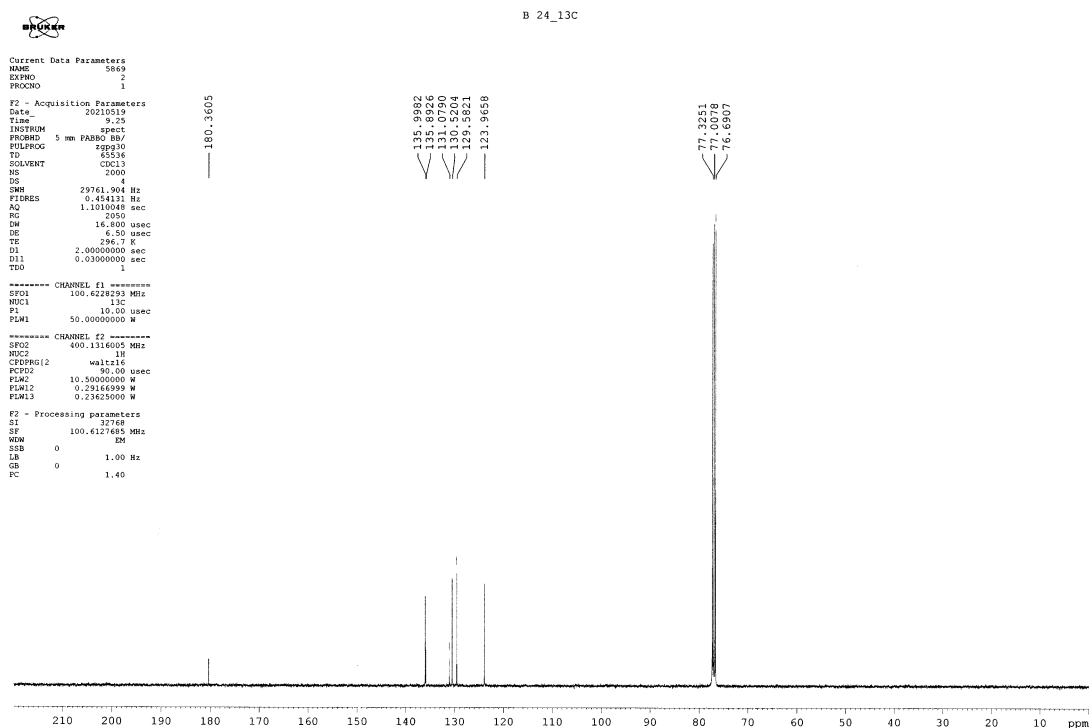
¹H spectrum of FN11



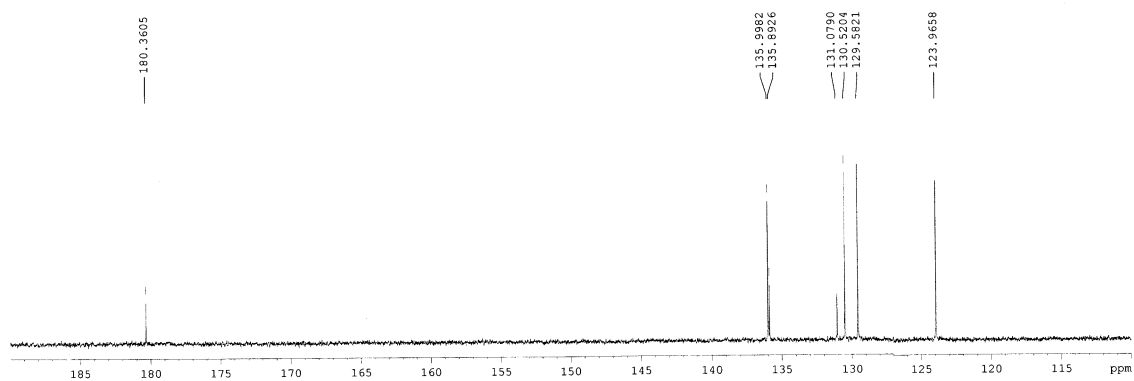
Enlarged spectrum in the range of 6-9 ppm.



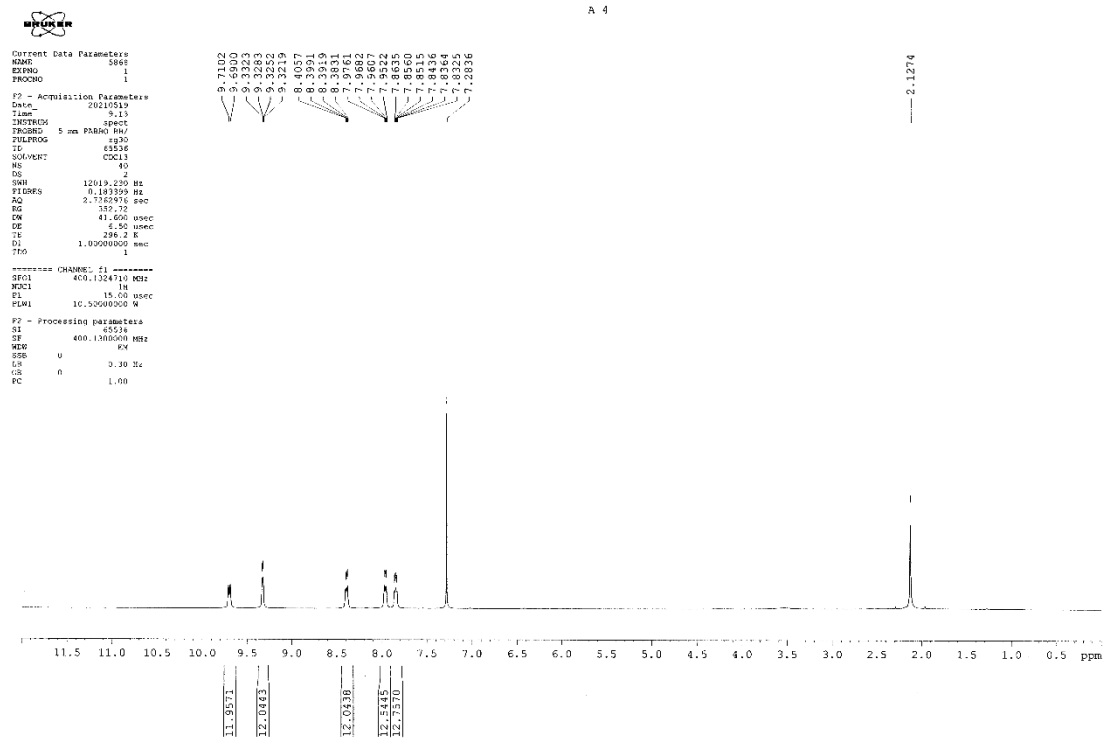
¹³C spectrum of FN11



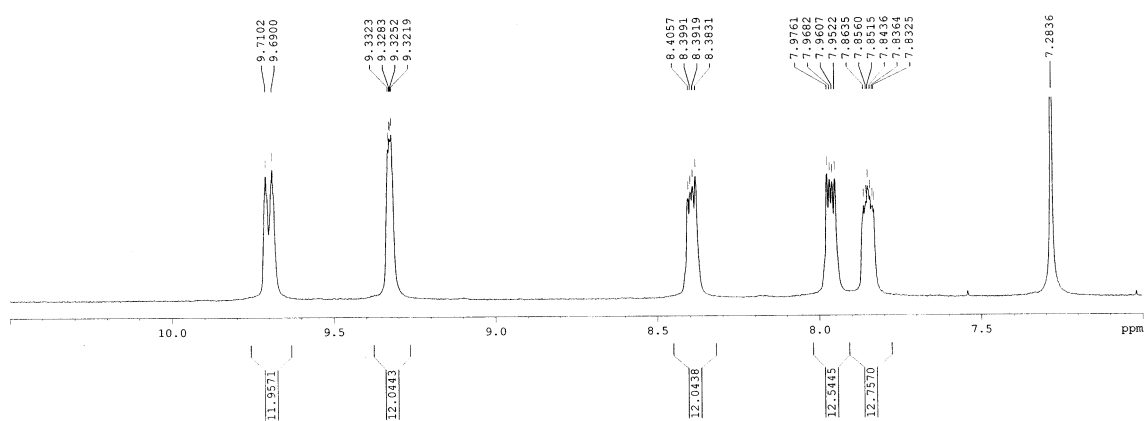
Enlarged spectrum in the range of 110-150 ppm.



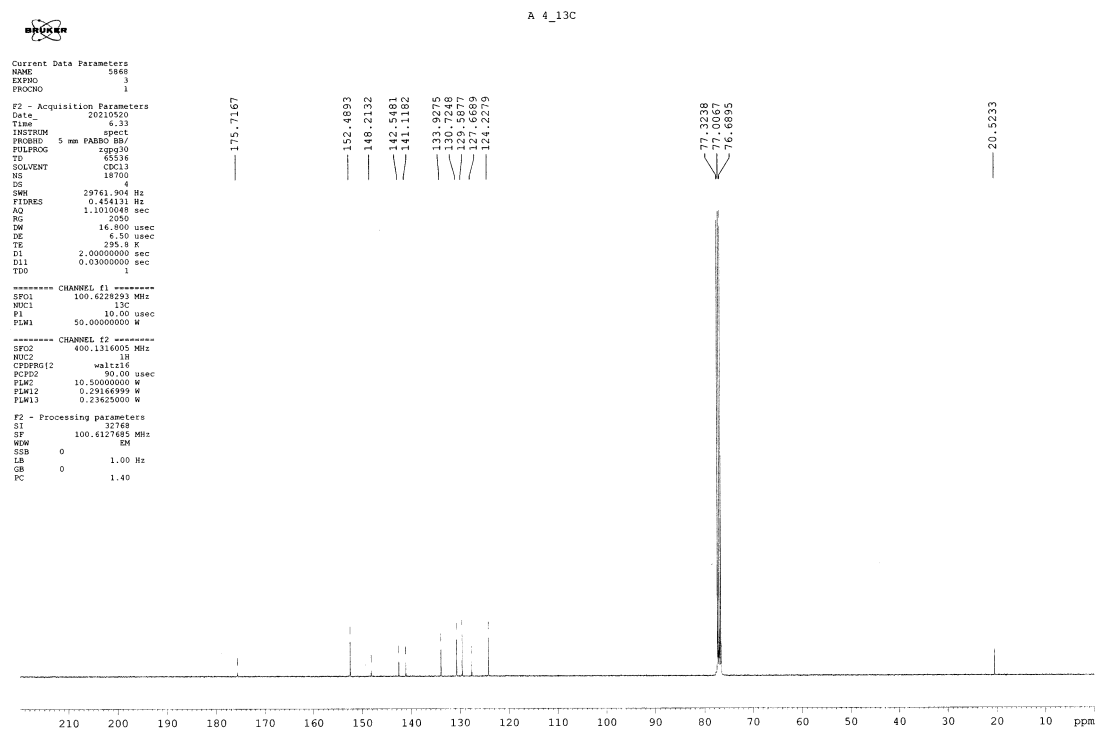
¹H spectrum of FN12



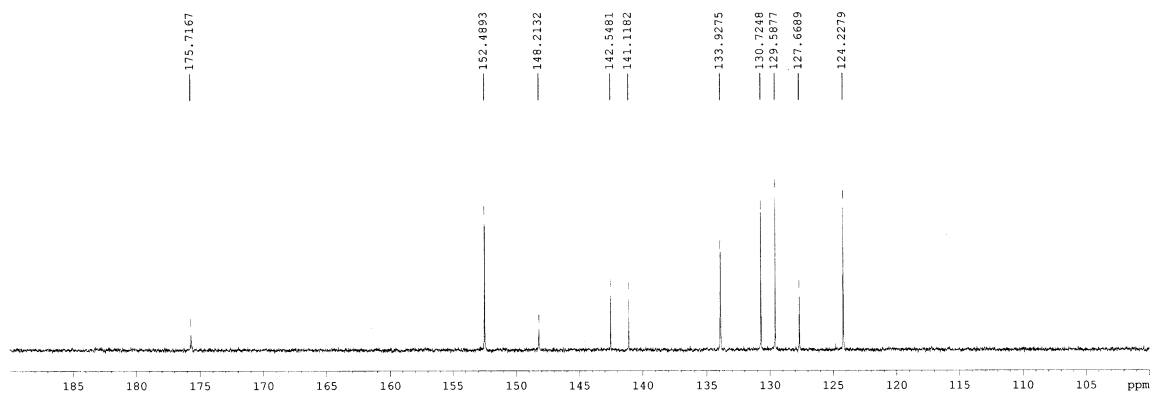
Enlarged spectrum in the range of 6-9 ppm.



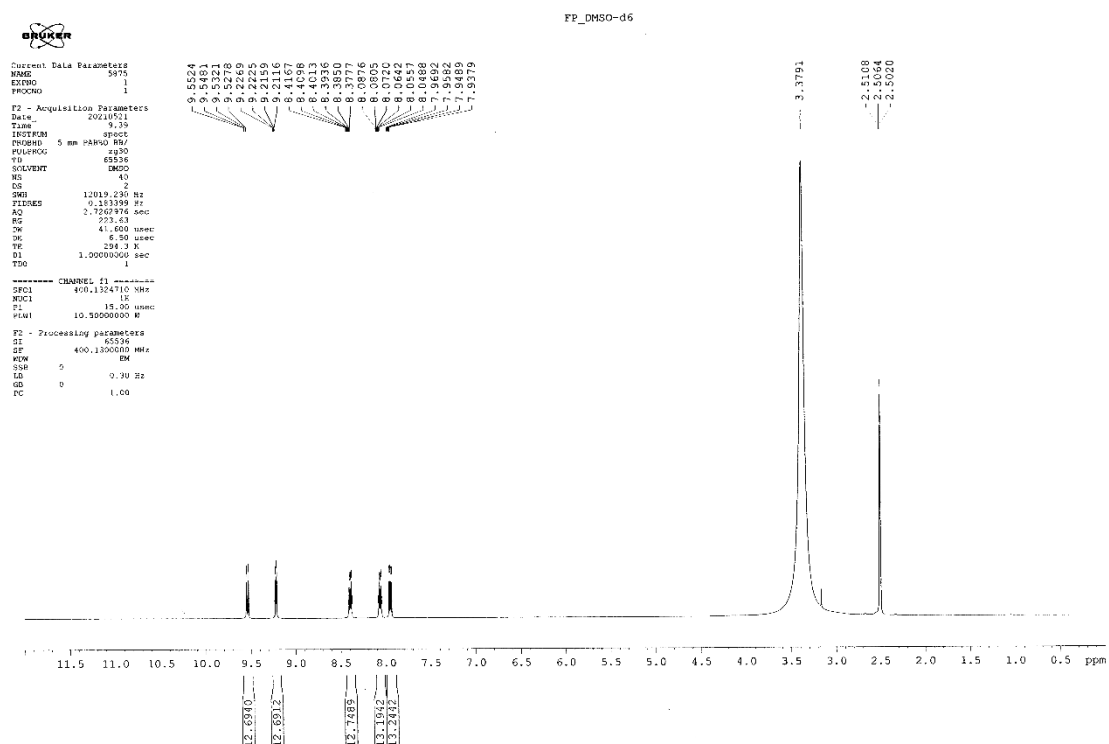
¹³C spectrum of FN12



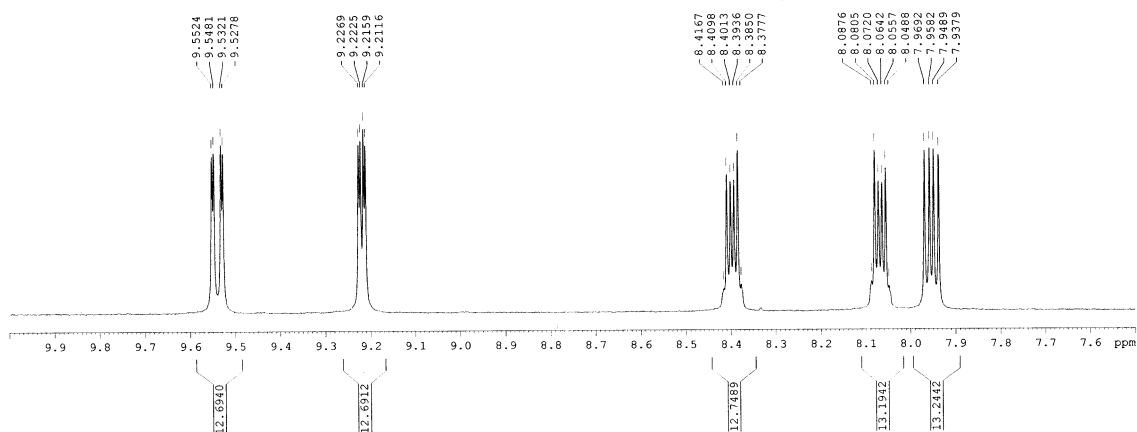
Enlarged spectrum in the range of 100-150 ppm.



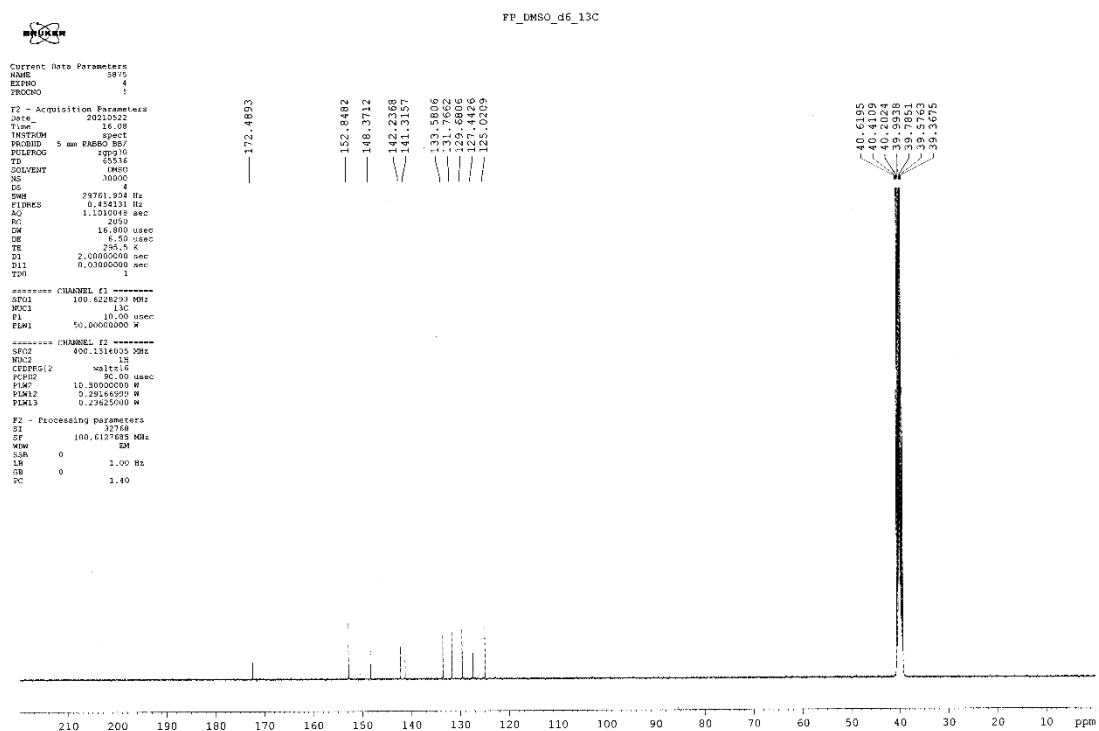
¹H spectrum of FN13

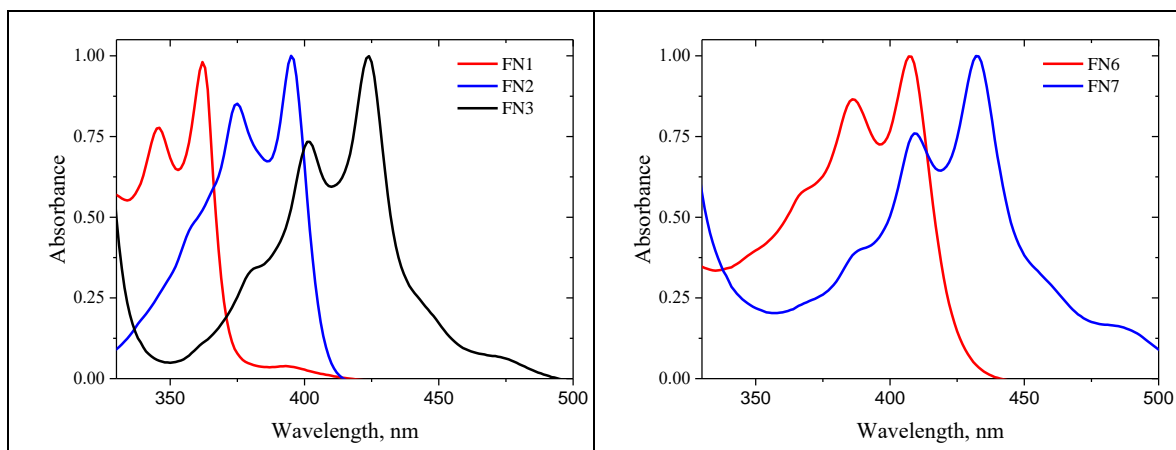


Enlarged spectrum in the range of 100-150 ppm.

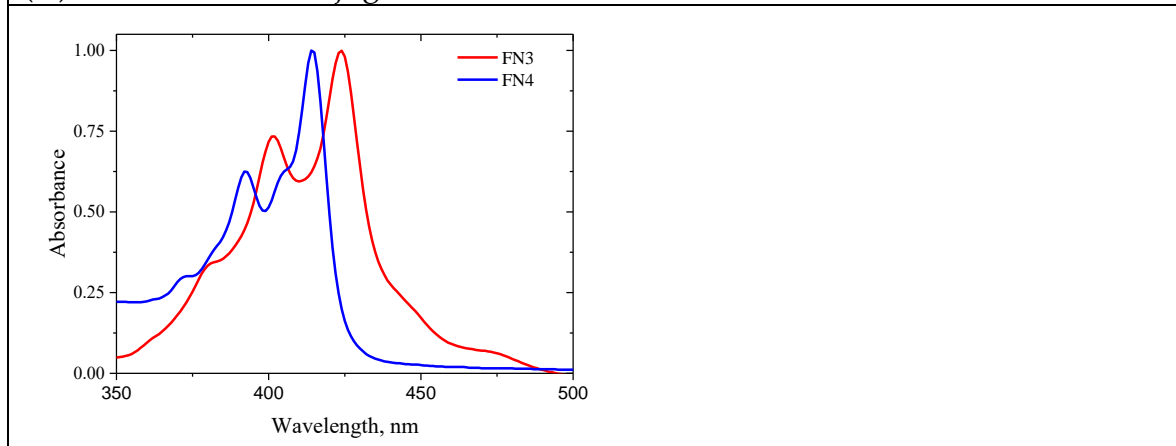


¹³C spectrum of FN13

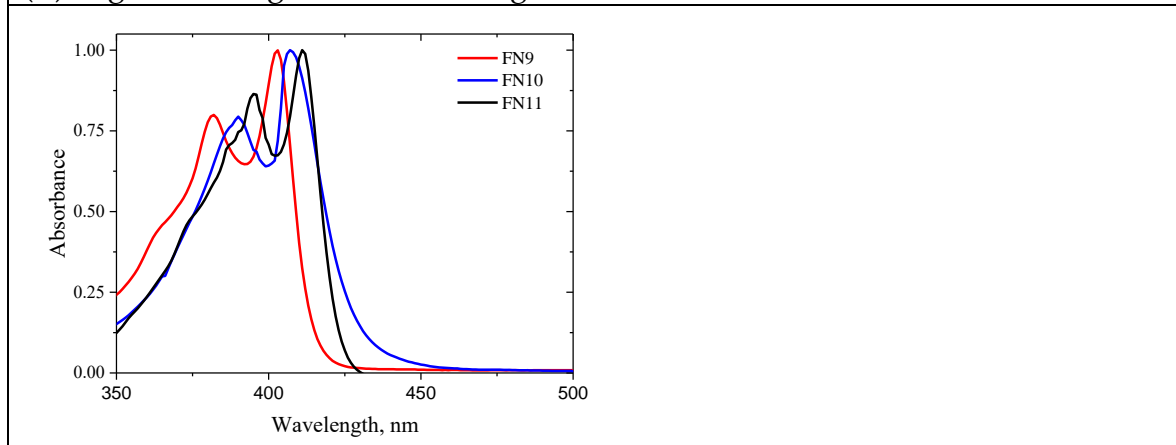




(A) the number of conjugated double bonds in the molecule



(B) angular arrangement of the rings



(C) increase in the number of nitrogen atoms in the molecule

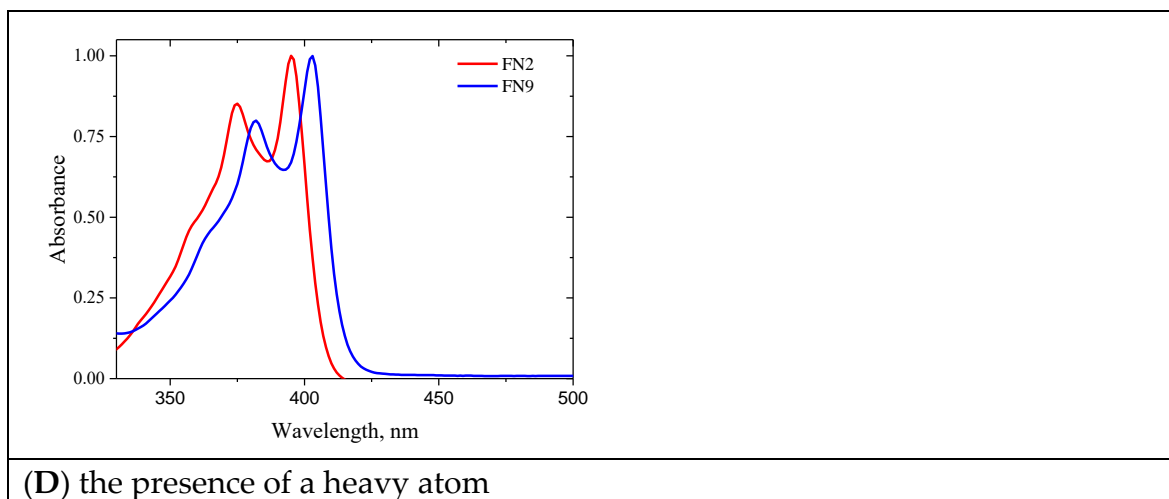
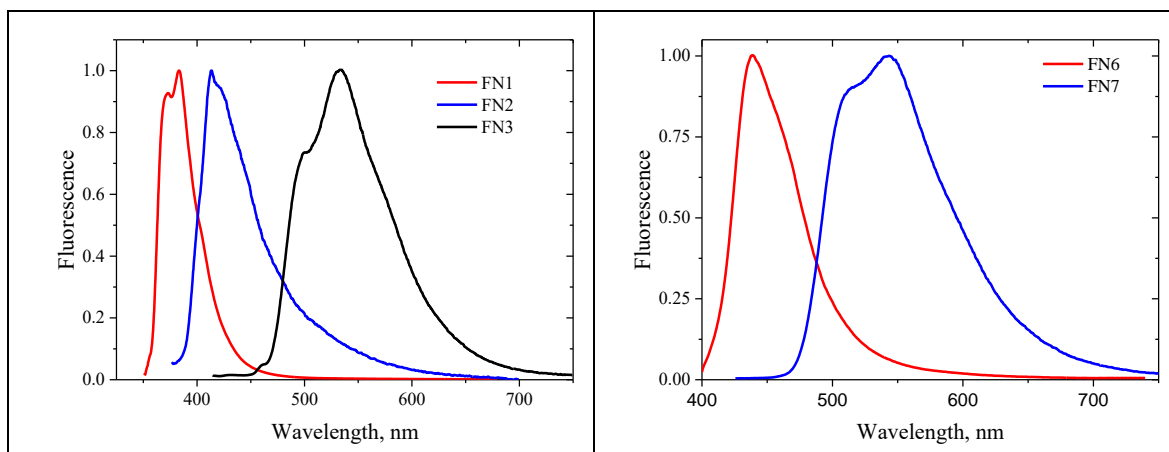
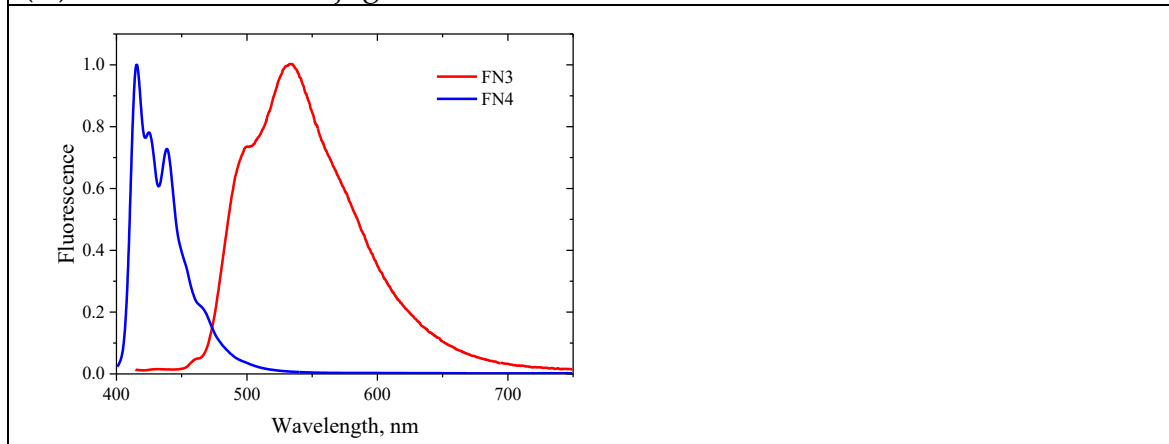


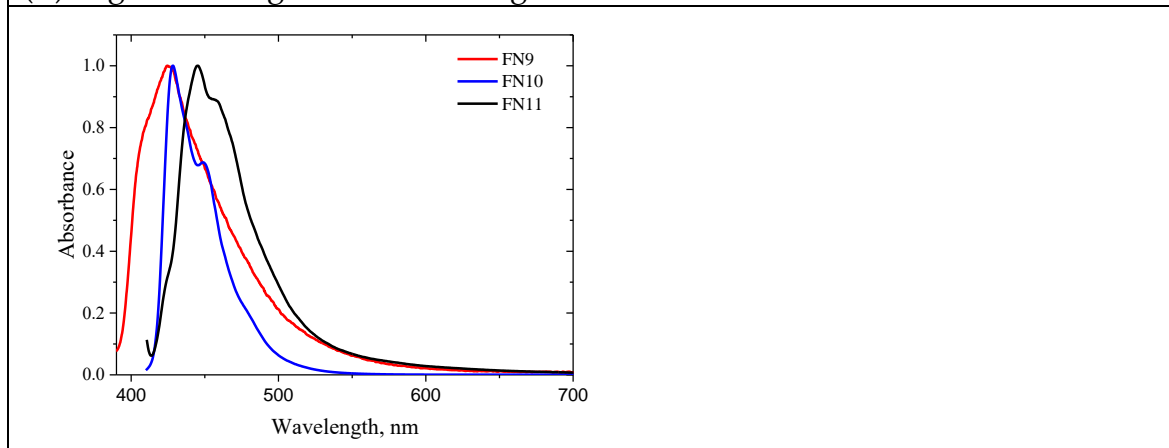
Figure S1. Normalized electronic absorption spectra of phenazine derivatives in ethyl acetate illustrating the influence of dye structure on the bands position.



(A) the number of conjugated double bonds in the molecule



(B) angular arrangement of the rings



(C) increase in the number of nitrogen atoms in the molecule

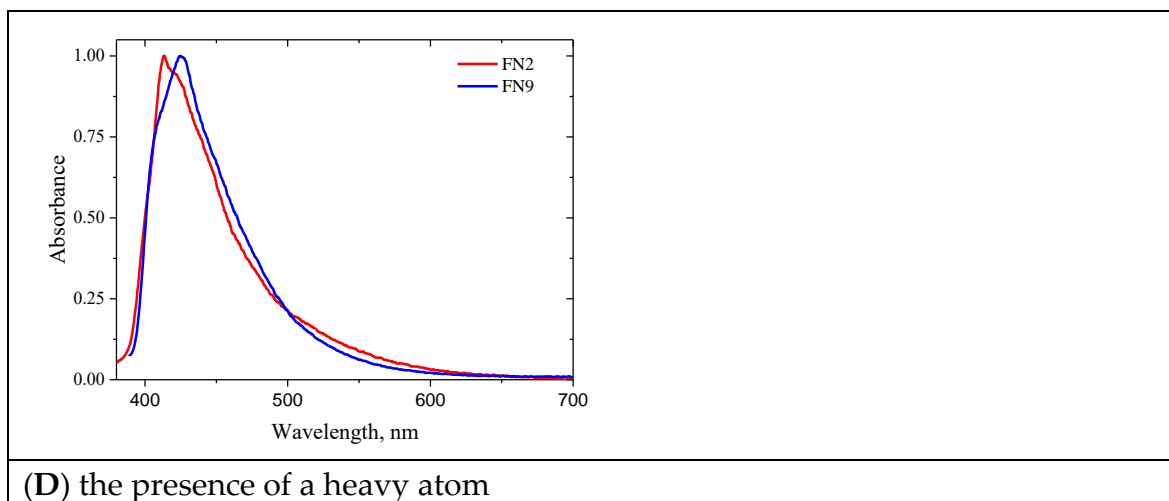
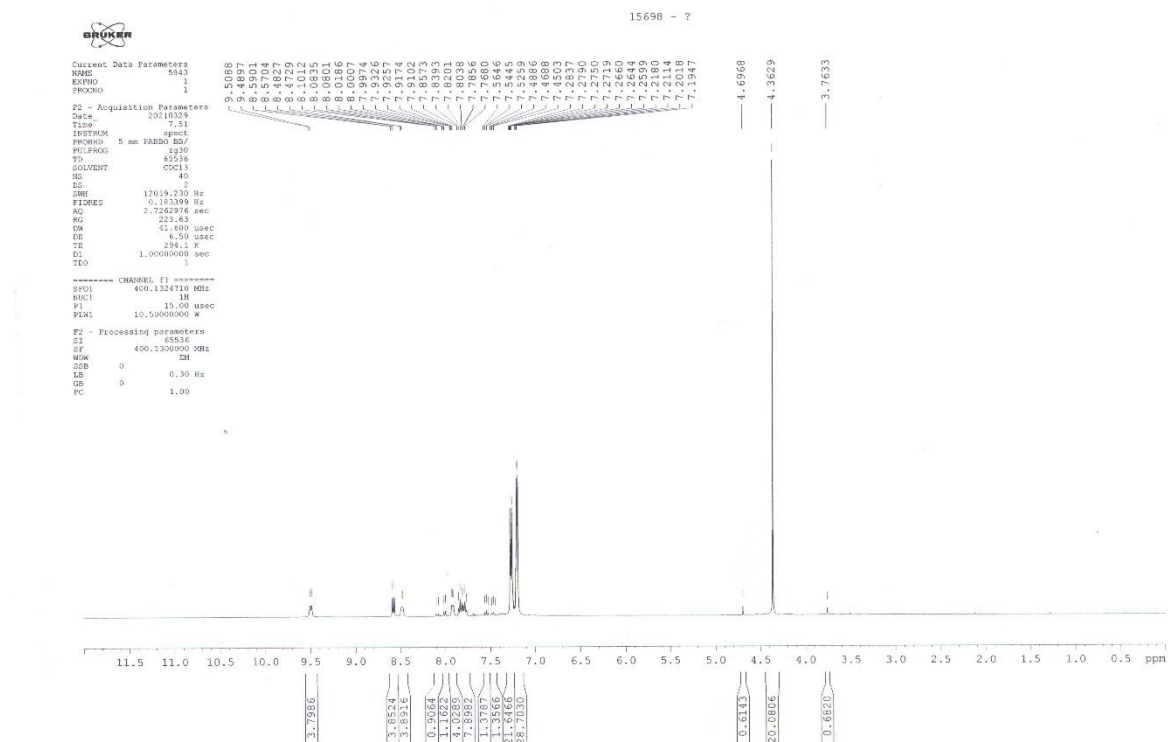


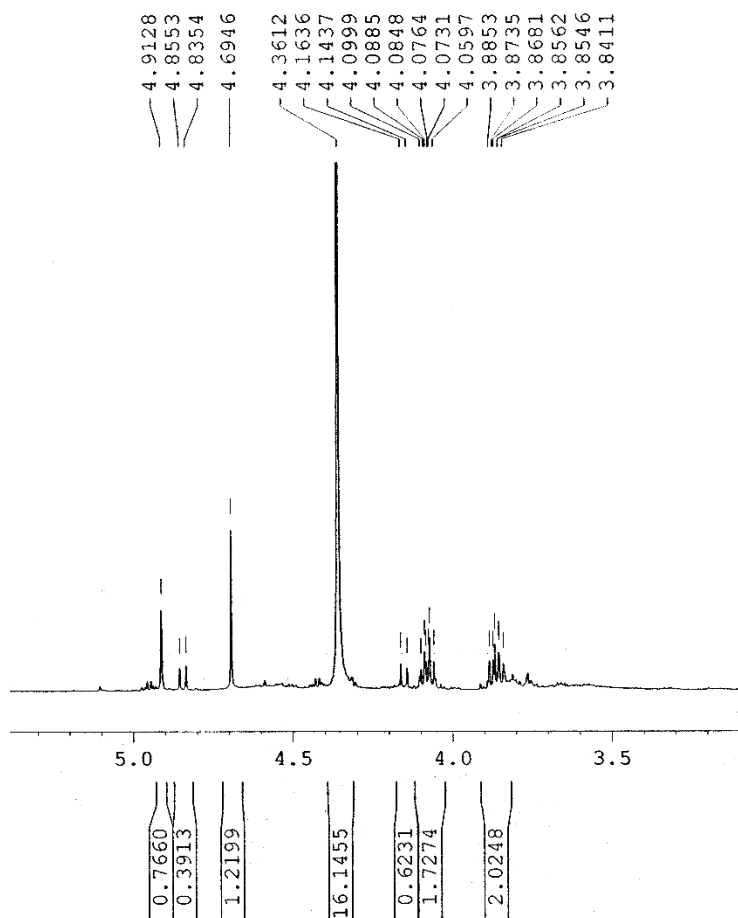
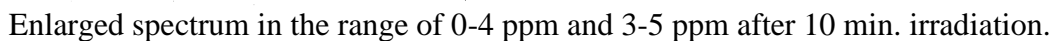
Figure S2. Normalized fluorescence spectra of phenazine derivatives in ethyl acetate illustrating the influence of dye structure on the bands position; Ex = 366 nm or 404 nm.

^1H NMR spectra of a mixture of dibenzo[a.c]phenazine **FN2** (sensitizer) and 2,3-diphenyl-*p*-dioxene in CDCl_3 after different irradiation time

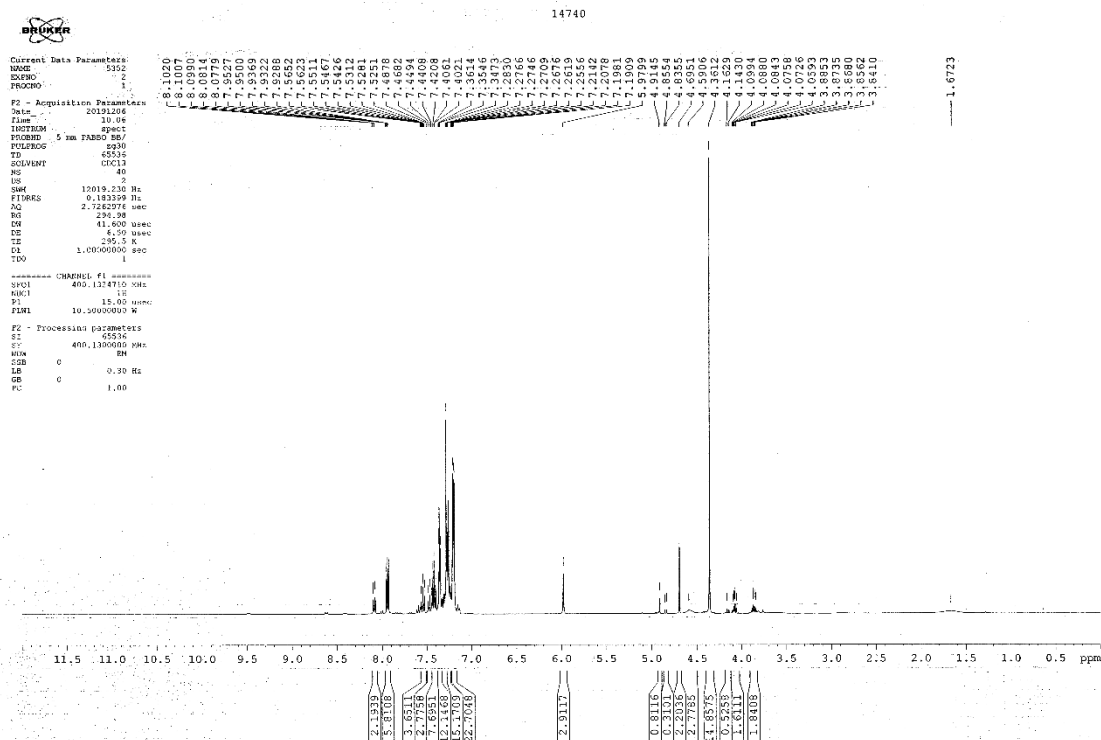
^1H NMR spectrum before irradiation.



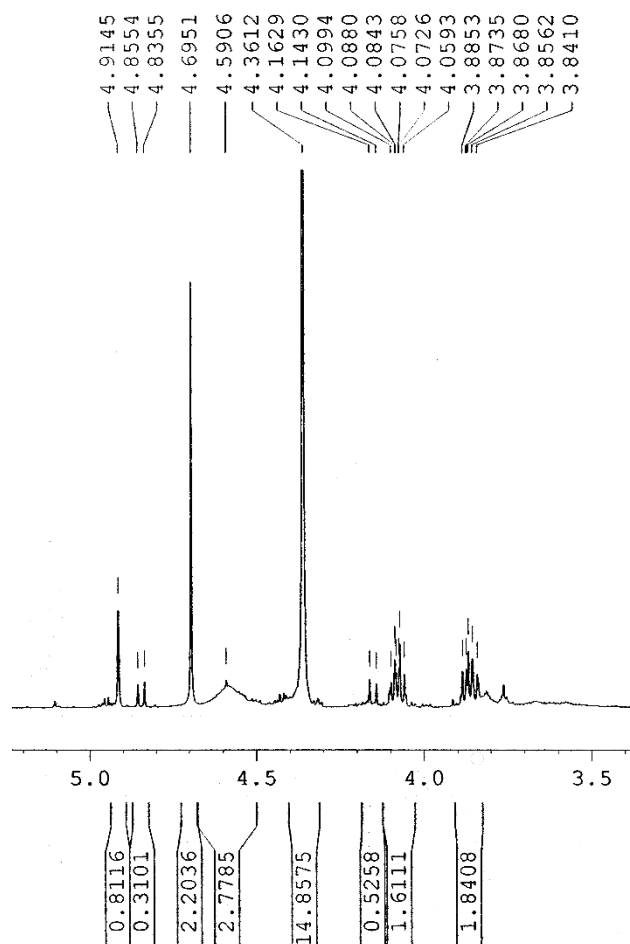
14739



^1H NMR spectrum after 20 min. irradiation.



Enlarged spectrum in the range of 0-4 ppm and 3-5 ppm after 20 min. irradiation.



14741

Current Data Parameters

NAME 5352
EXTRNO 3
PROCNO 3

F2 - Acquisition Parameters

Date 20191206
Time 10.36
INSTRUM spect
PROBHD 5 mm PABBO 846
PULPROG zgpg30
TD 65536
FID 65013
RG 40
RG 2
SOLVENT
NS 2
DSH 12019.230 Hz
FIDRES 0.163329 Hz
AQ 2.7262976 sec
RG 250.07
D9 91.600 usec
PC 6.50 usec
VC 295.8
G1 1.0000000 sec
TEO 1

----- CHANNEL f1 -----
FQ1 400.1364710 MHz
NUC1 1H
P1 19.50 usec
PL1 10.5000000 dB

F2 - Processing parameters

SI 8336
SF 400.1300000 MHz
WDW EM
SSB 0 0.30 Hz
CB 0 1.30 Hz
PC 1.00

Integration values (from left to right):

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- 1.5526
- 3.3117
- 3.5912
- 1.1111
- 1.1111
- 1.1471
- 2.8733
- 0.7321
- 3.4956
- 3.7935
- 2.7935
- 12.6815
- 0.5602
- 1.5506
- 1.8461

1.6914

4.9149
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32