



Universitat Autònoma de Barcelona

Departament de Química

Facultat de Ciències

New Functional Ligands for the Preparation of Photoactive Nanoparticle-Based Materials

Laura Amorín Ferré

Ph.D. Thesis

Ph.D. in Chemistry

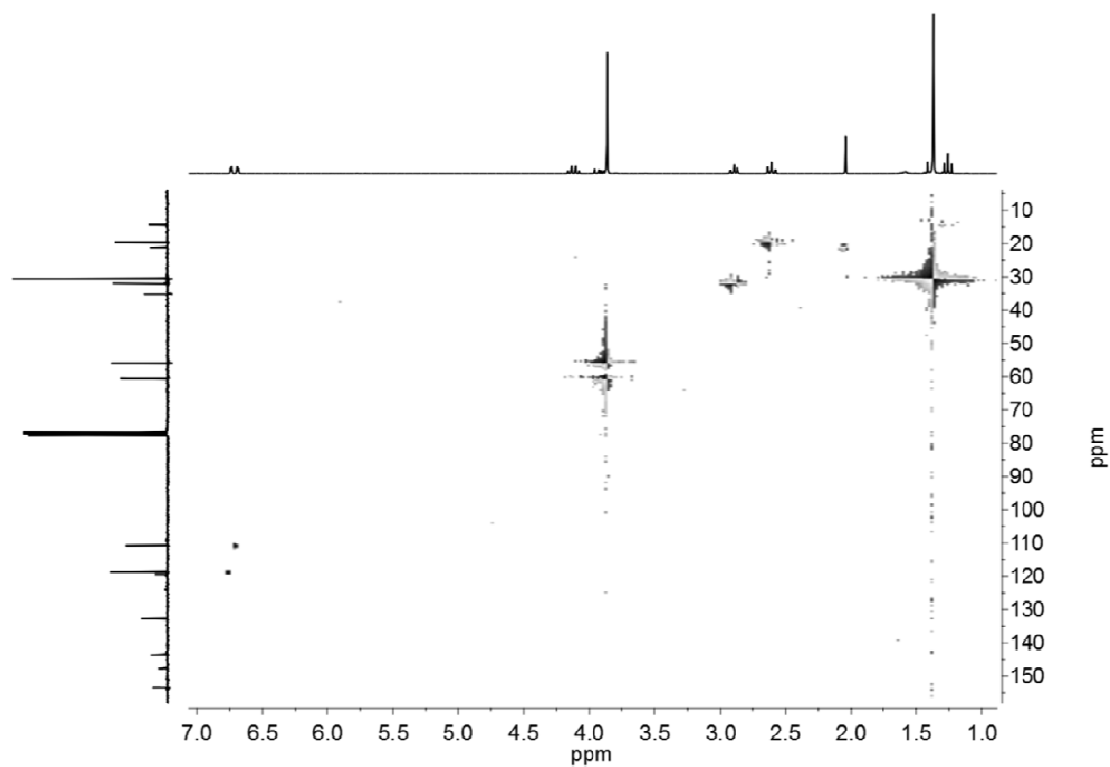
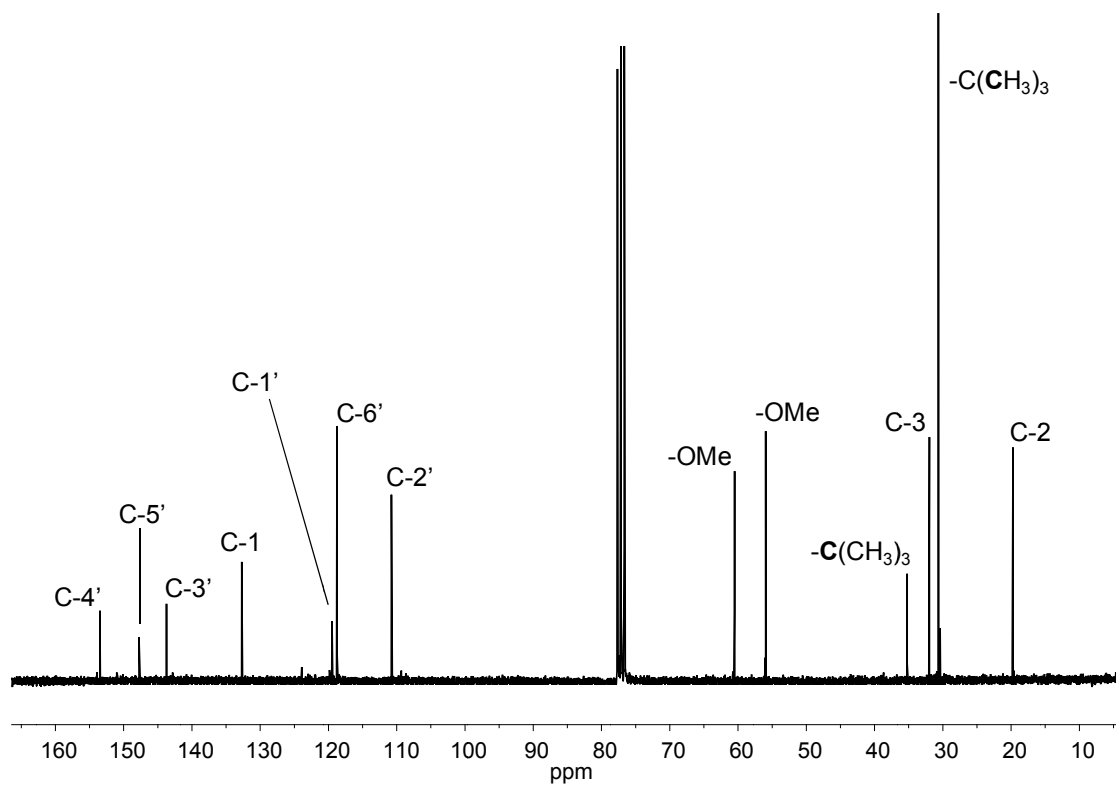
2014

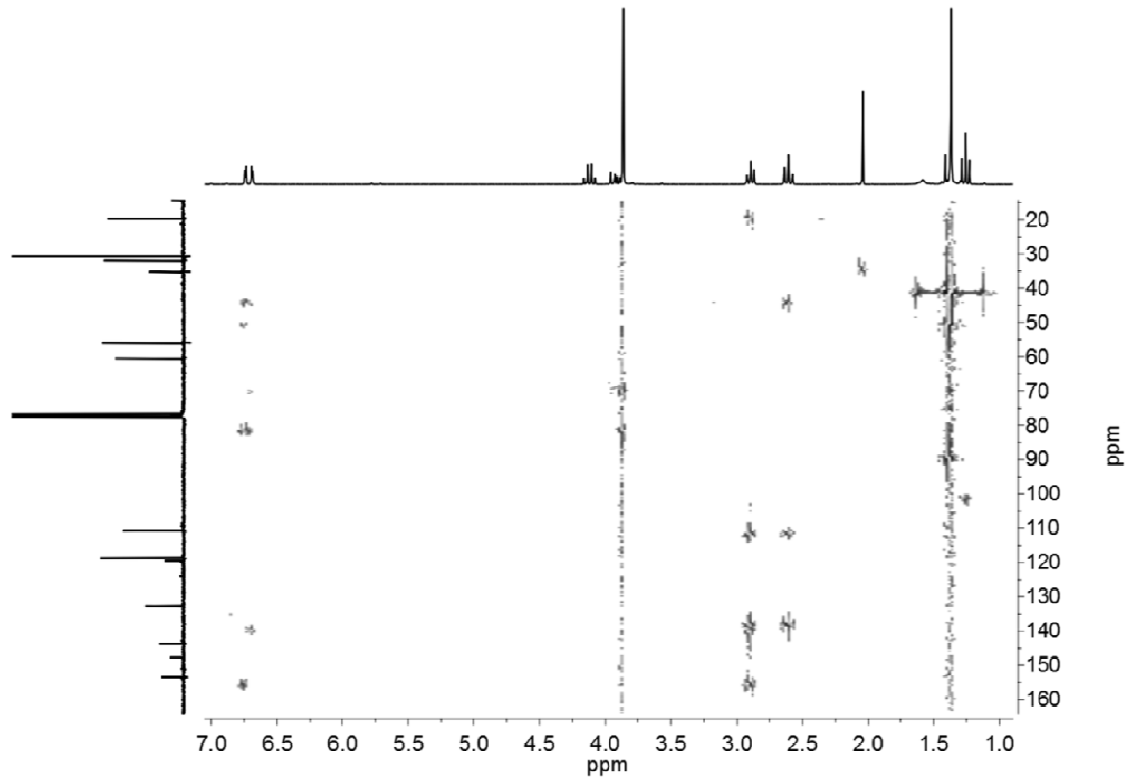
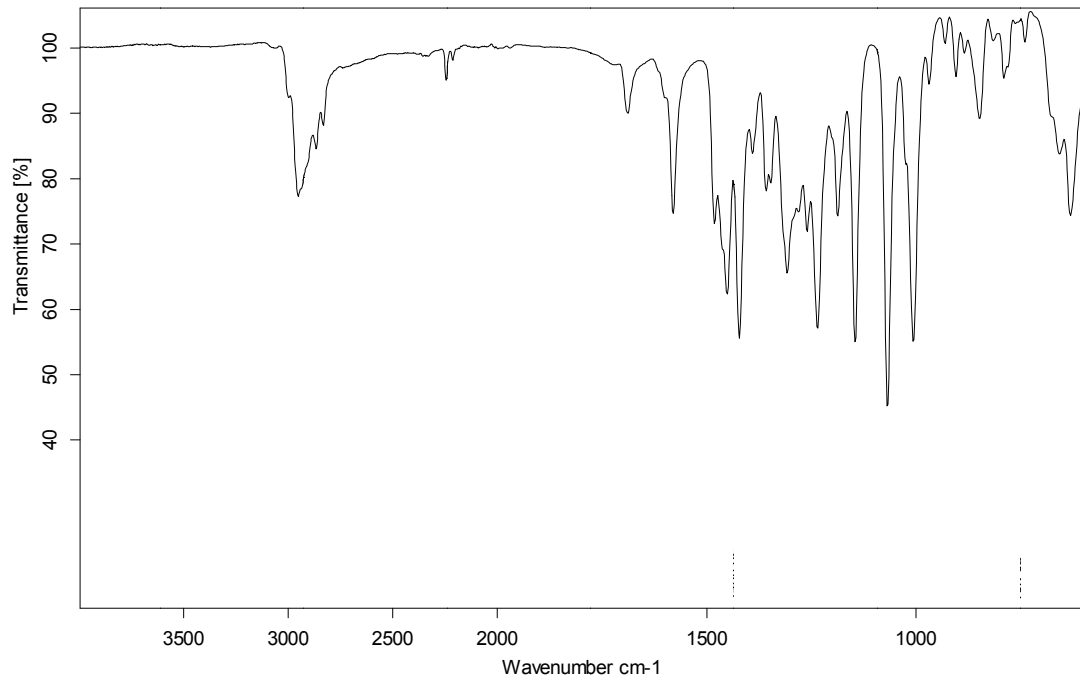
Supervisors:

Dr. José Luis Bourdelande Fernández

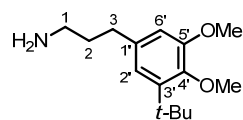
Dr. Félix Busqué Sánchez

Dr. Jordi Hernando Campos

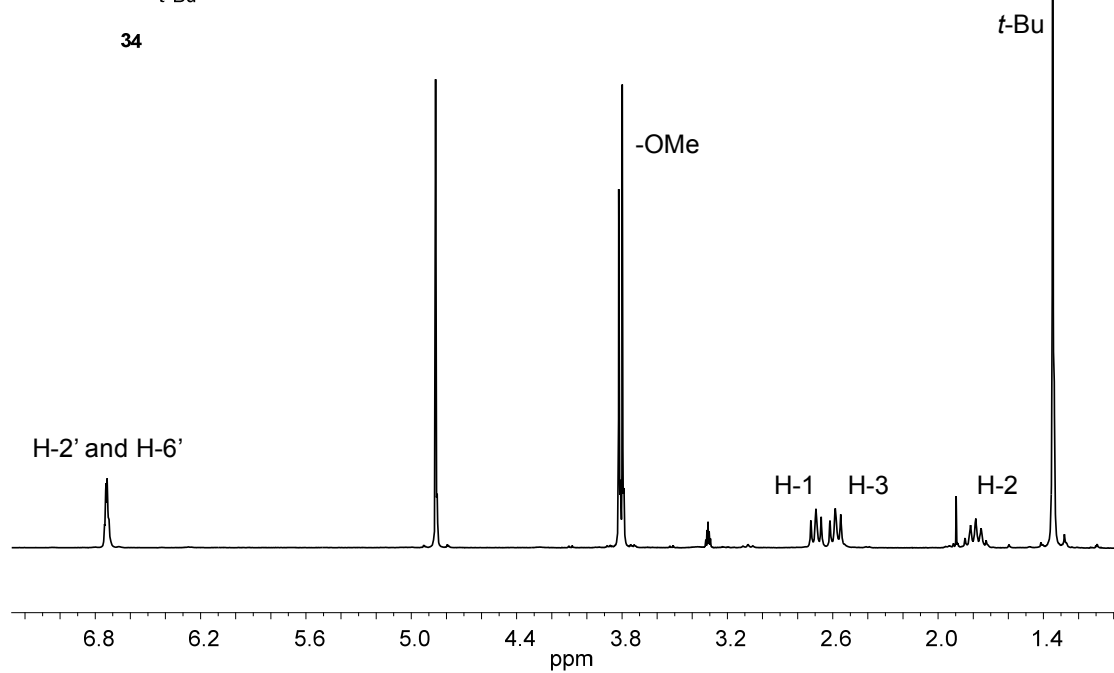
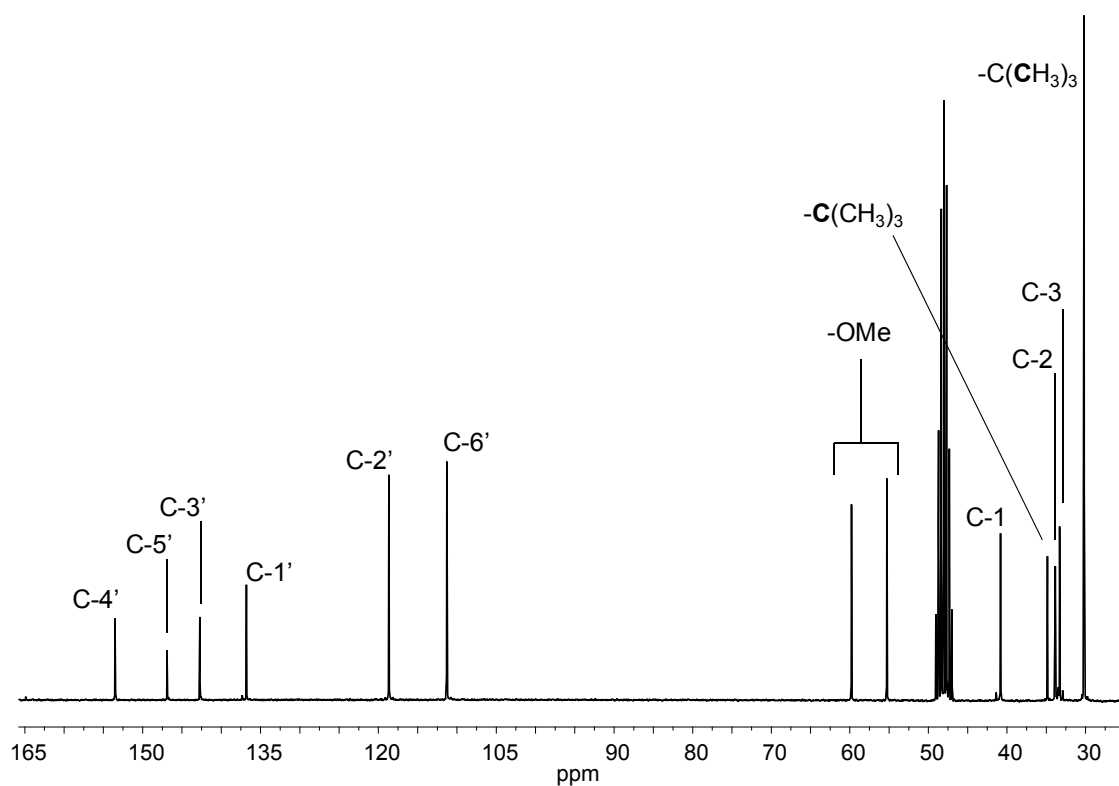


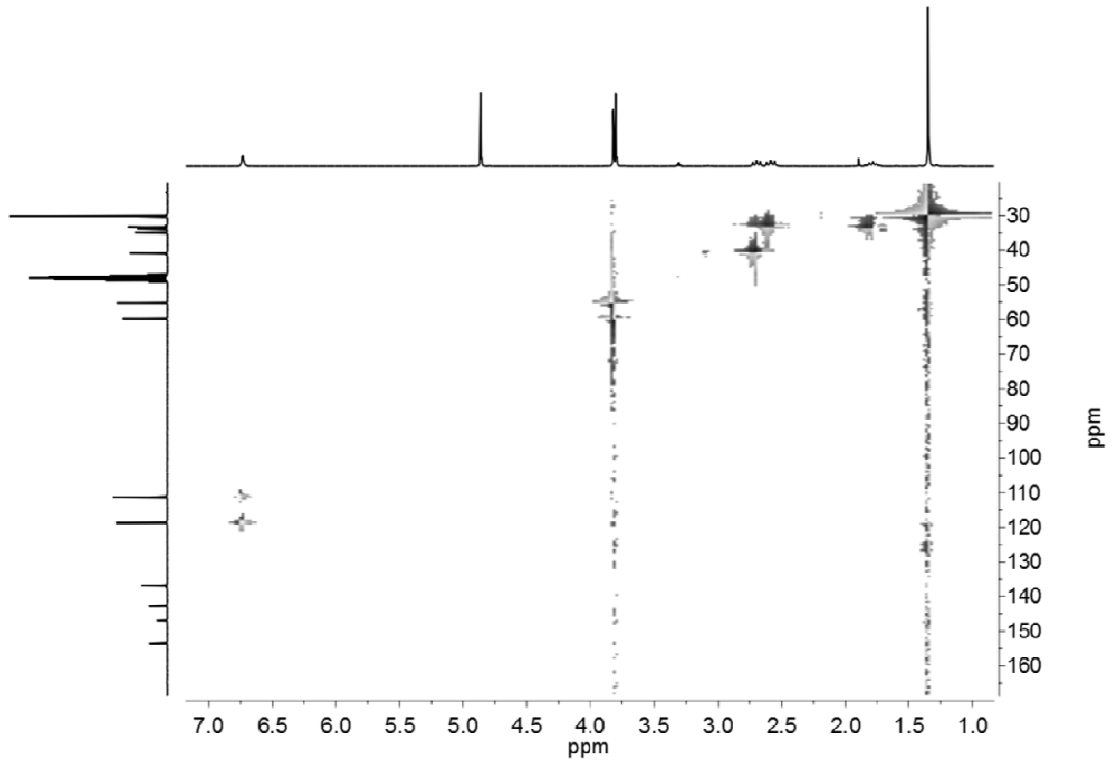
HMBC (CDCl_3 , 90 MHz)

IR (ATR)

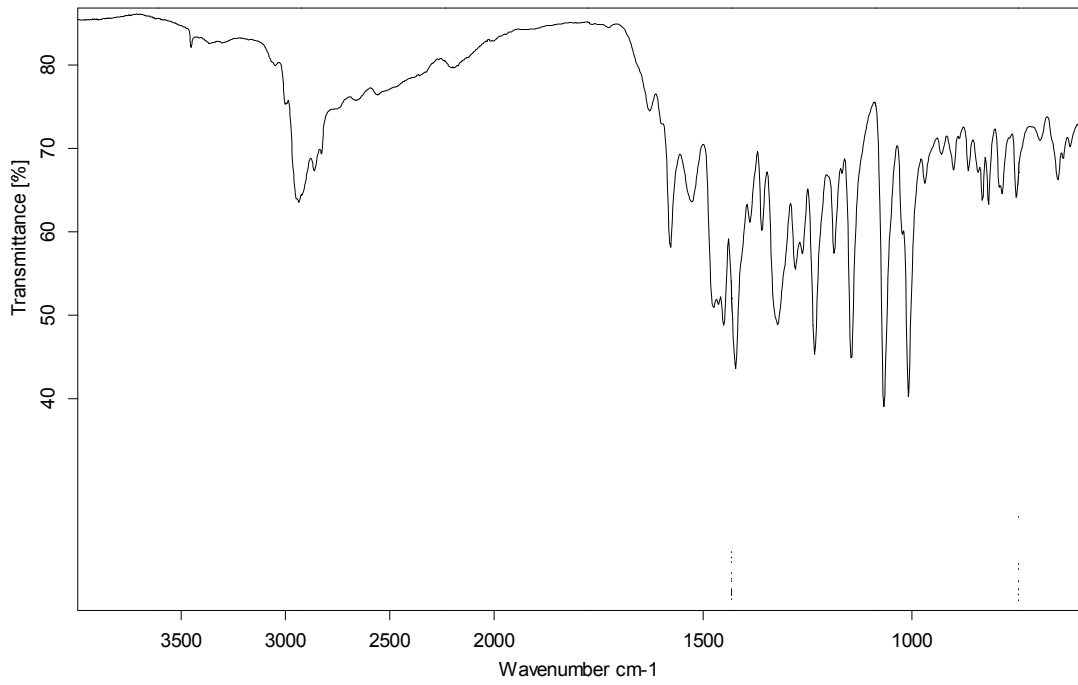


34

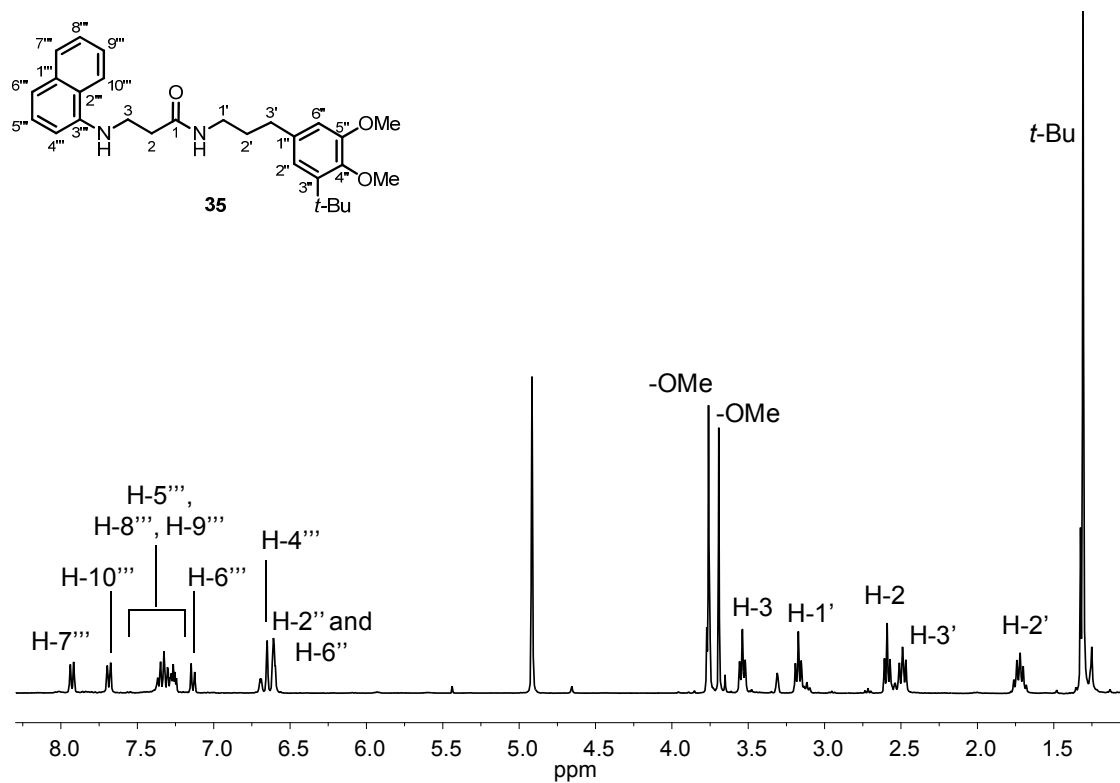
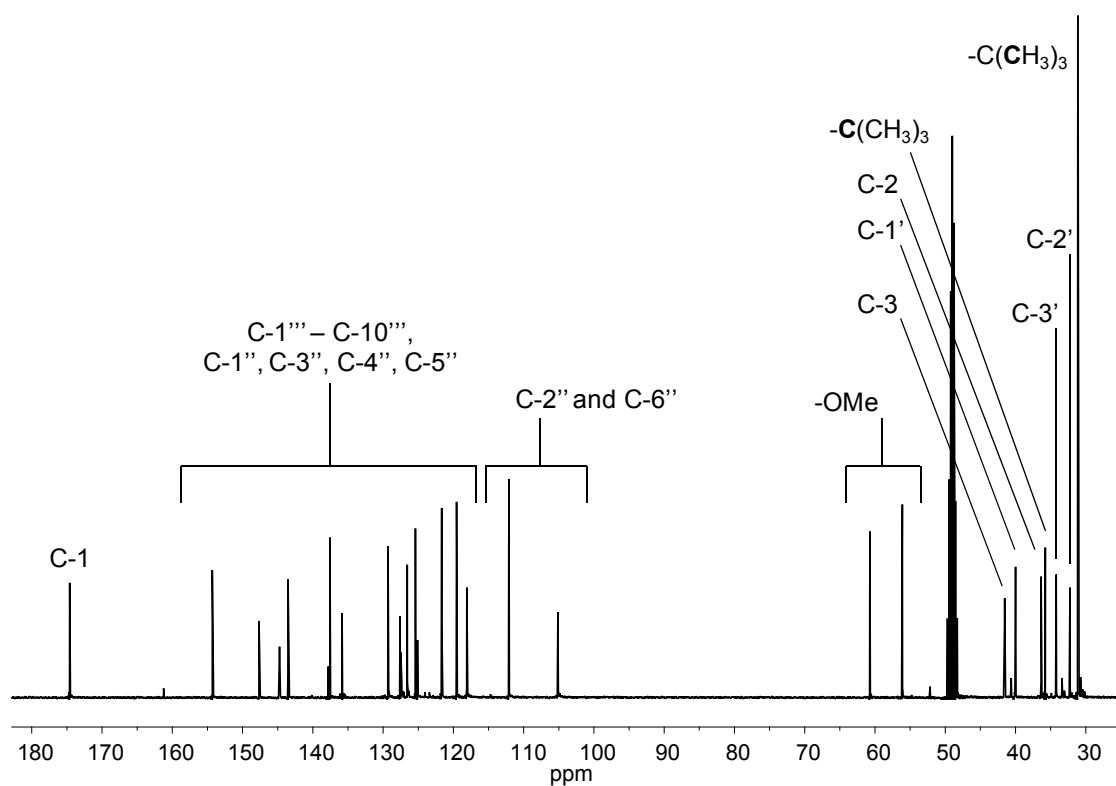
¹H NMR (MeOH-d₄, 250 MHz)¹³C NMR (MeOH-d₄, 60 MHz)

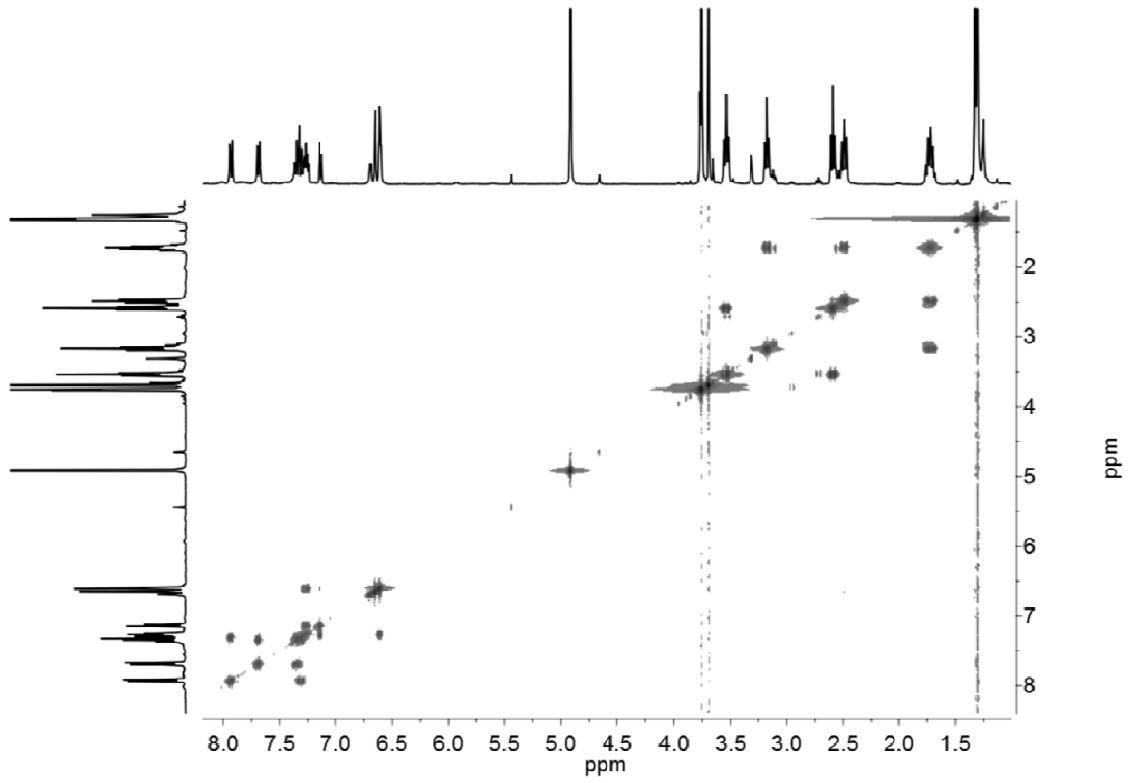


HSQC (MeOH-d₄, 60 MHz)

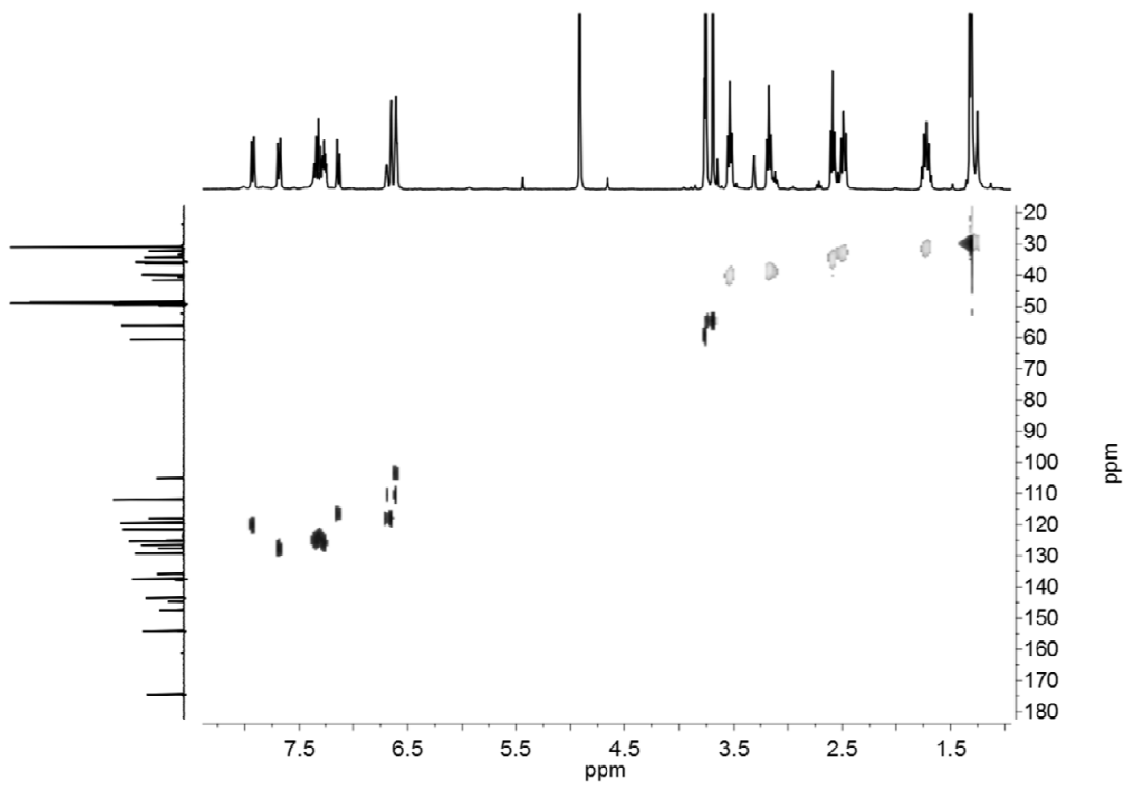


IR (ATR)

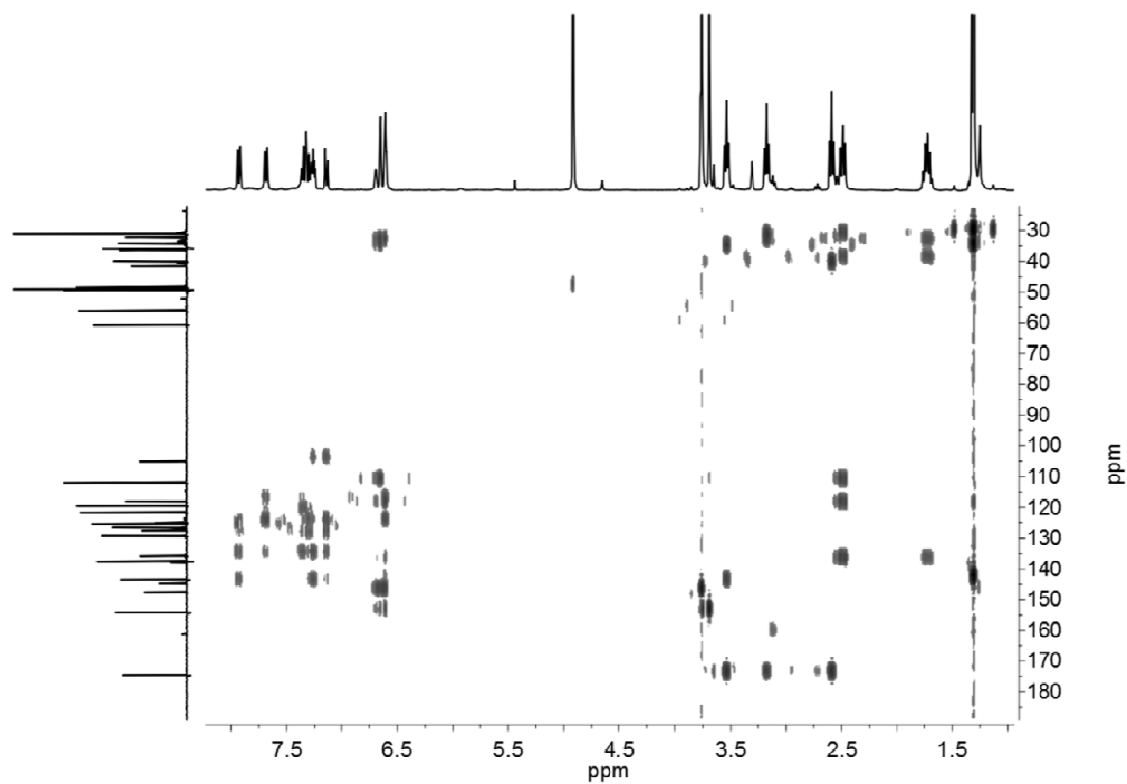
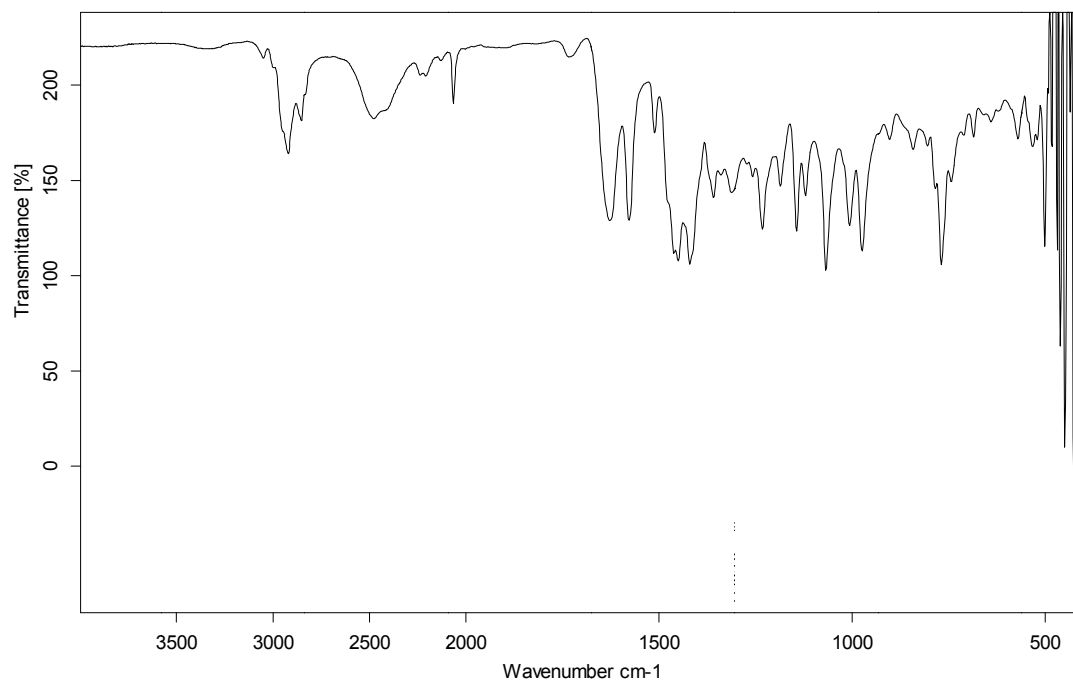
¹H NMR (MeOH-d₄, 360 MHz)¹³C NMR (MeOH-d₄, 90 MHz)



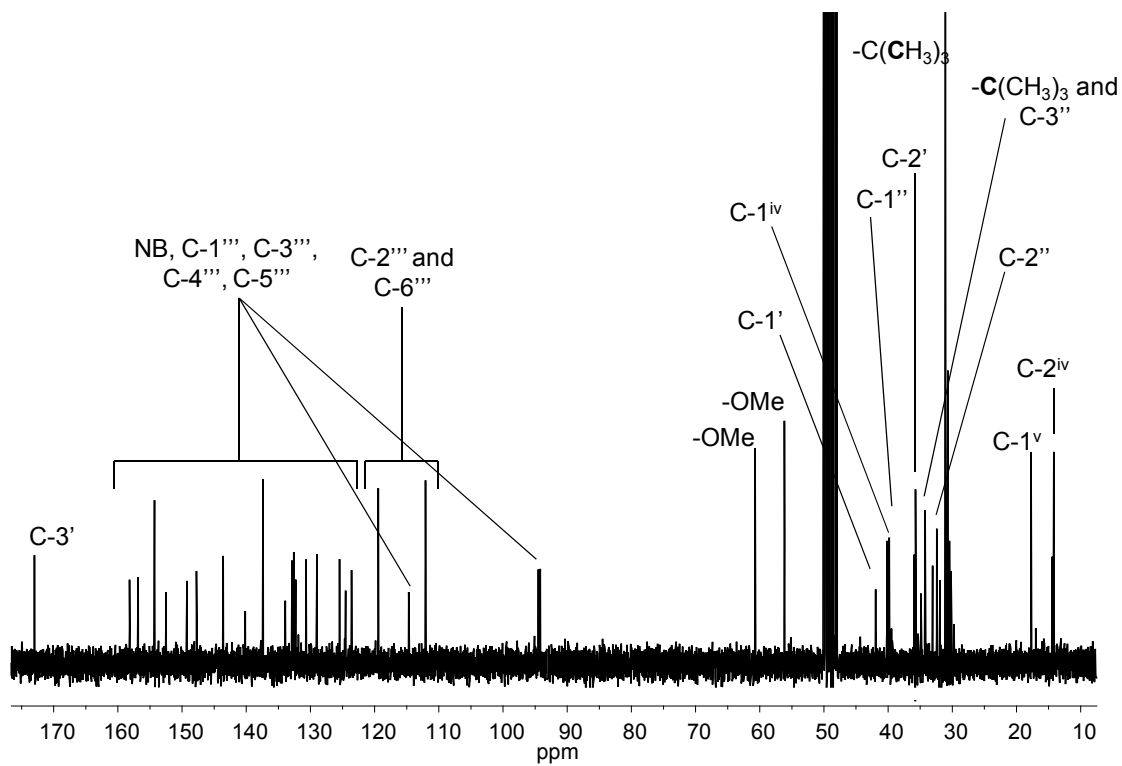
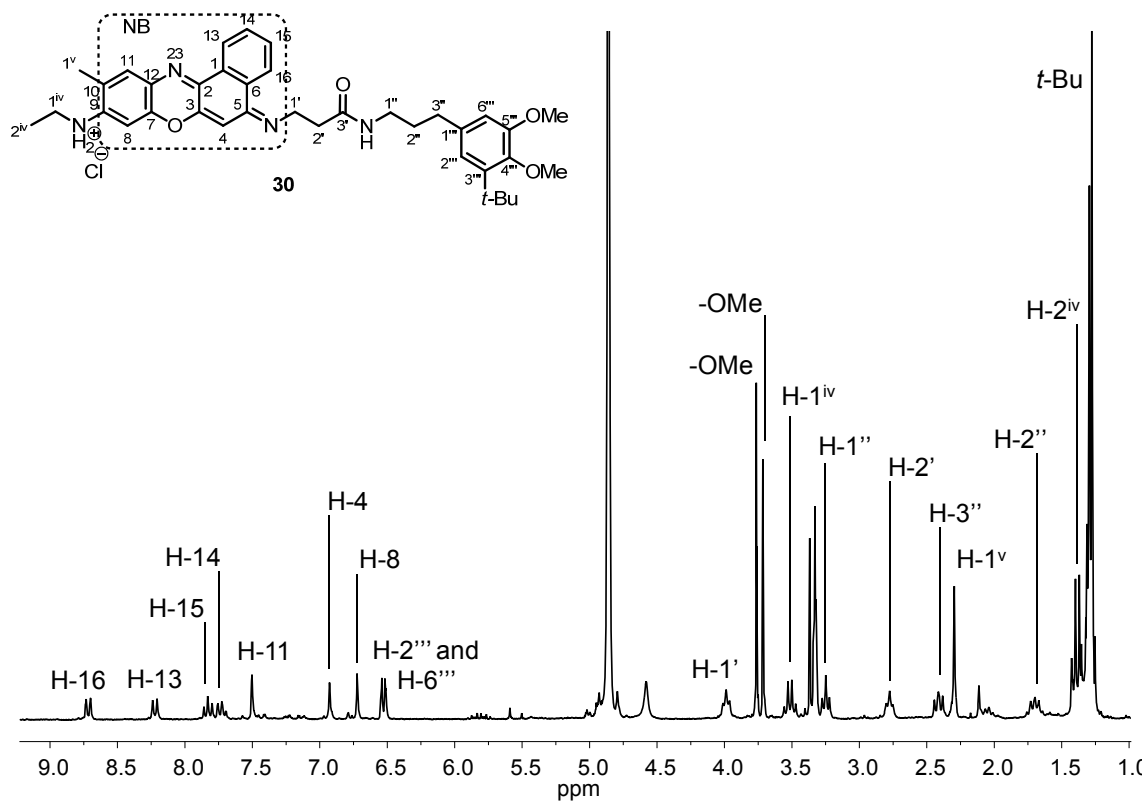
COSY (MeOH-d₄, 360 MHz)

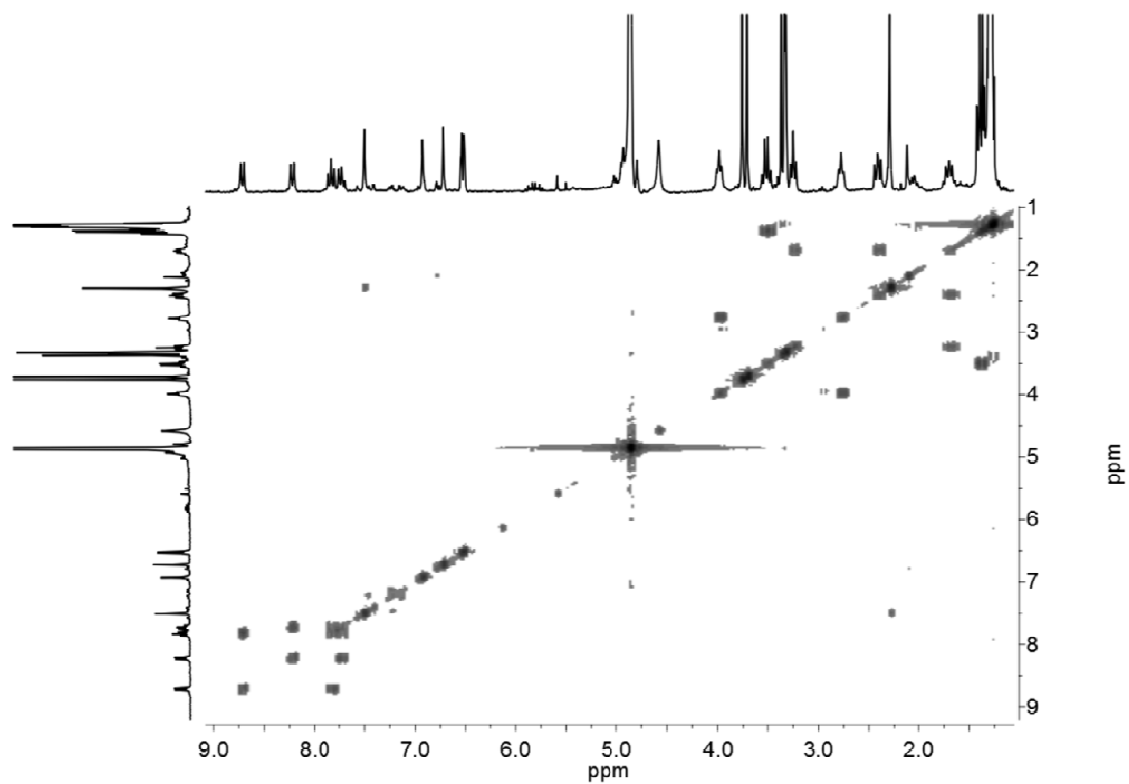
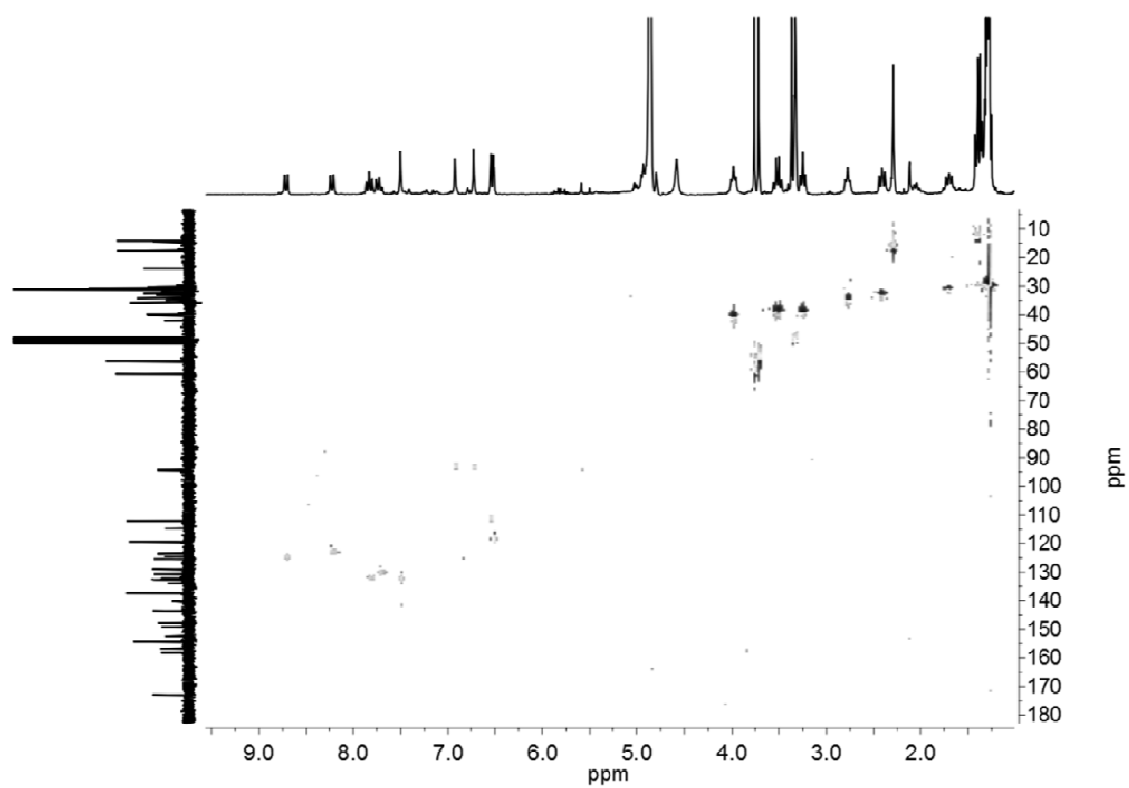


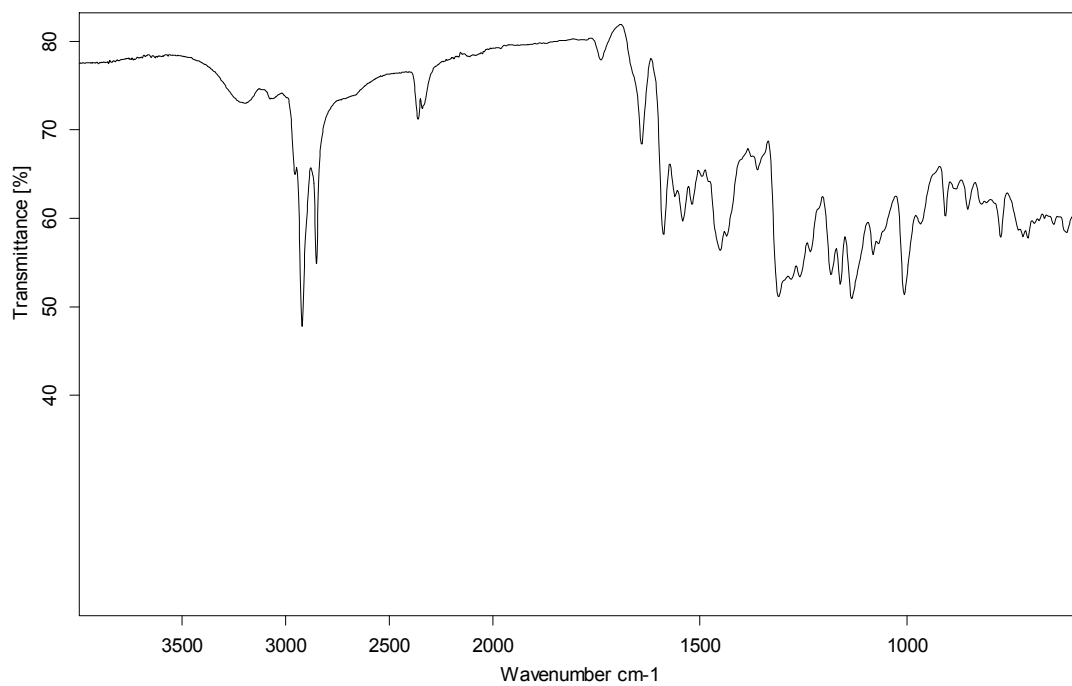
HSQC (MeOH-d₄, 90 MHz)

HMBC (MeOH-d₄, 90 MHz)

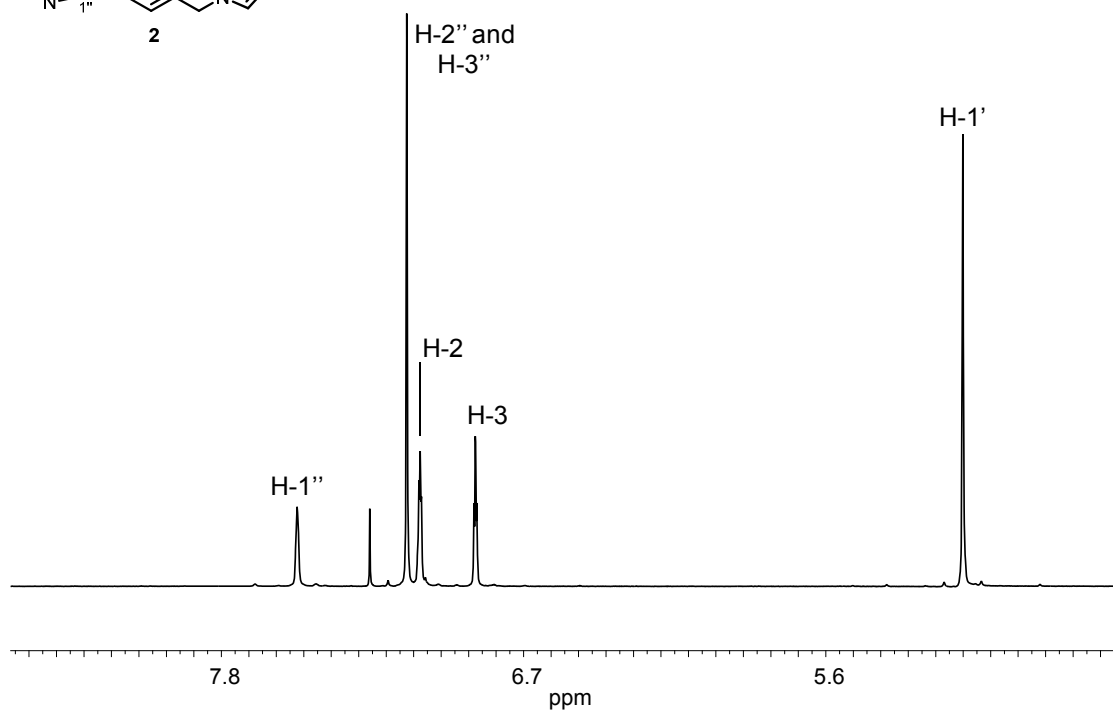
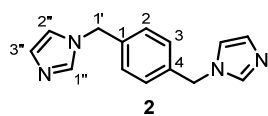
IR (ATR)

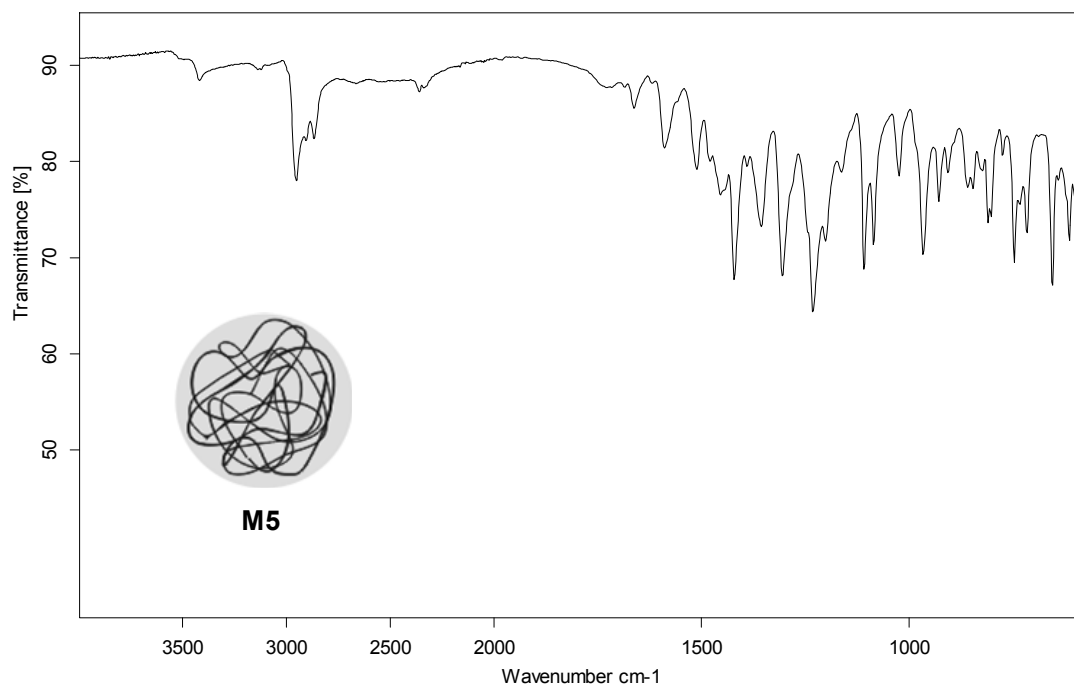


COSY (CDCl₃, 250 MHz)HSQC (CDCl₃, 63 MHz)

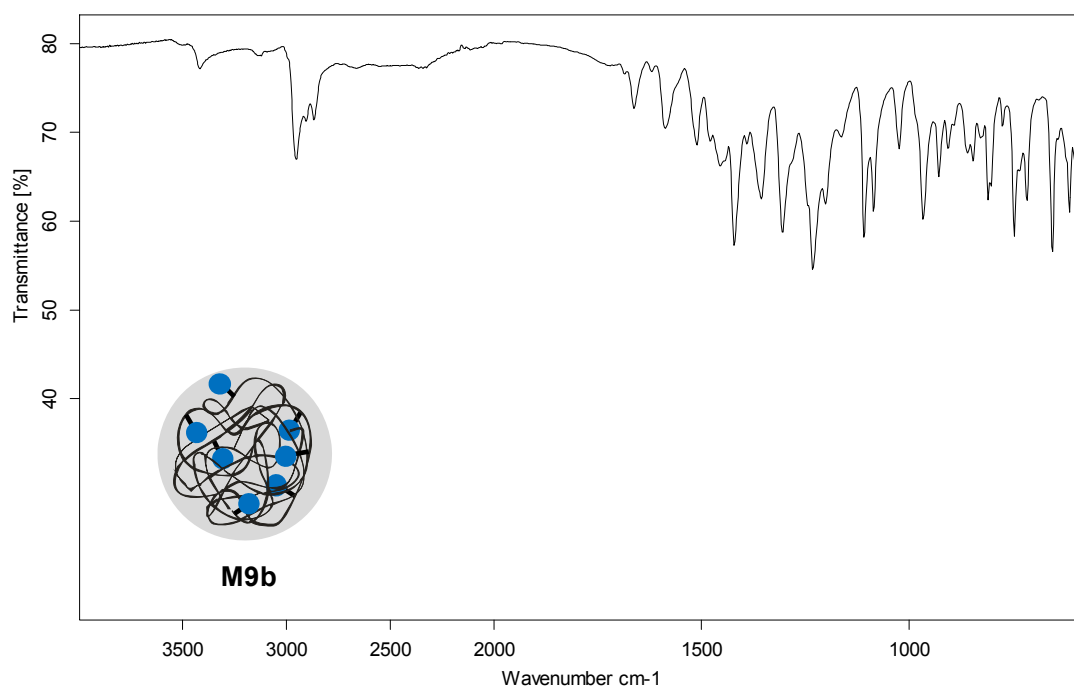


IR (ATR)

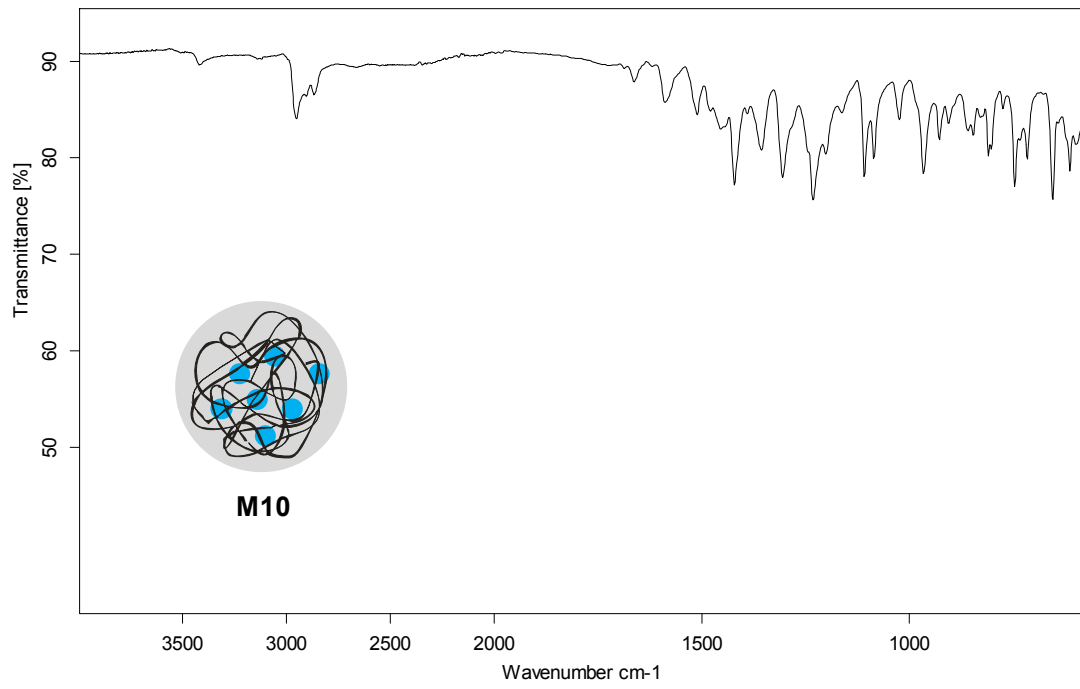
 ^1H NMR (CDCl_3 , 250 MHz)



IR (ATR)

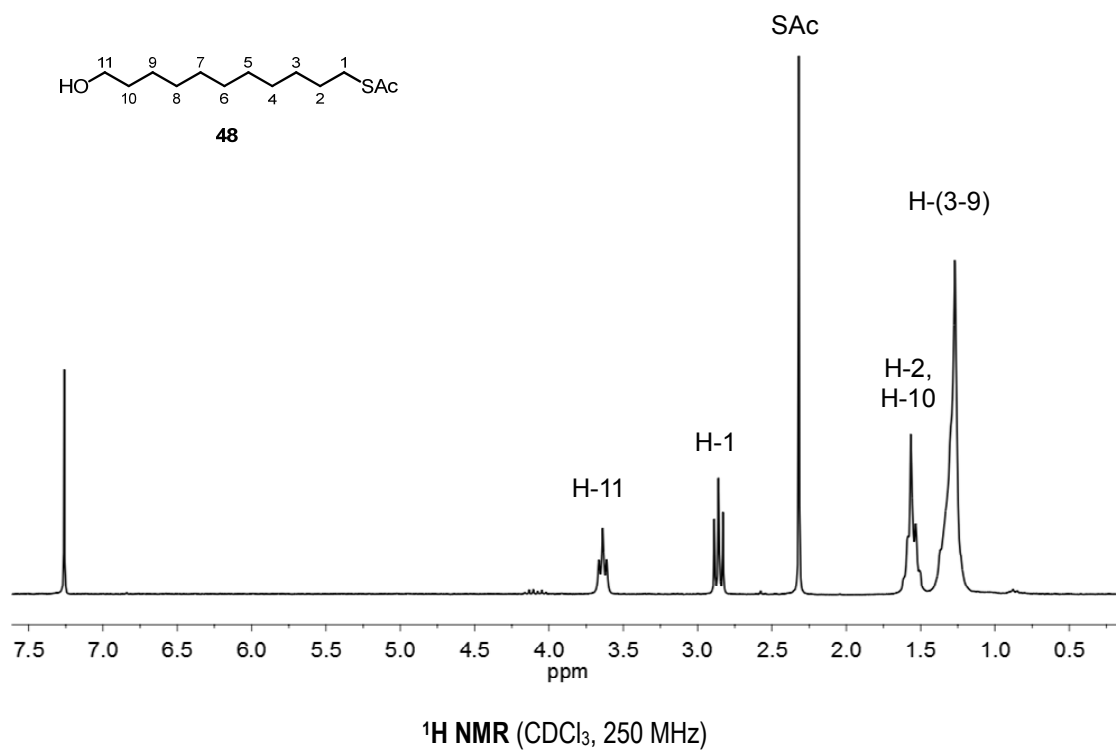
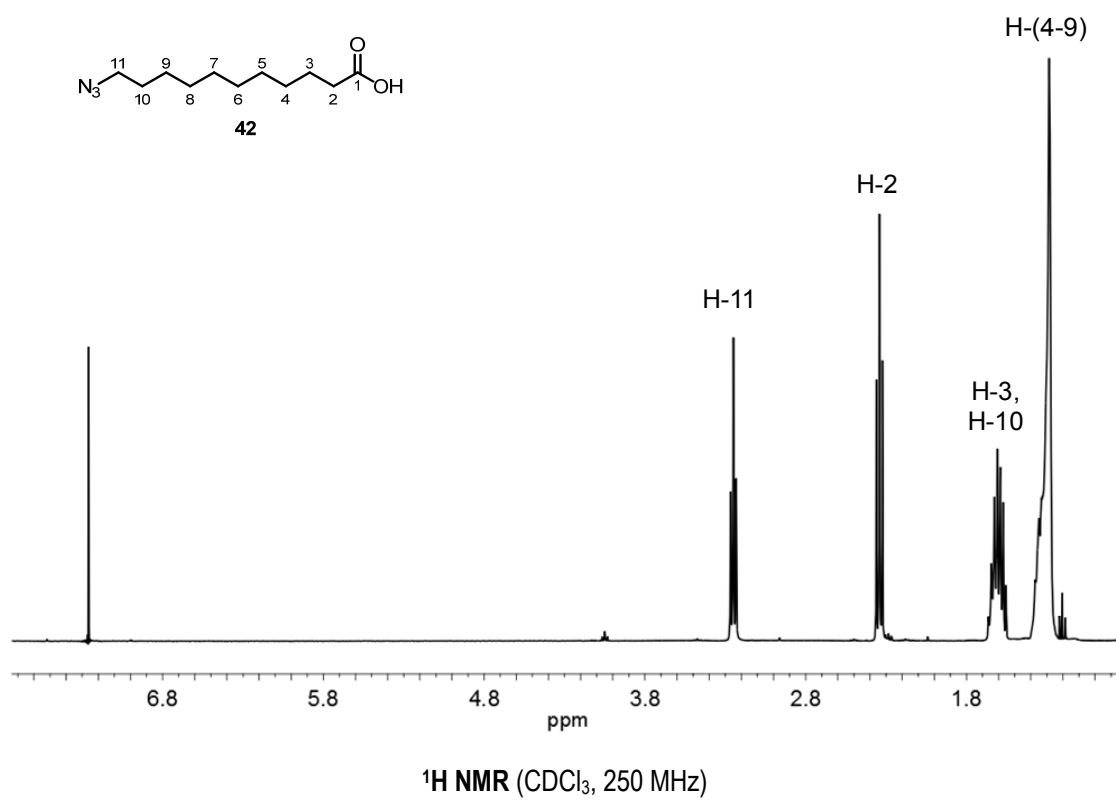


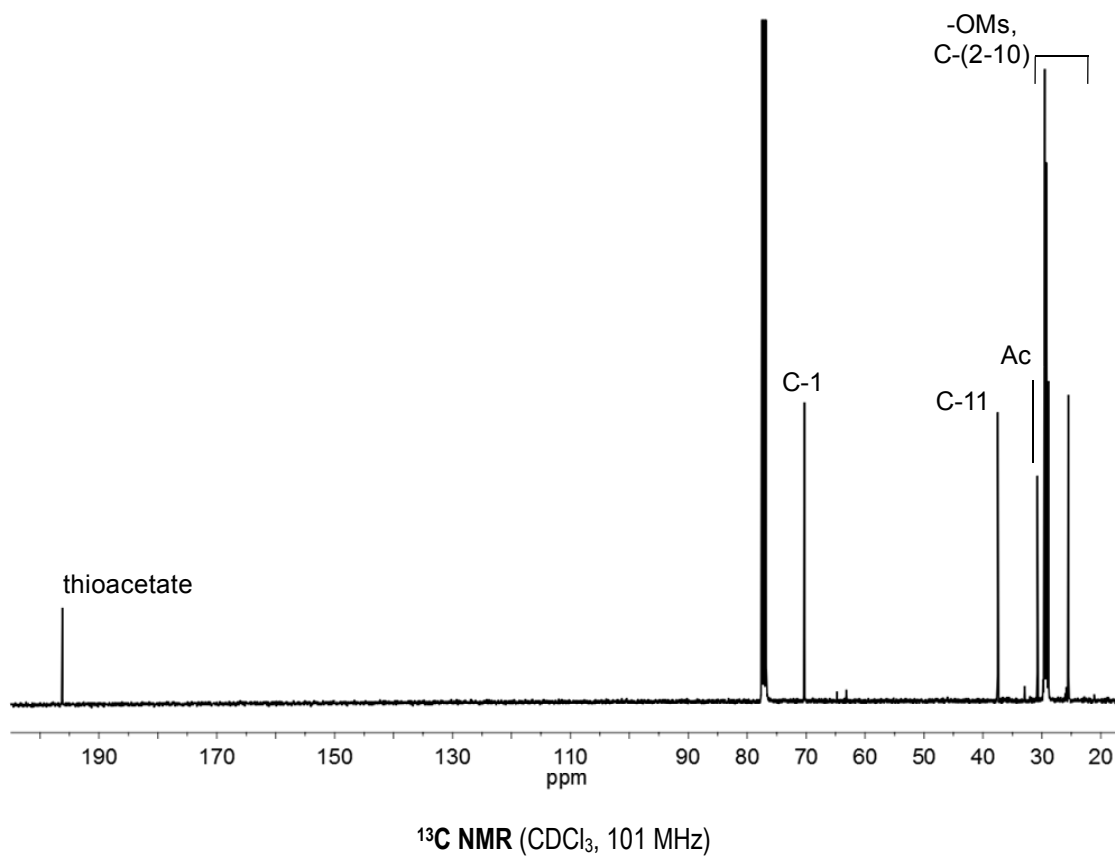
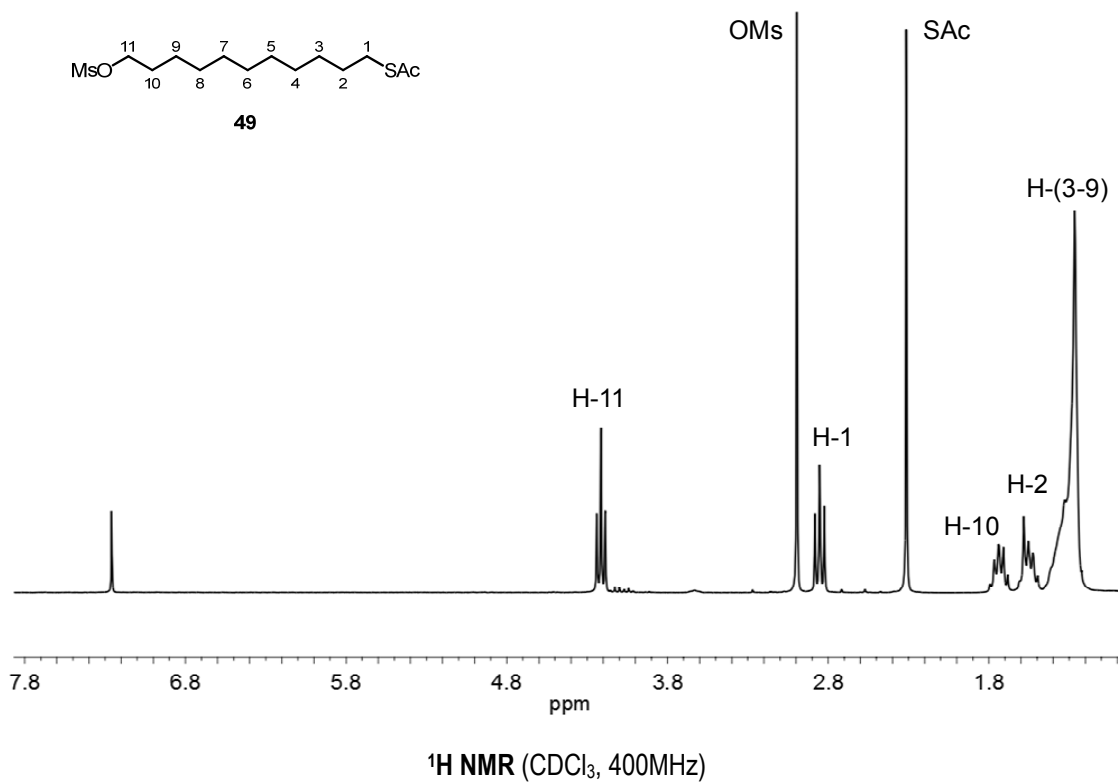
IR (ATR)

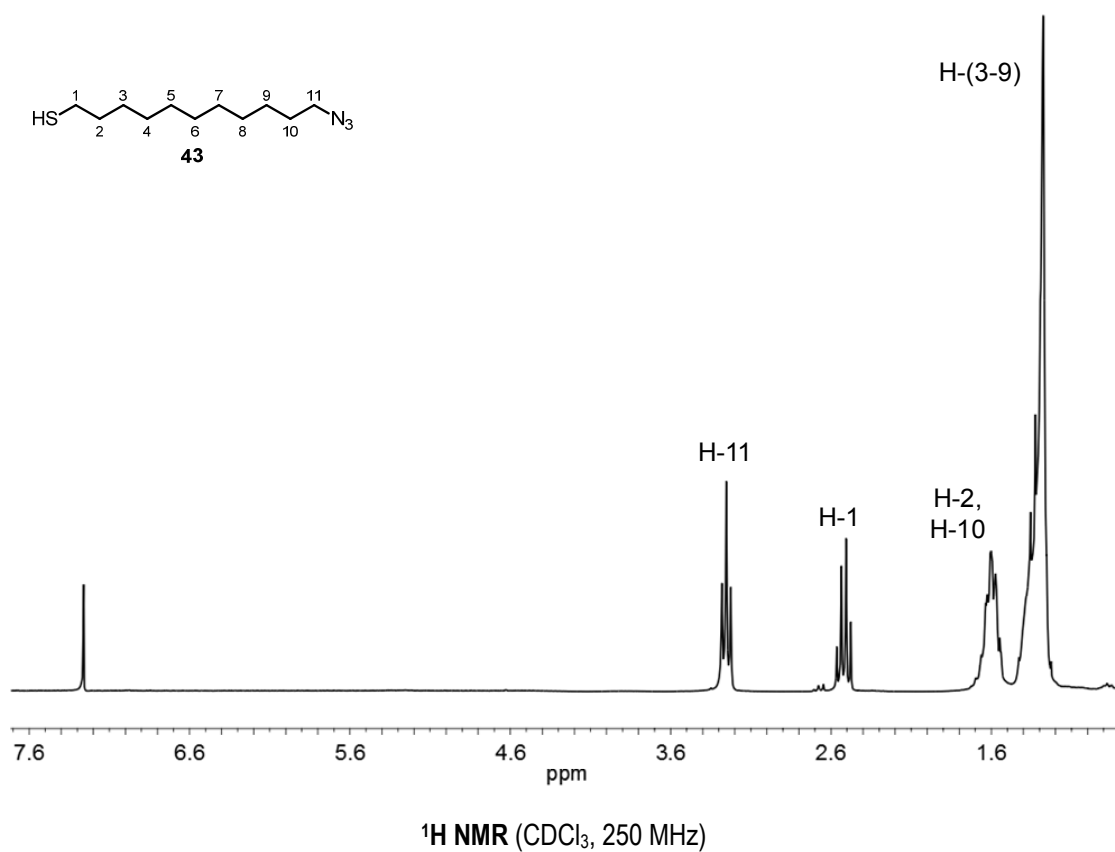
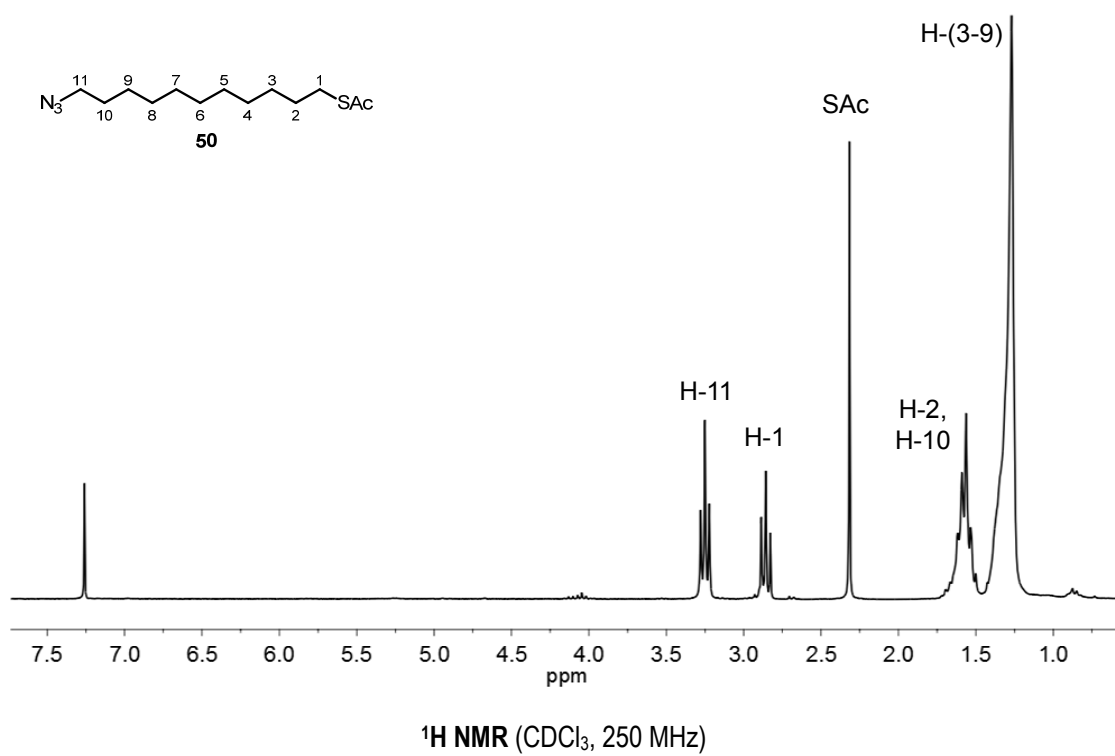


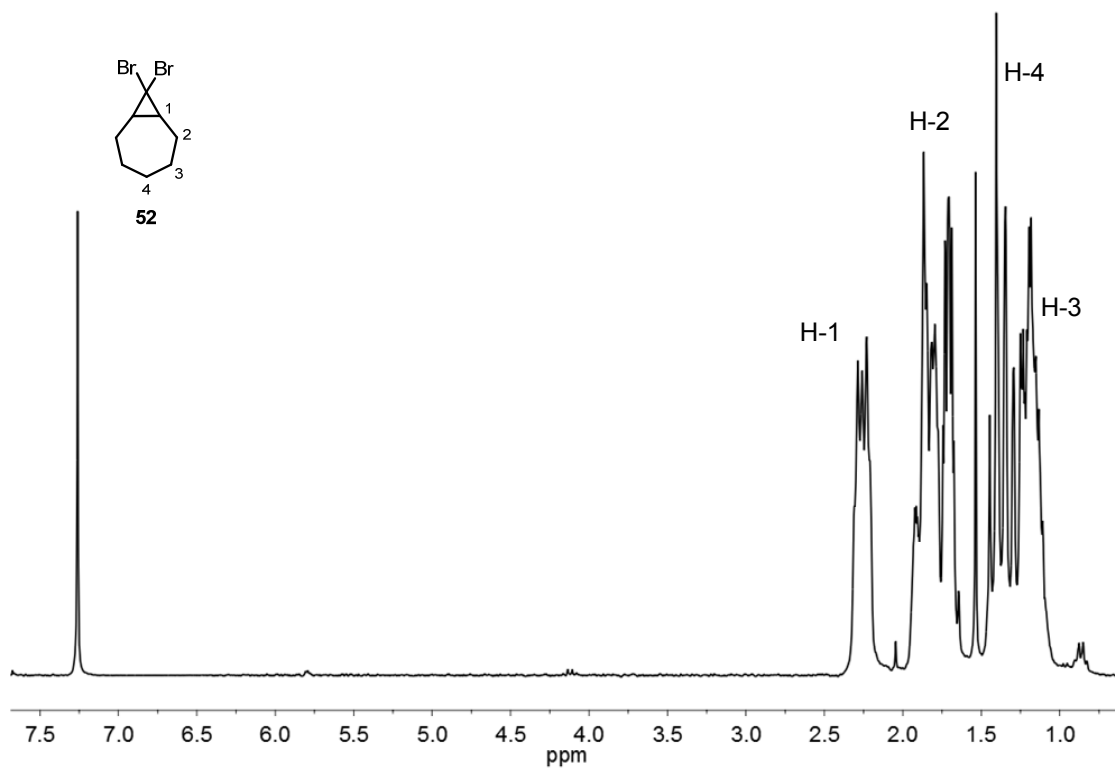
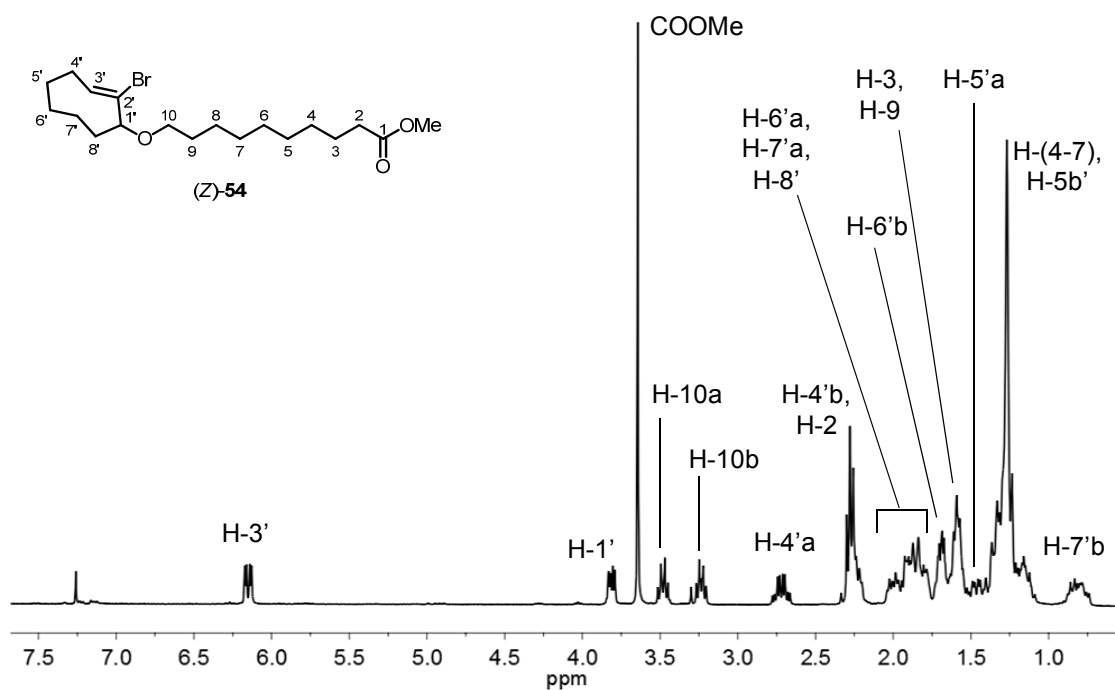
IR (ATR)

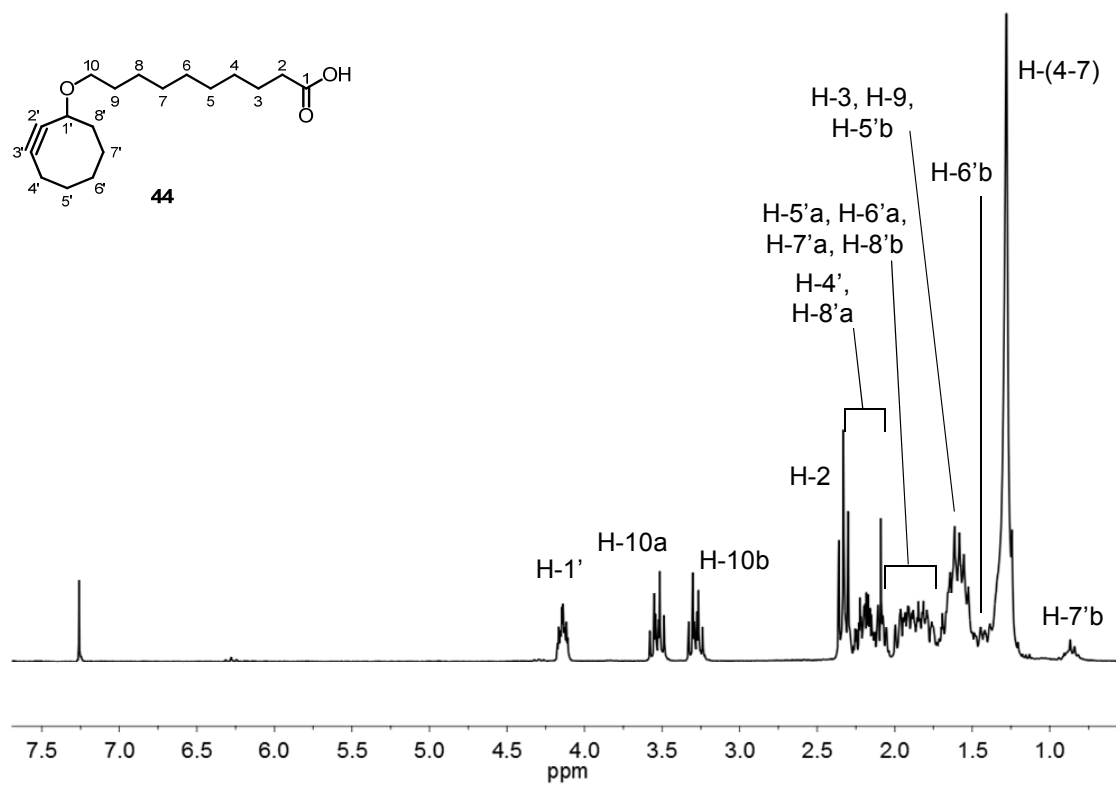
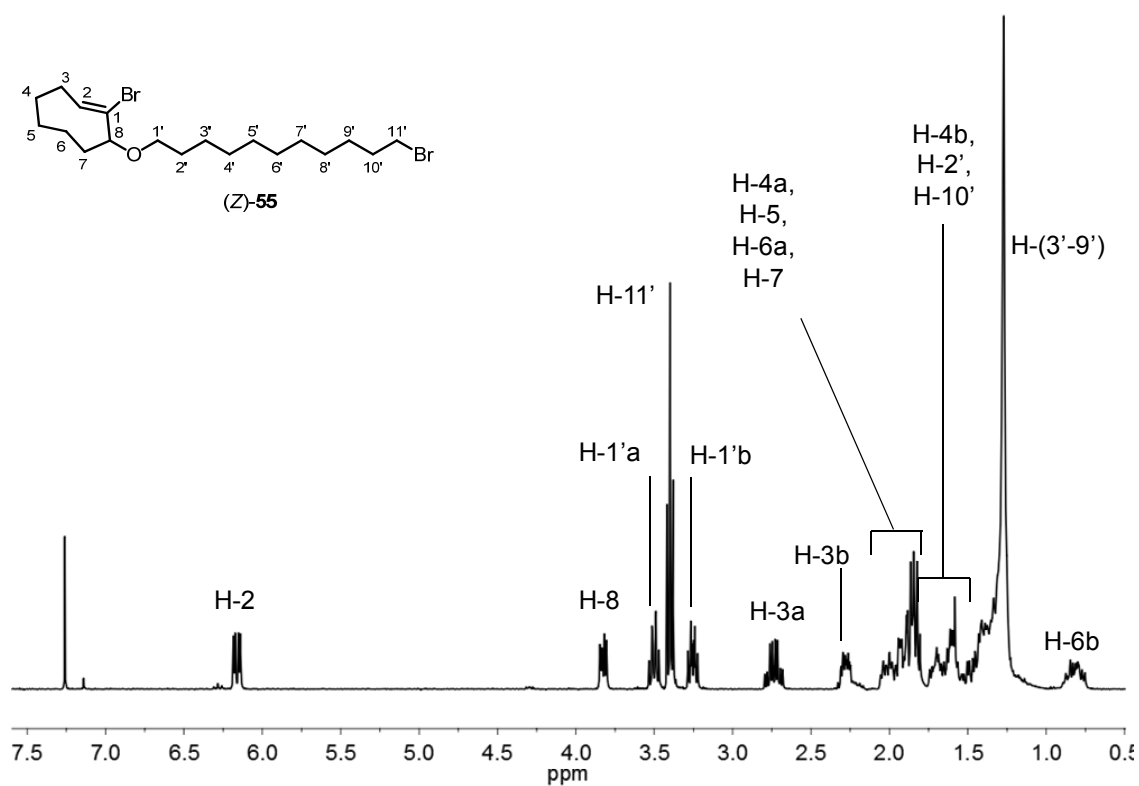
A.II. New functional ligands for quantum dot assembly

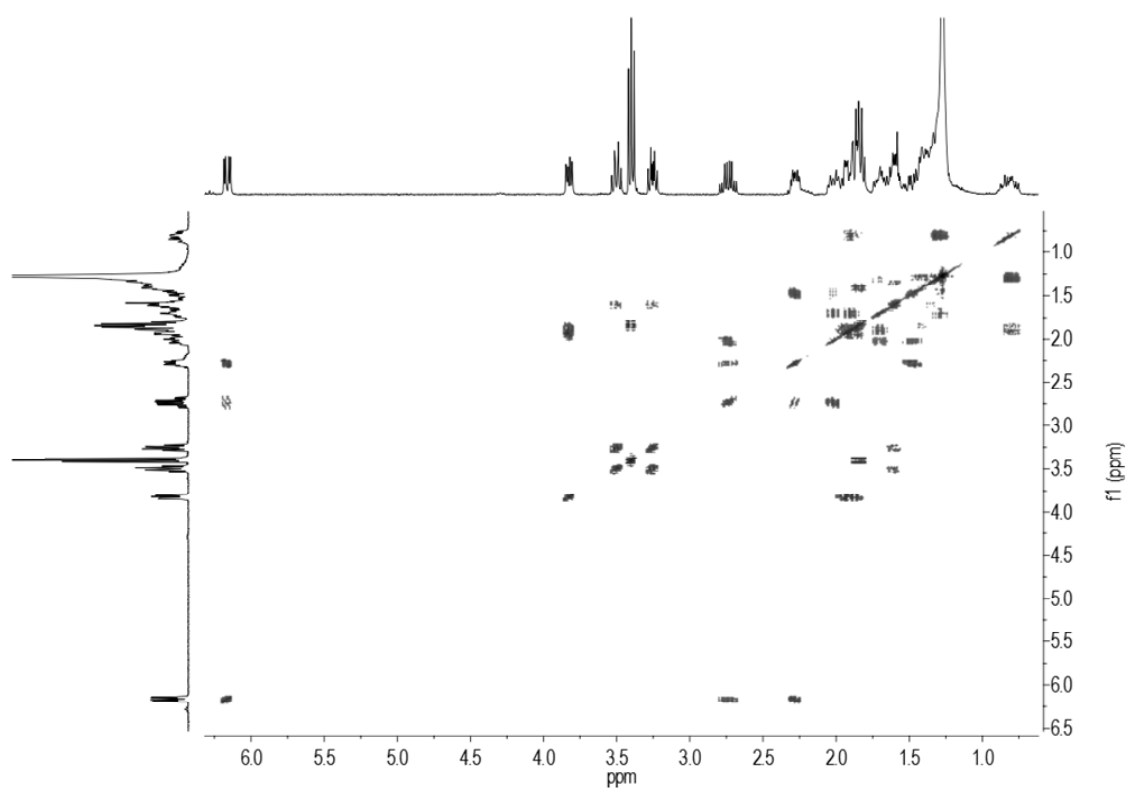
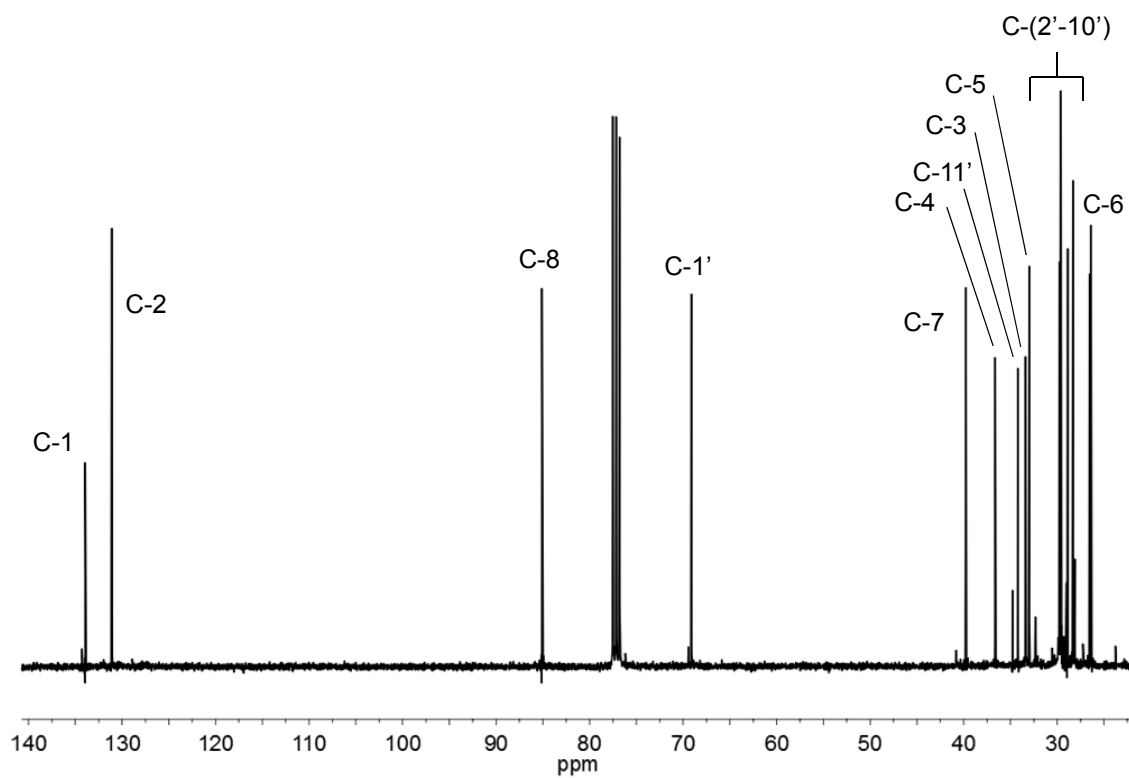


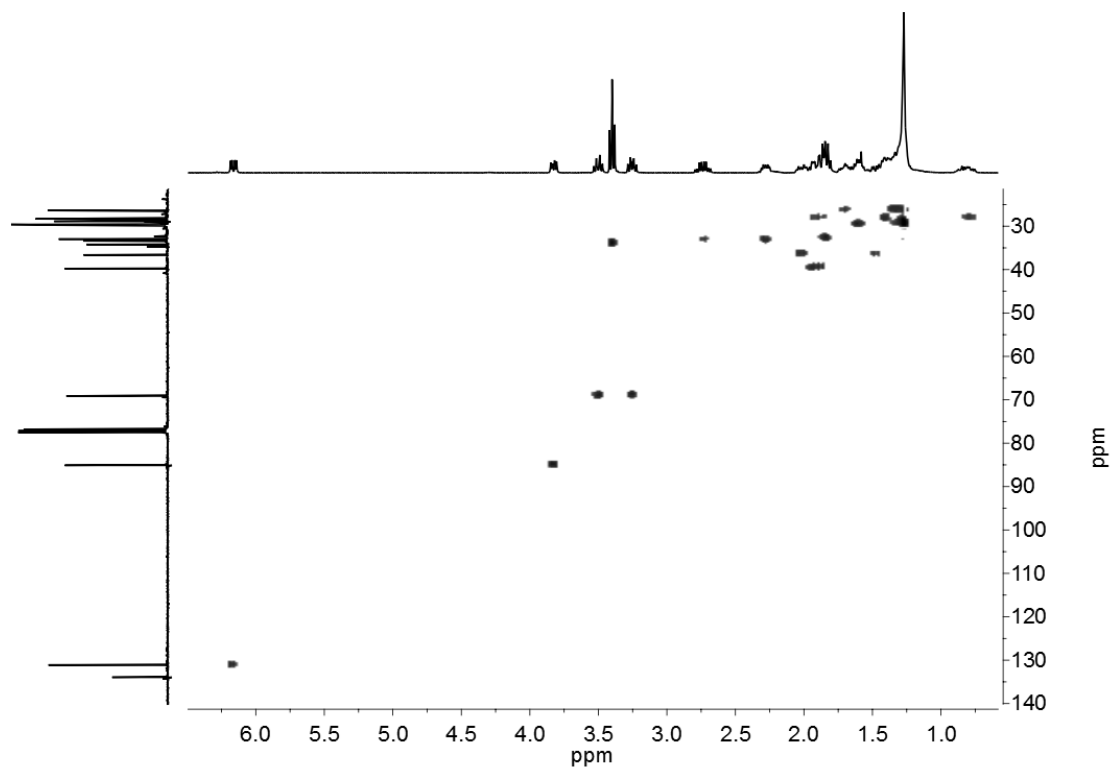
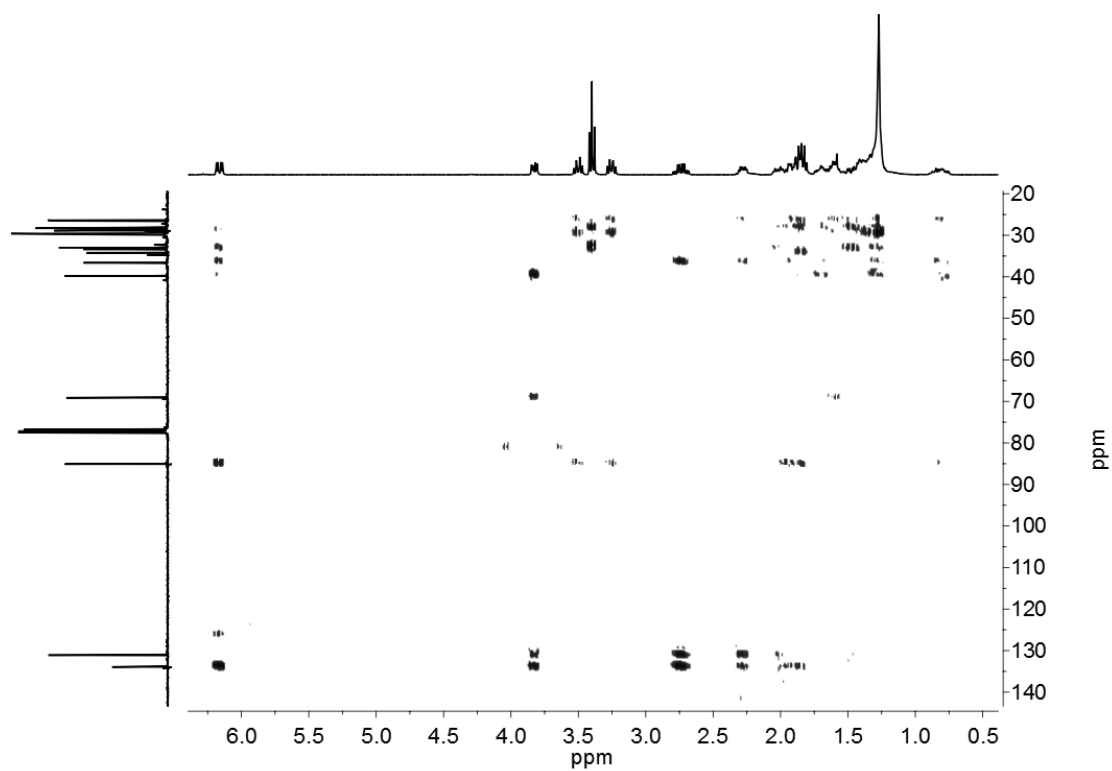


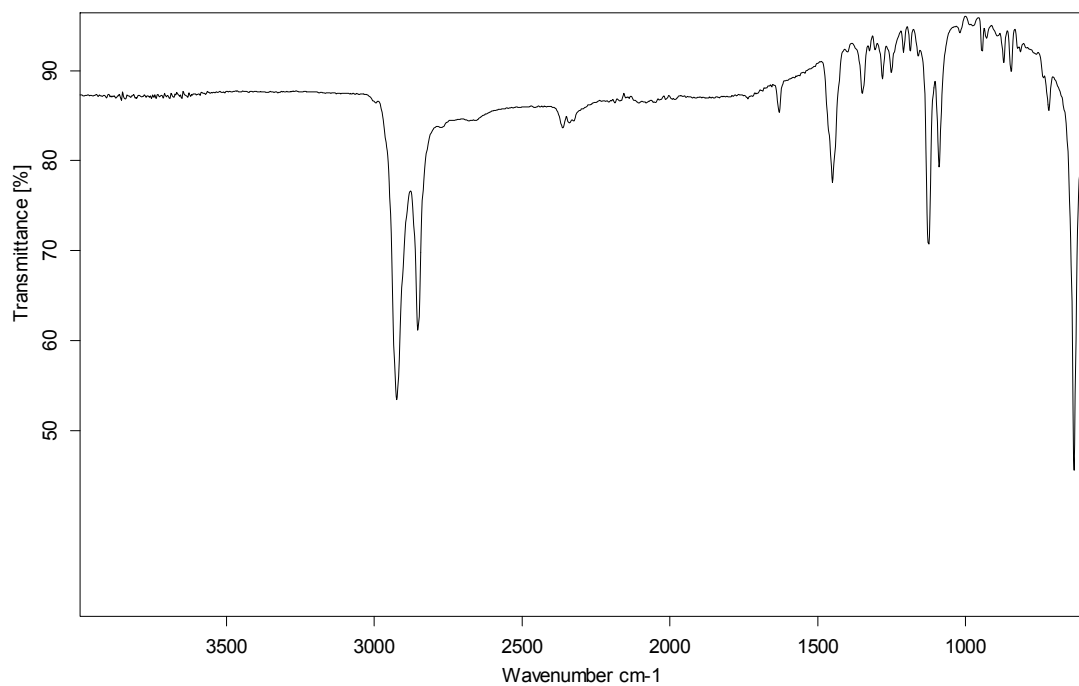


 $^1\text{H NMR}$ (CDCl₃, 250 MHz) $^1\text{H NMR}$ (CDCl₃, 360 MHz)

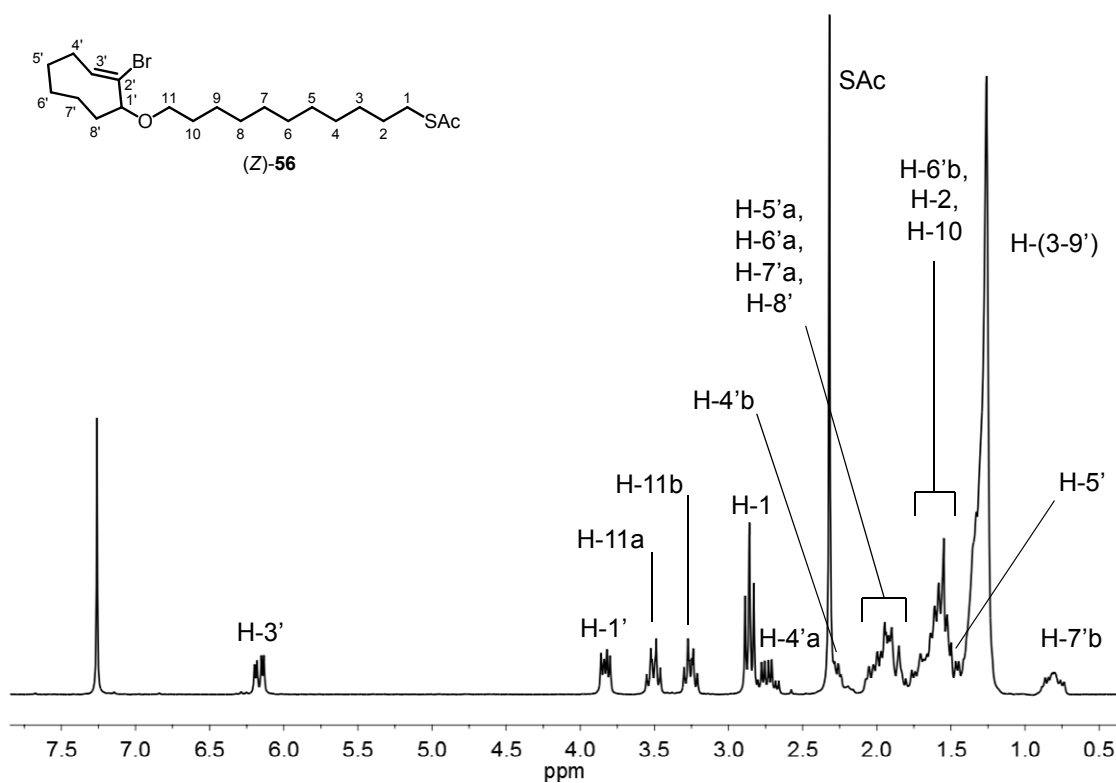
 $^1\text{H NMR}$ (CDCl₃, 400 MHz) $^1\text{H NMR}$ (CDCl₃, 360 MHz)

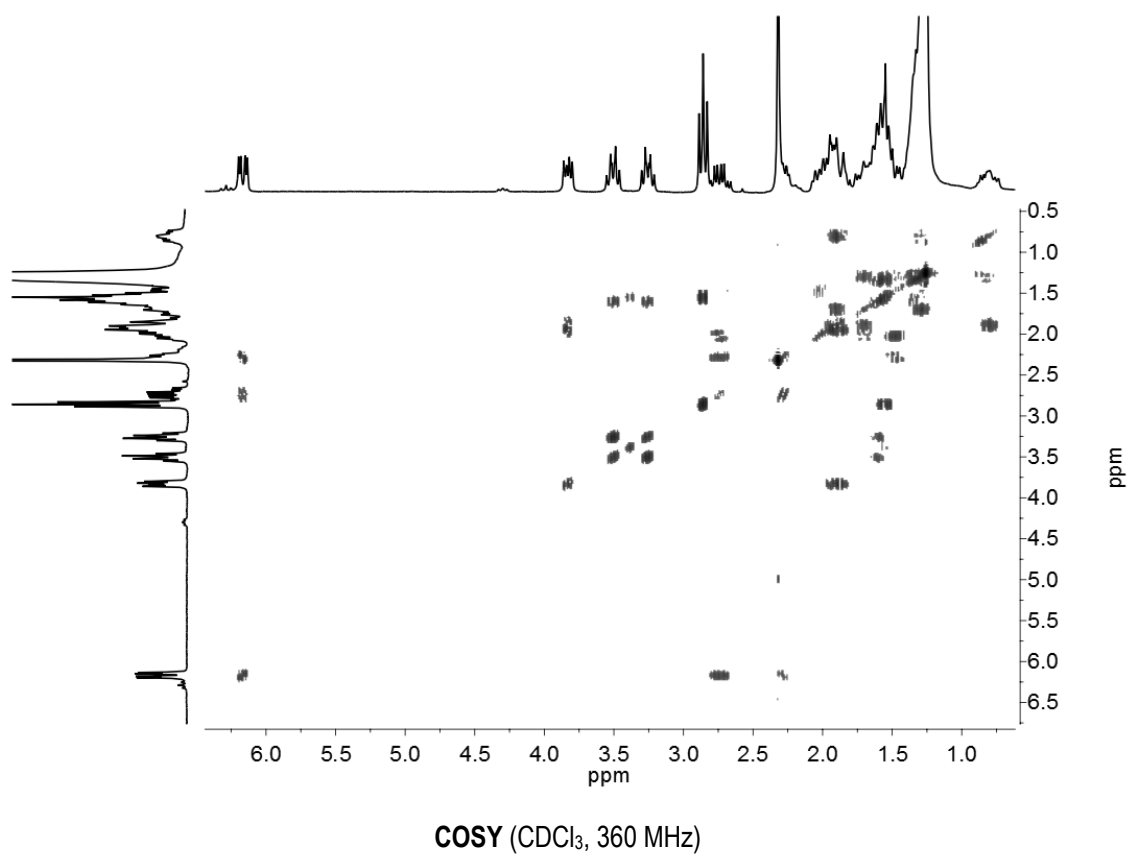
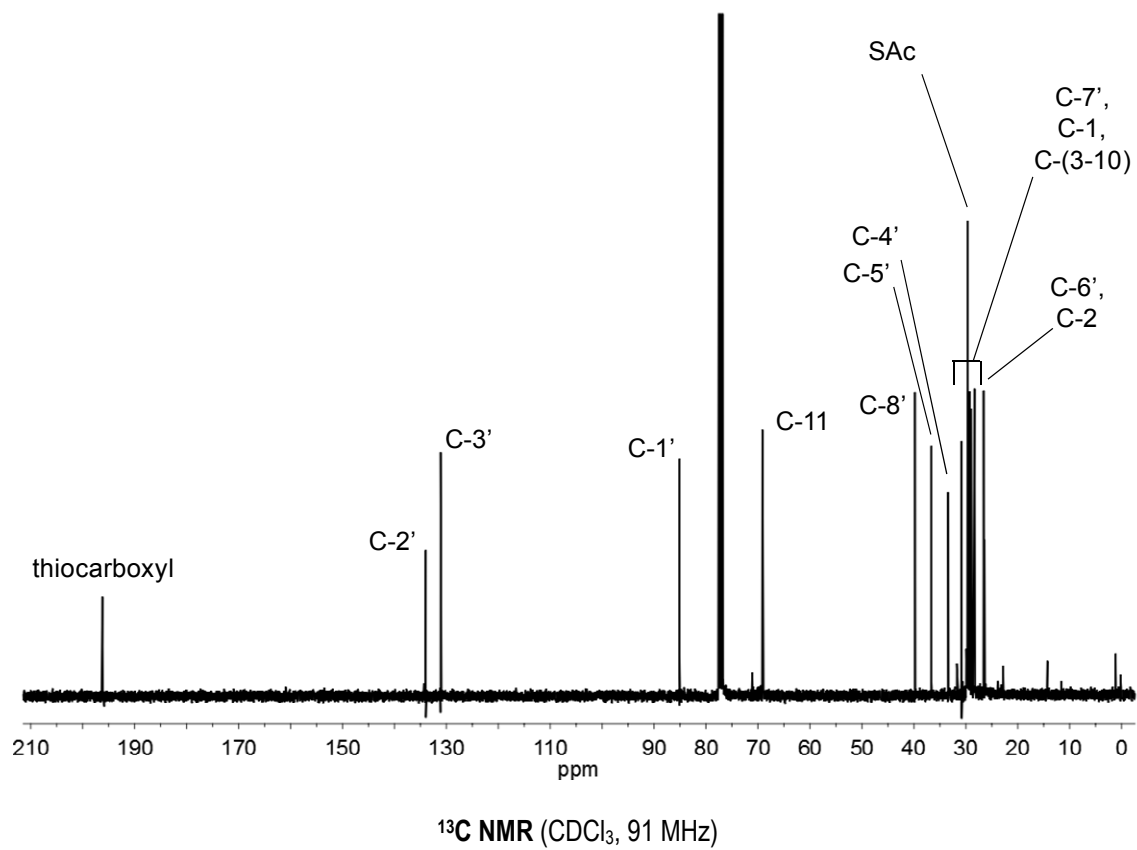


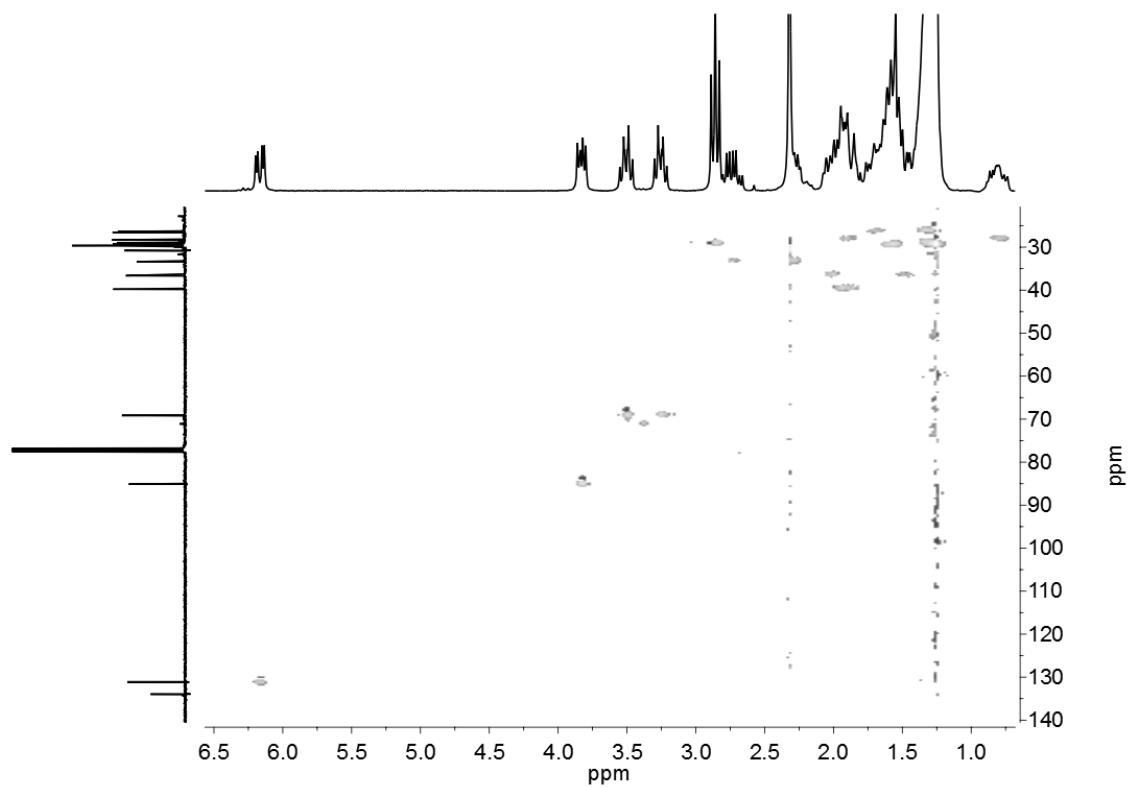
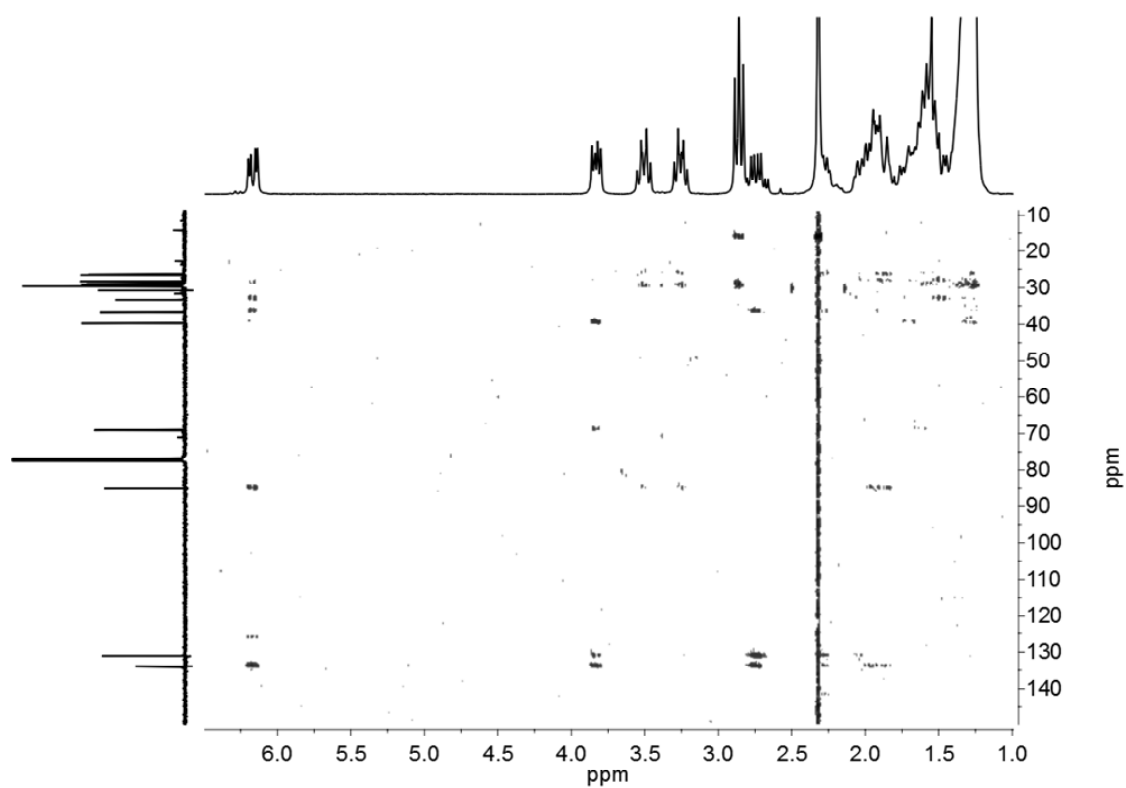
HSQC (CDCl₃, 91 MHz)HMBC (CDCl₃, 91 MHz)

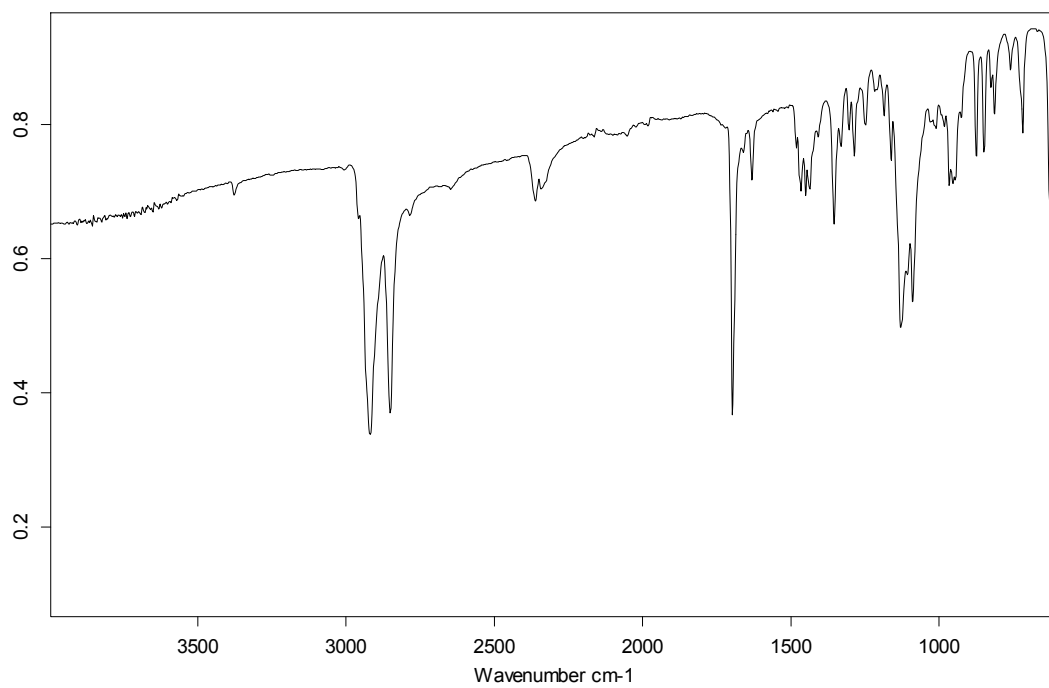


IR (ATR)

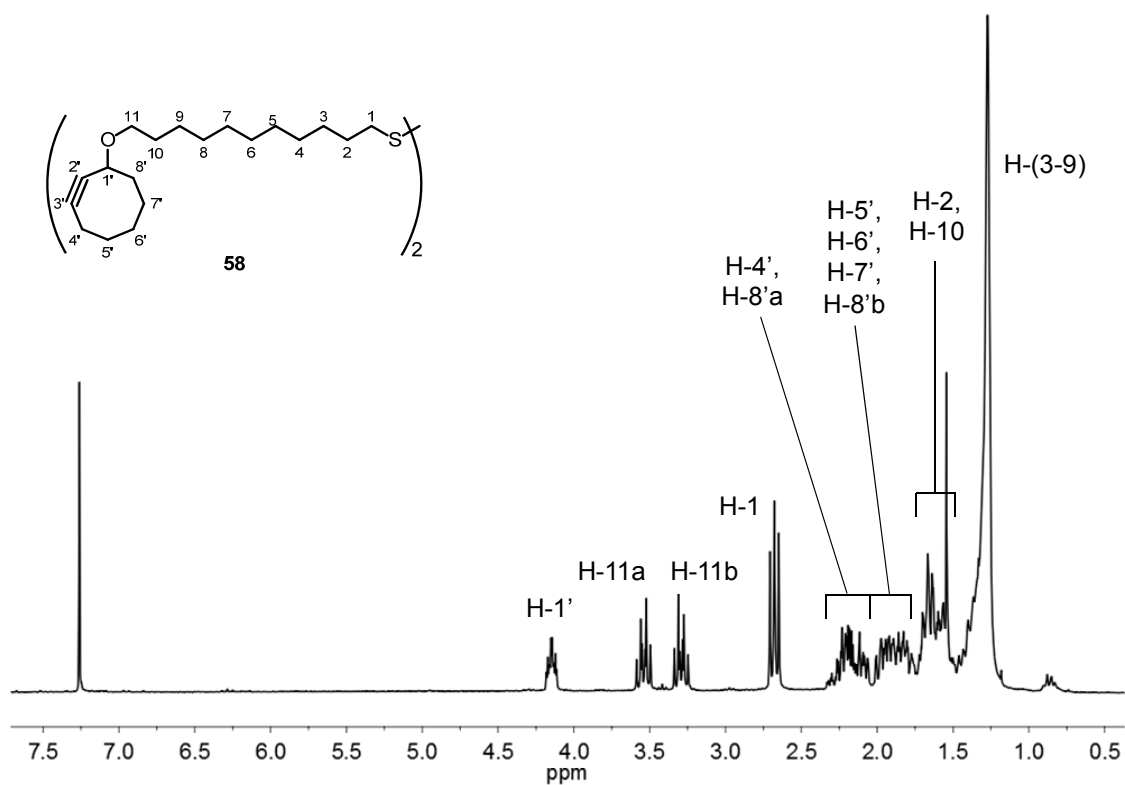
 $^1\text{H NMR}$ (CDCl_3 , 360 MHz)

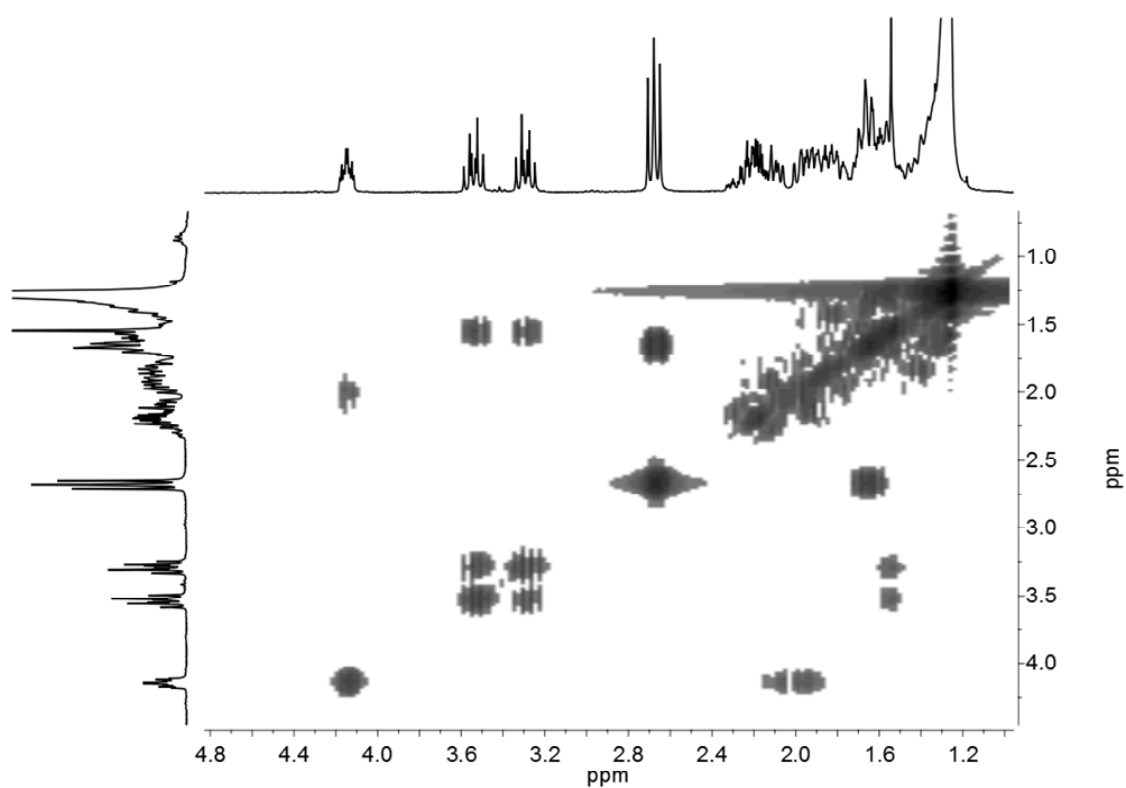
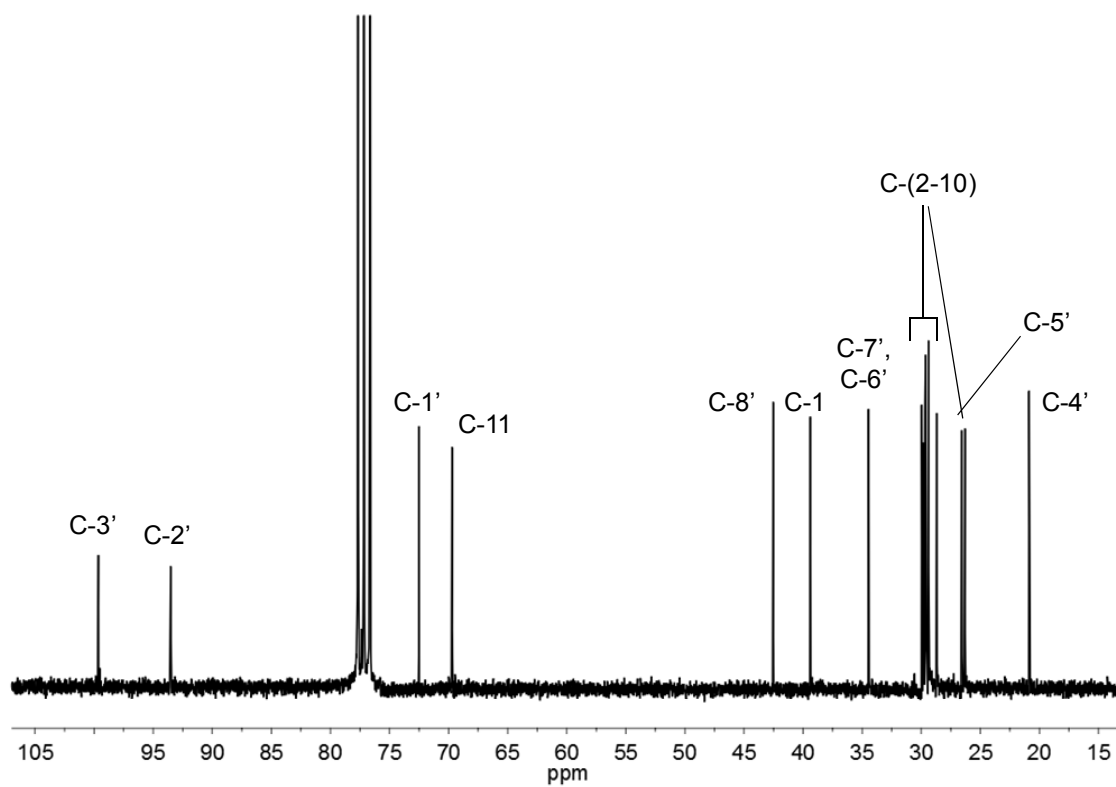


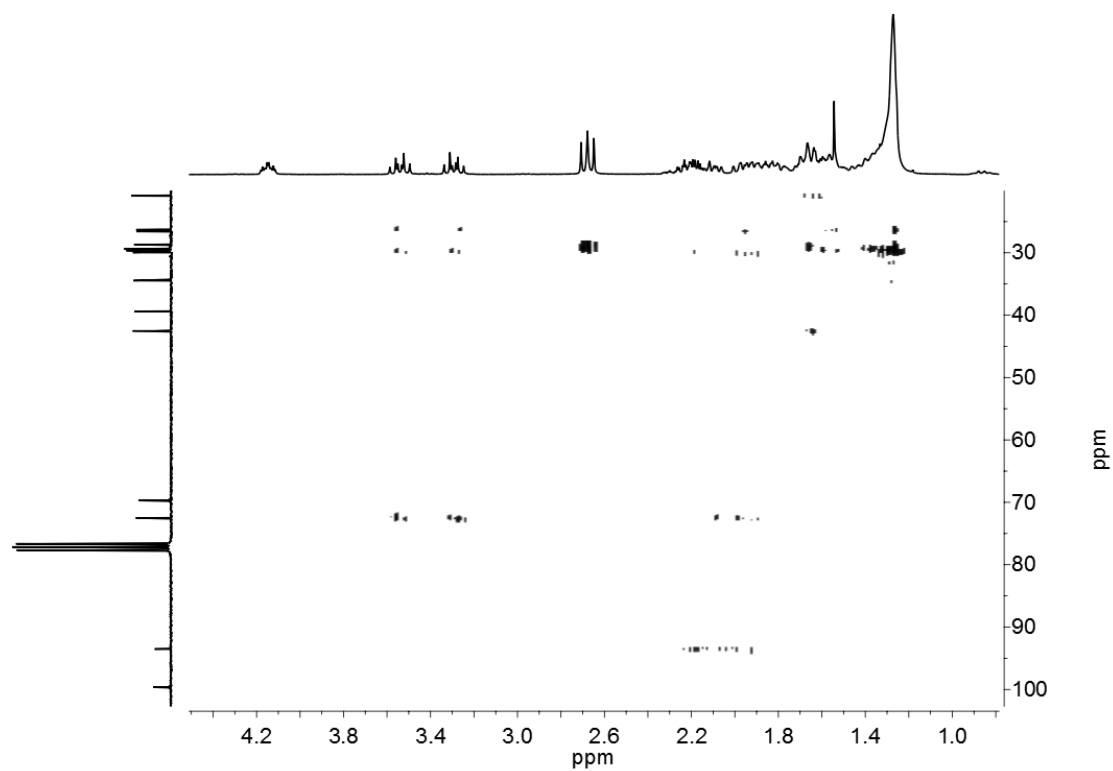
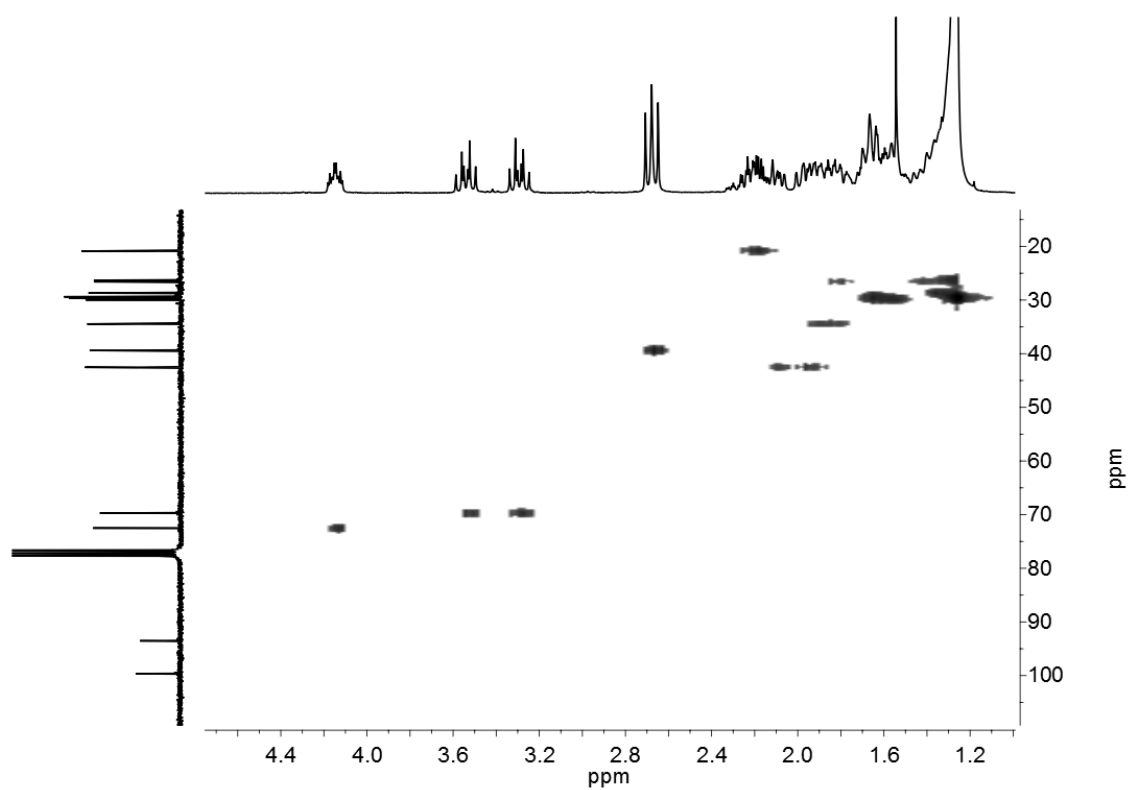
HSQC (CDCl_3 , 91 MHz)HMBC (CDCl_3 , 91 MHz)

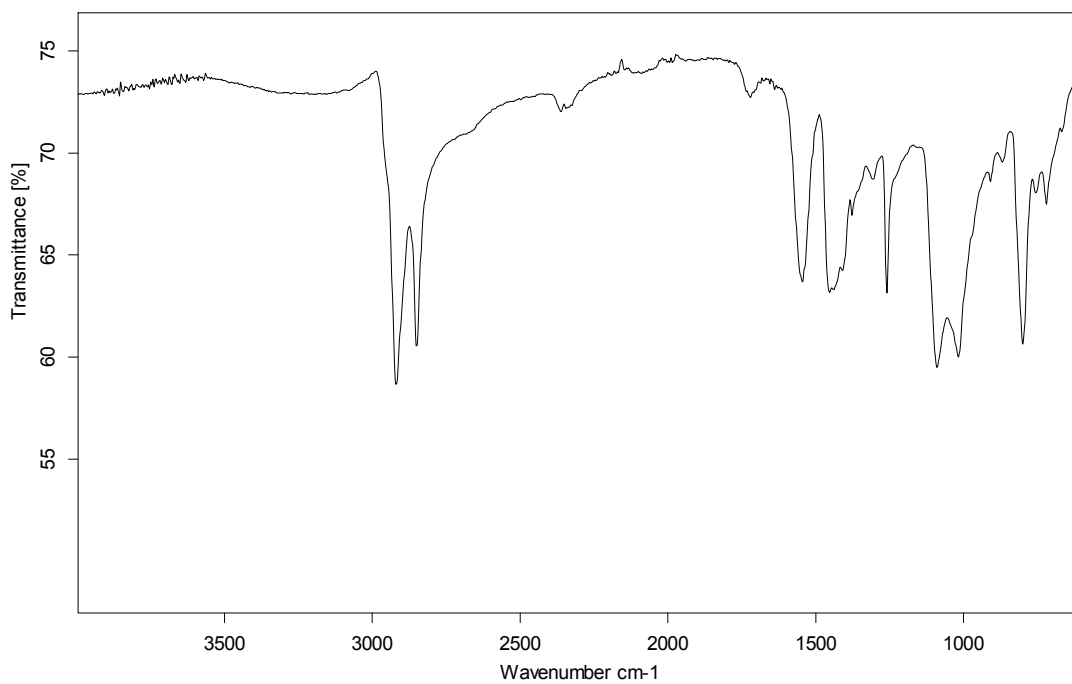


IR (ATR)

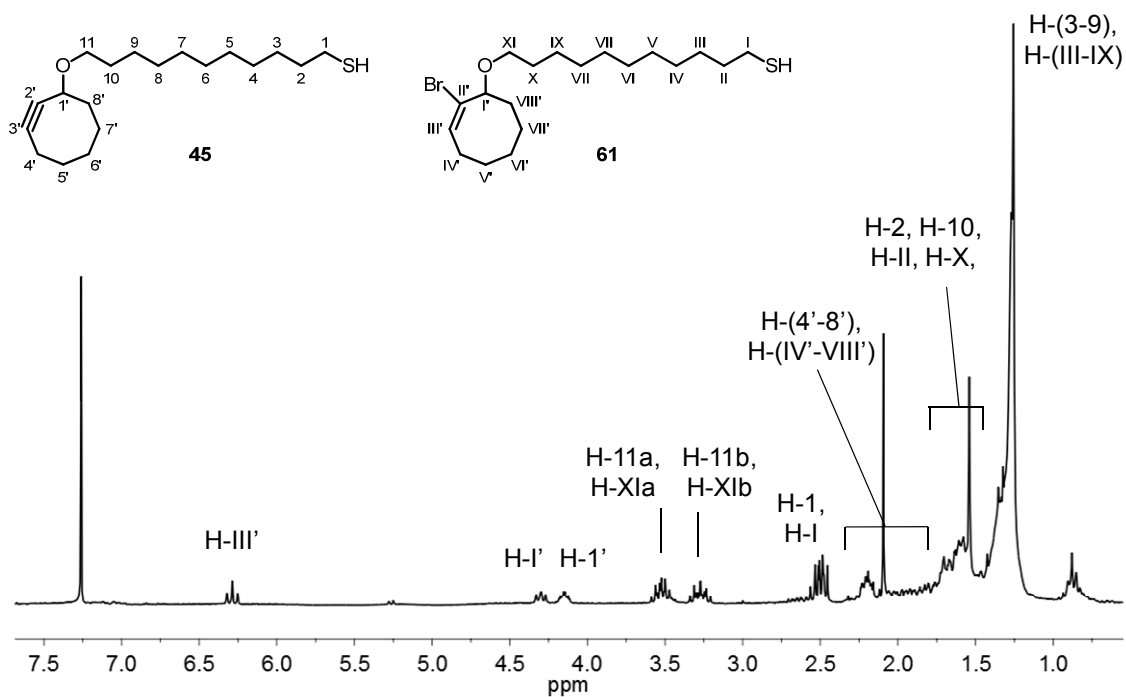
 $^1\text{H NMR}$ (CDCl_3 , 250 MHz)

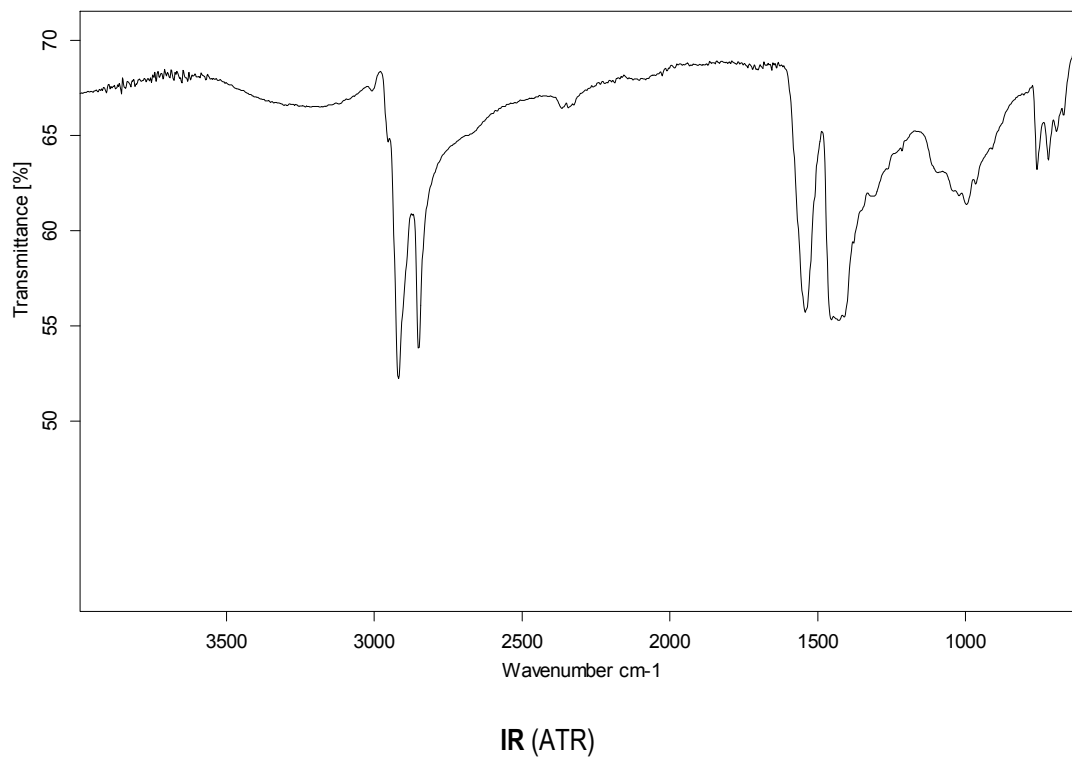
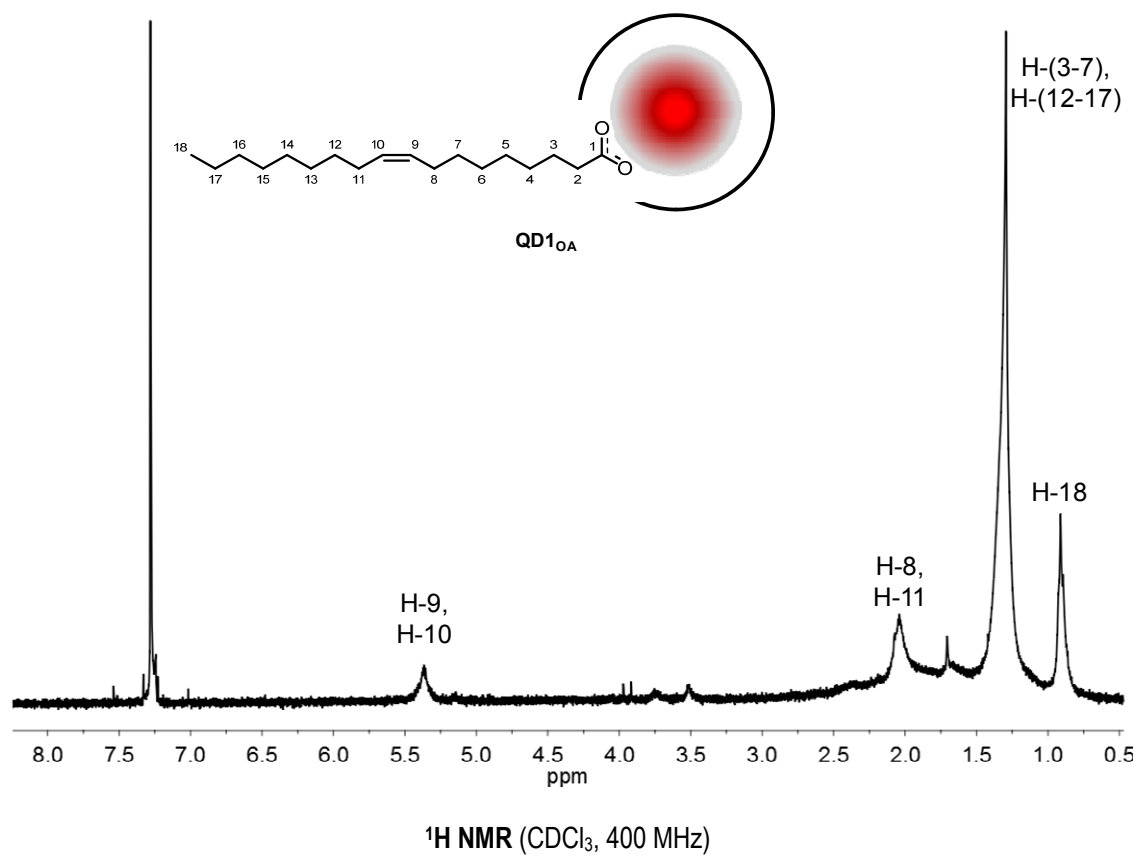


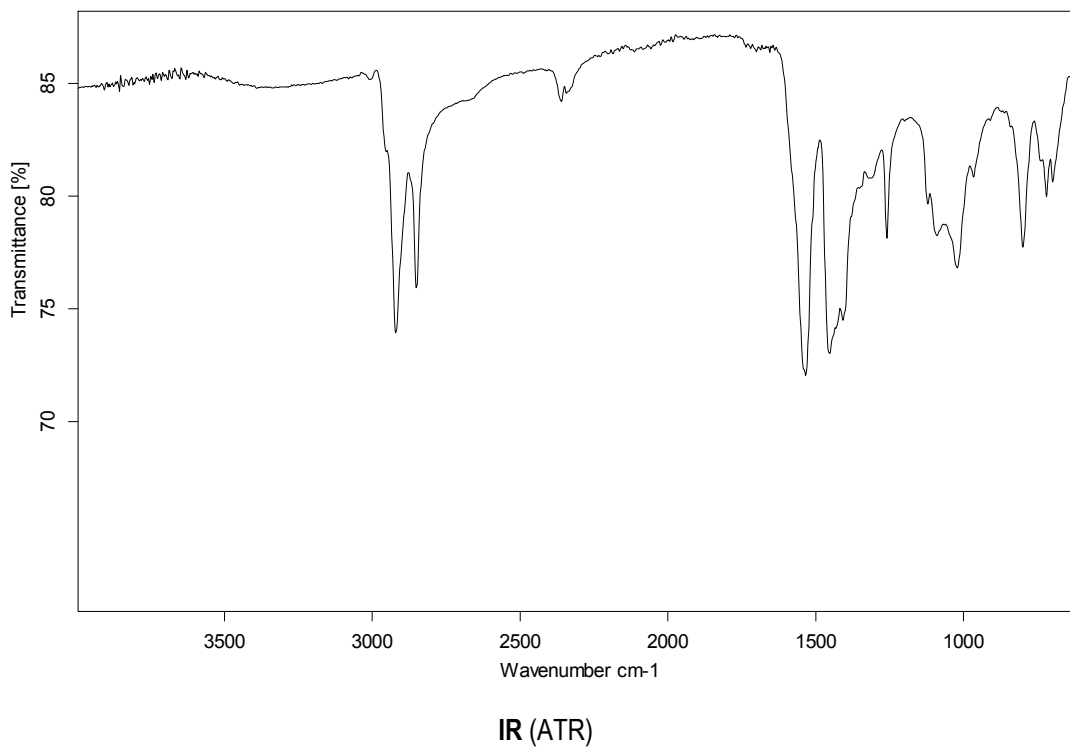
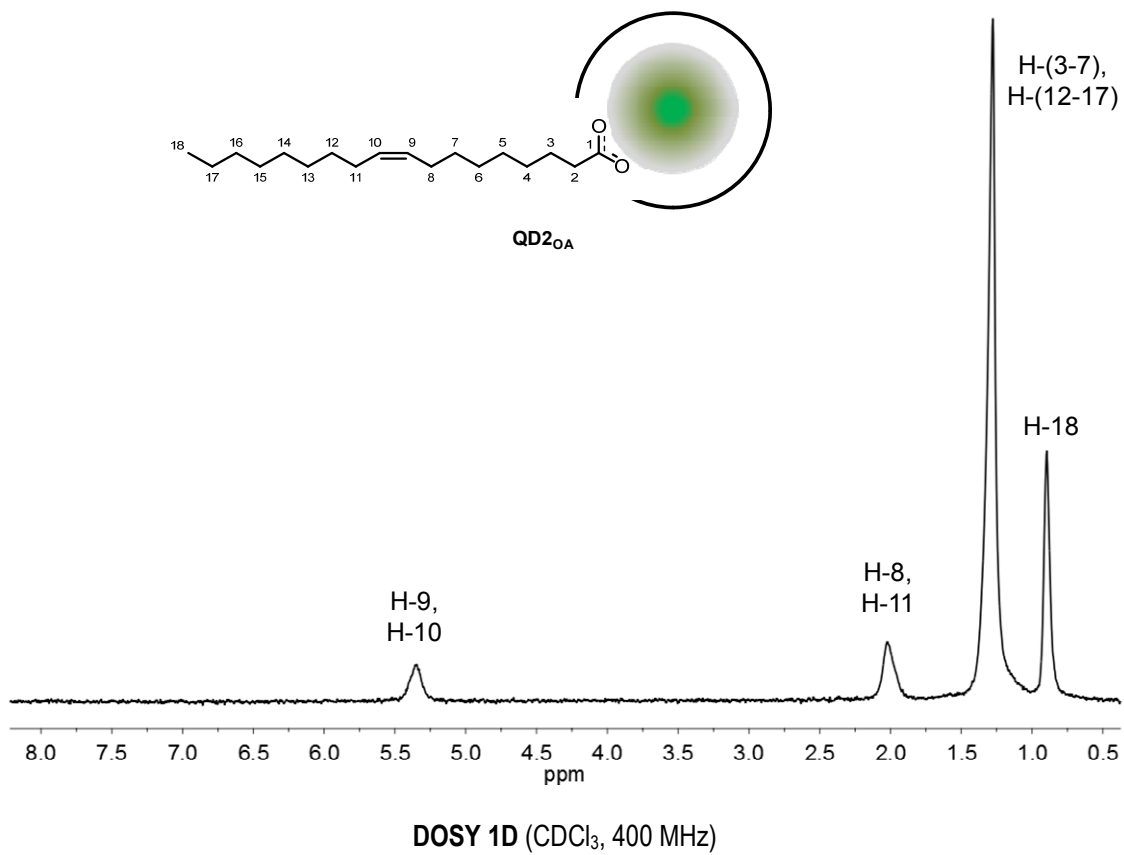


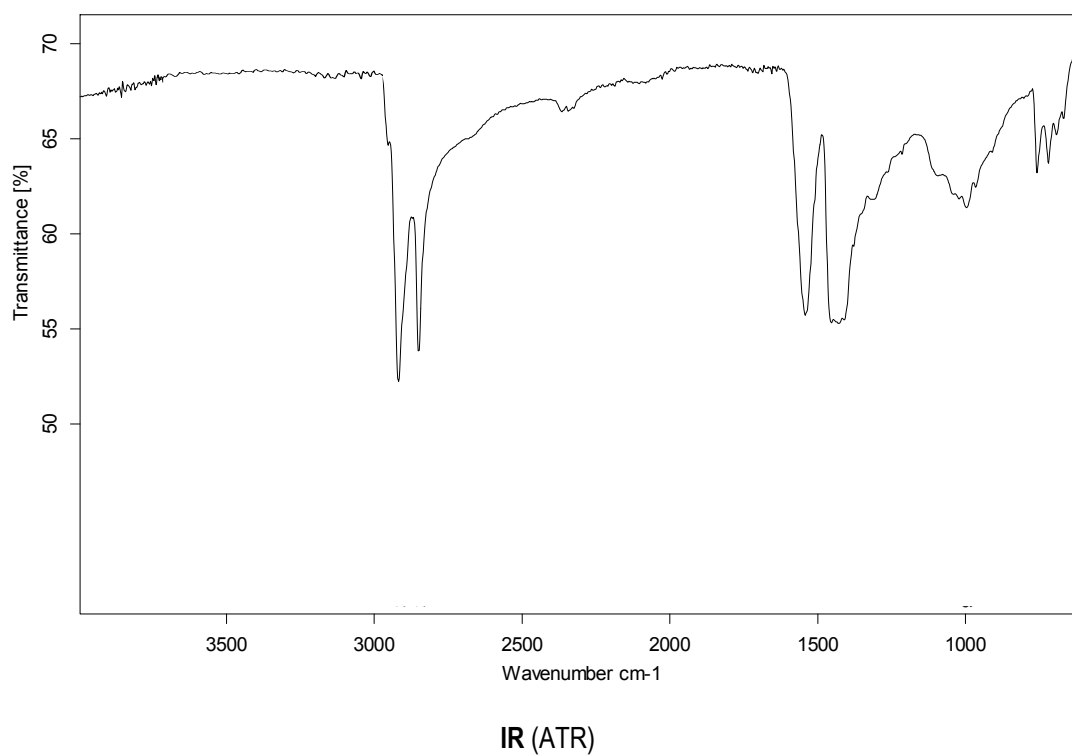
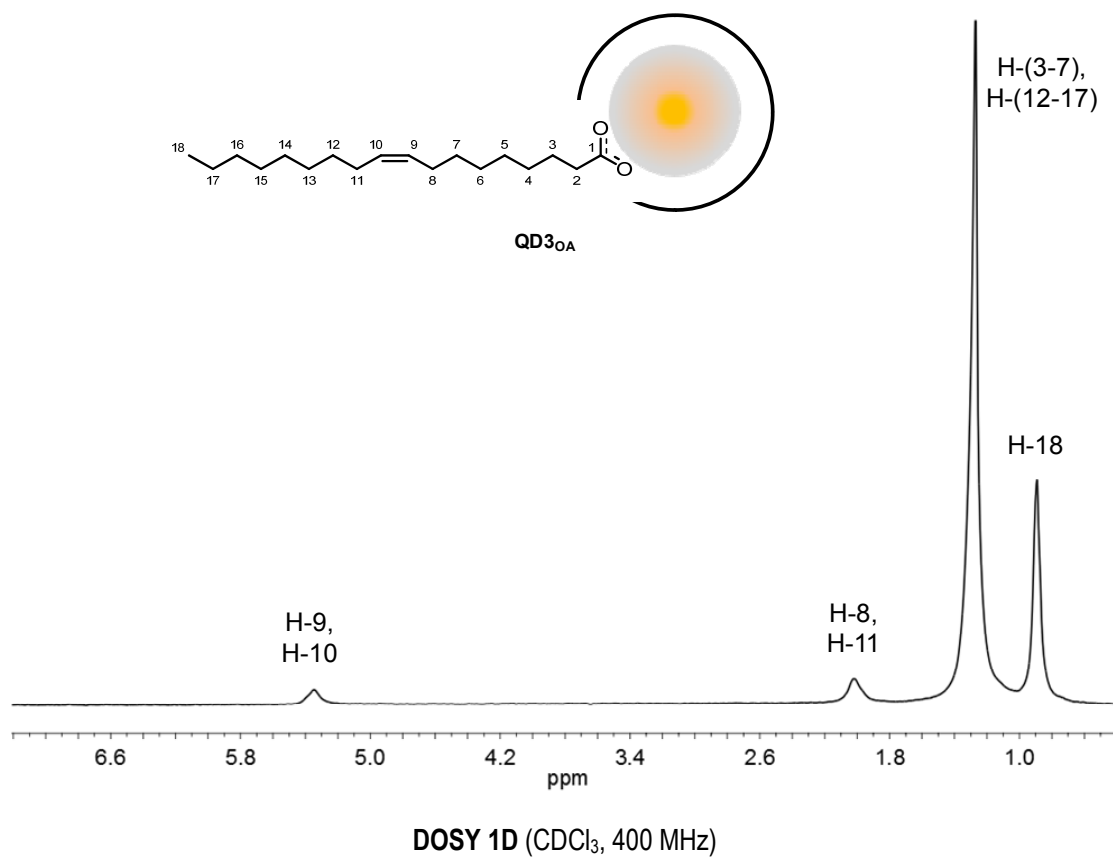


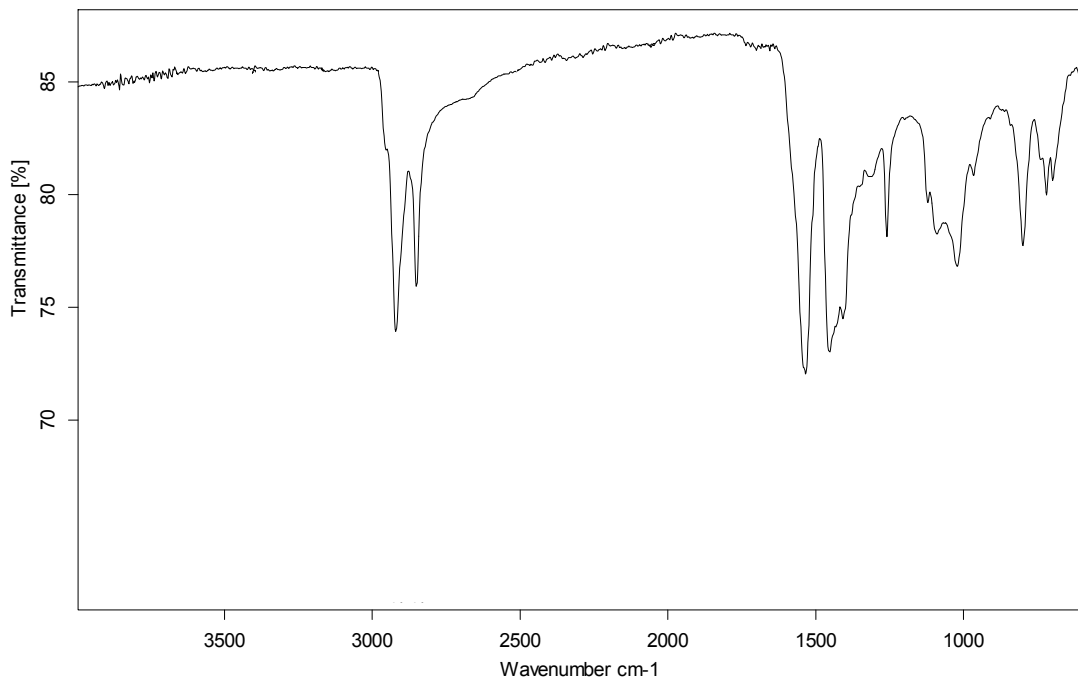
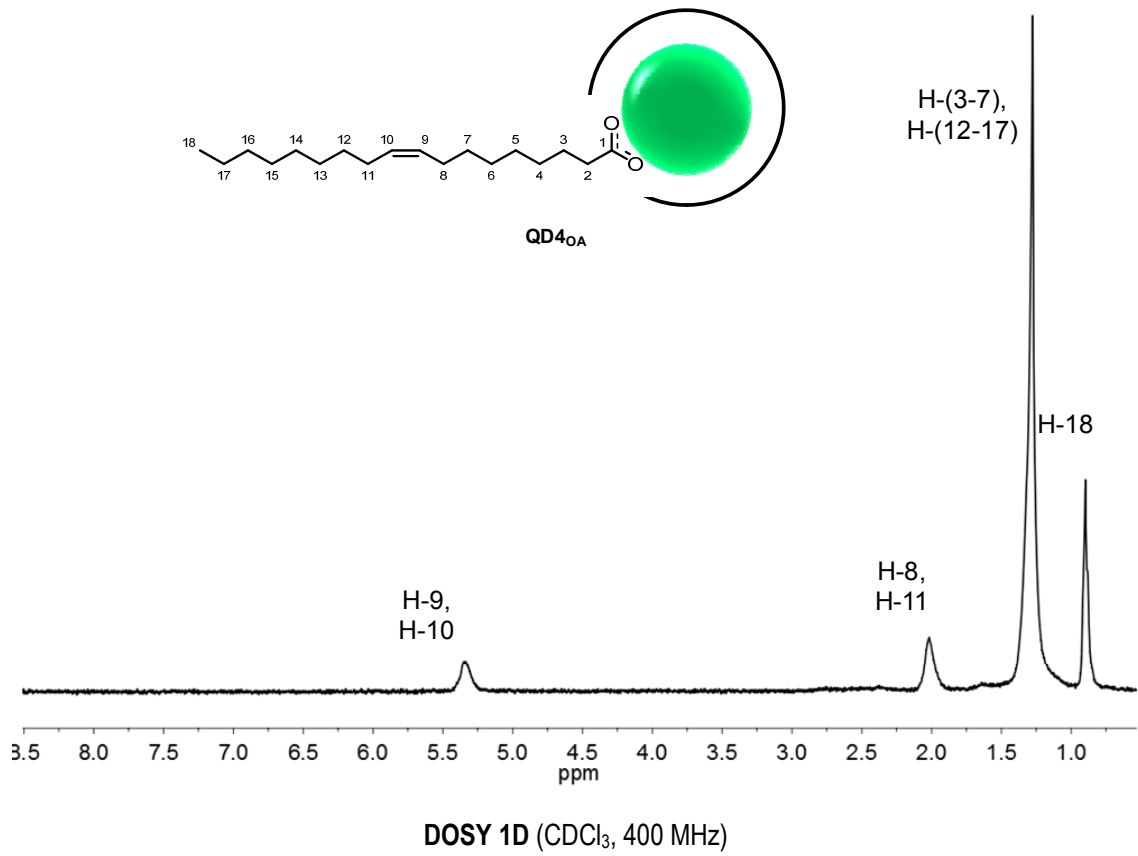
IR (ATR)

 $^1\text{H NMR}$ (CDCl_3 , 250 MHz)

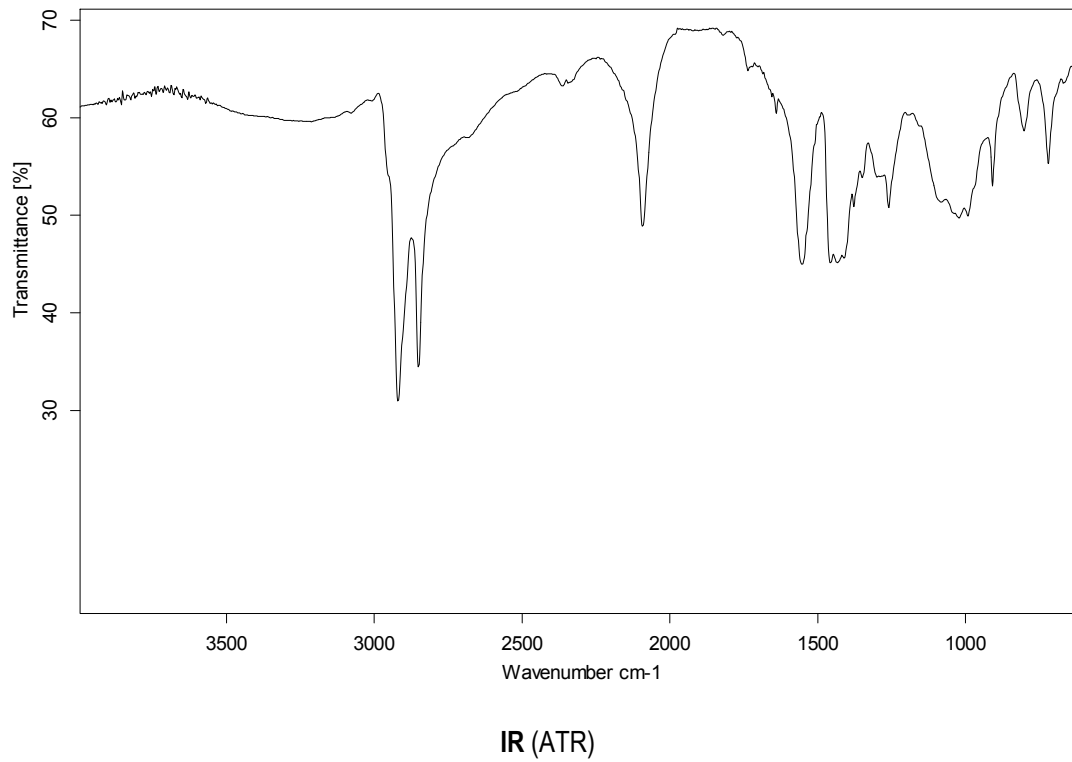
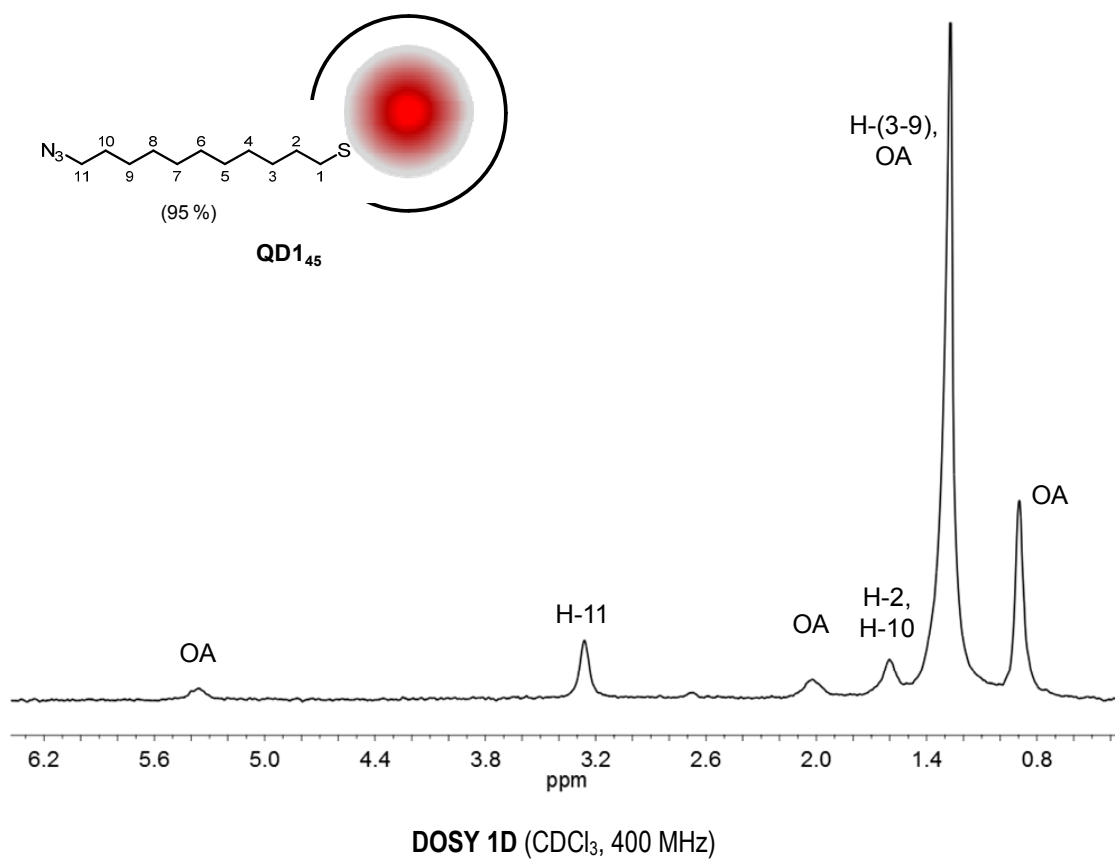


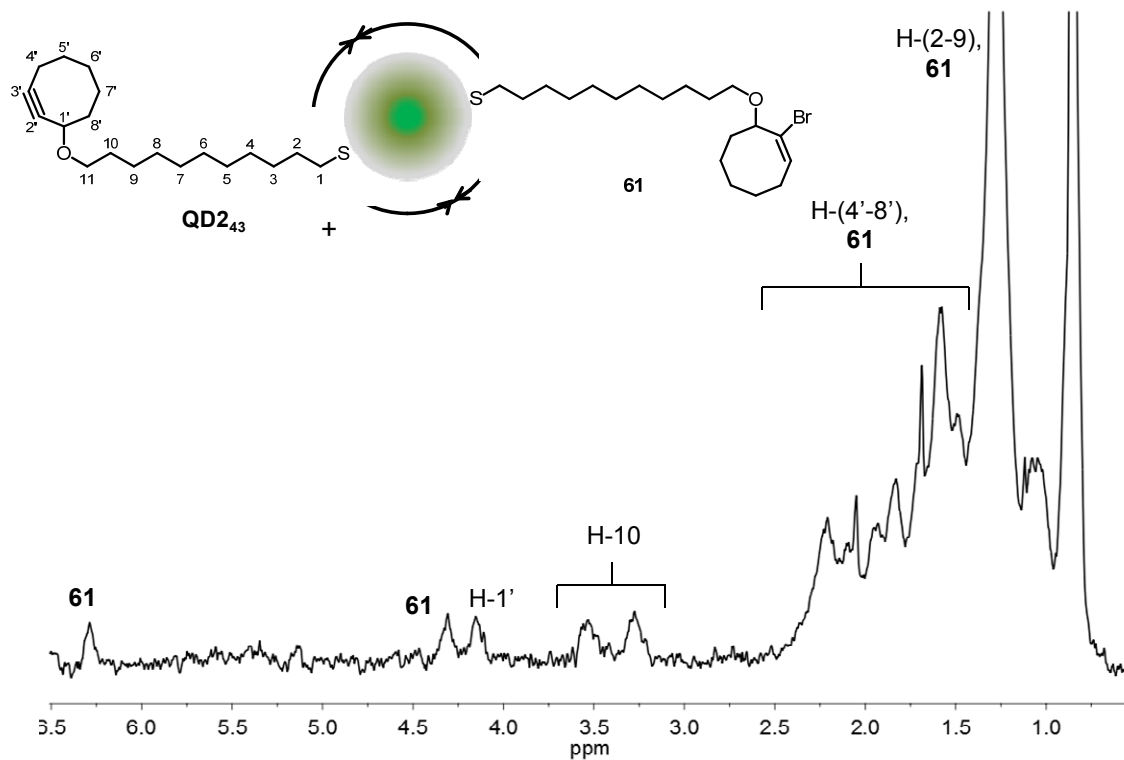
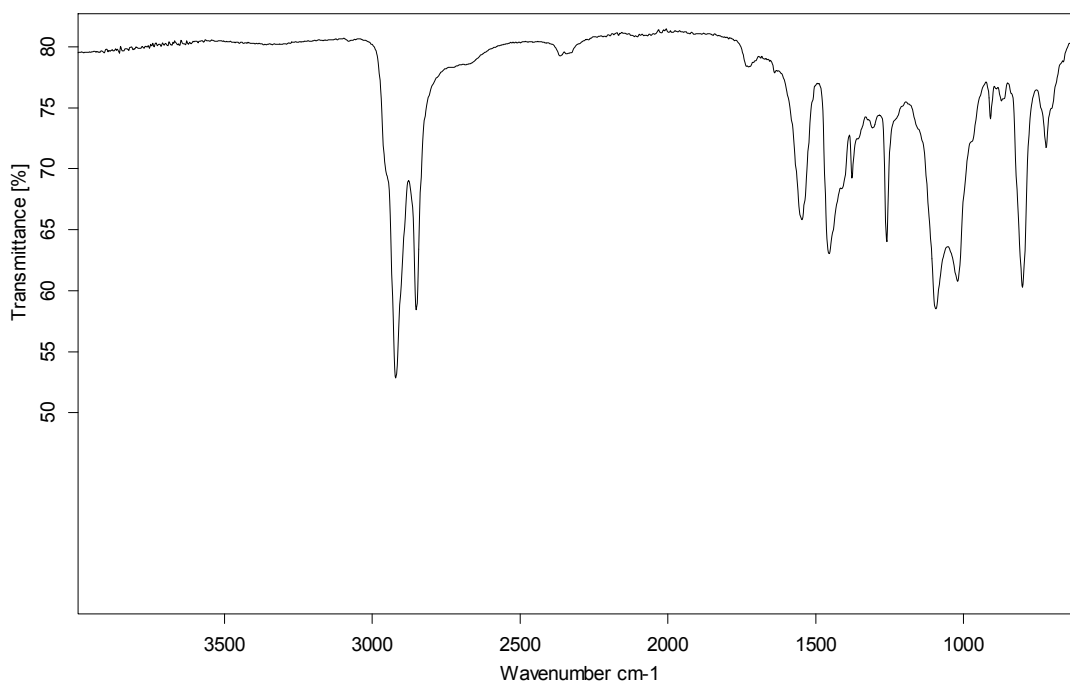




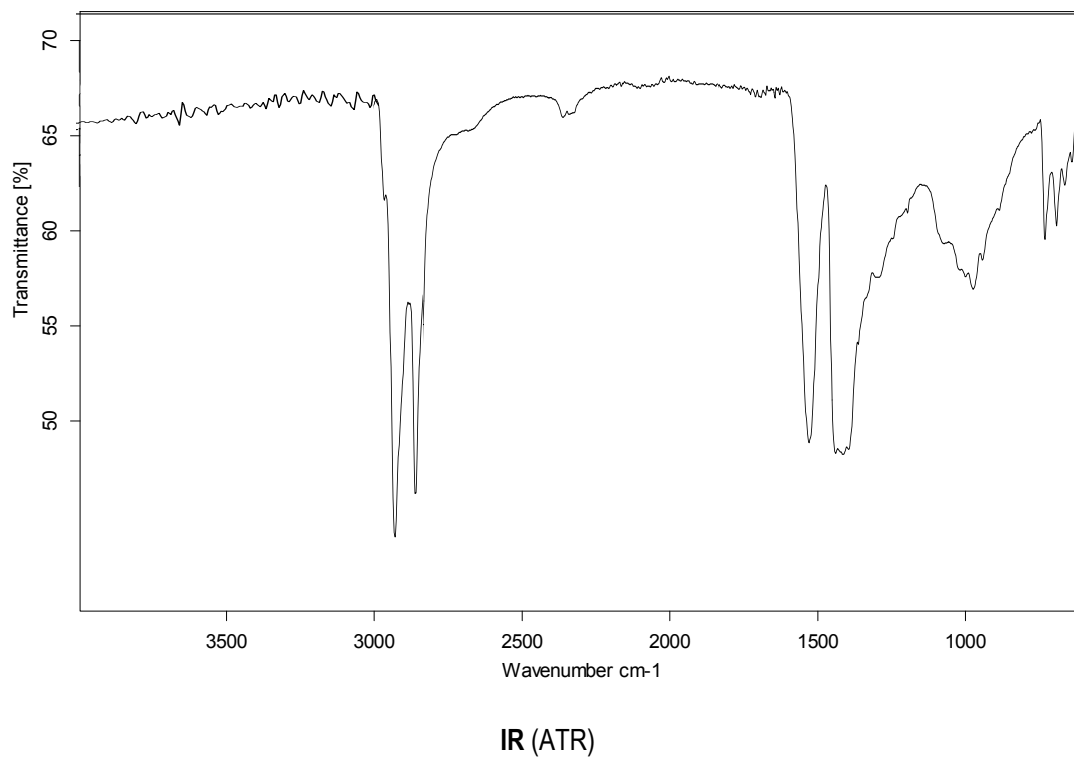
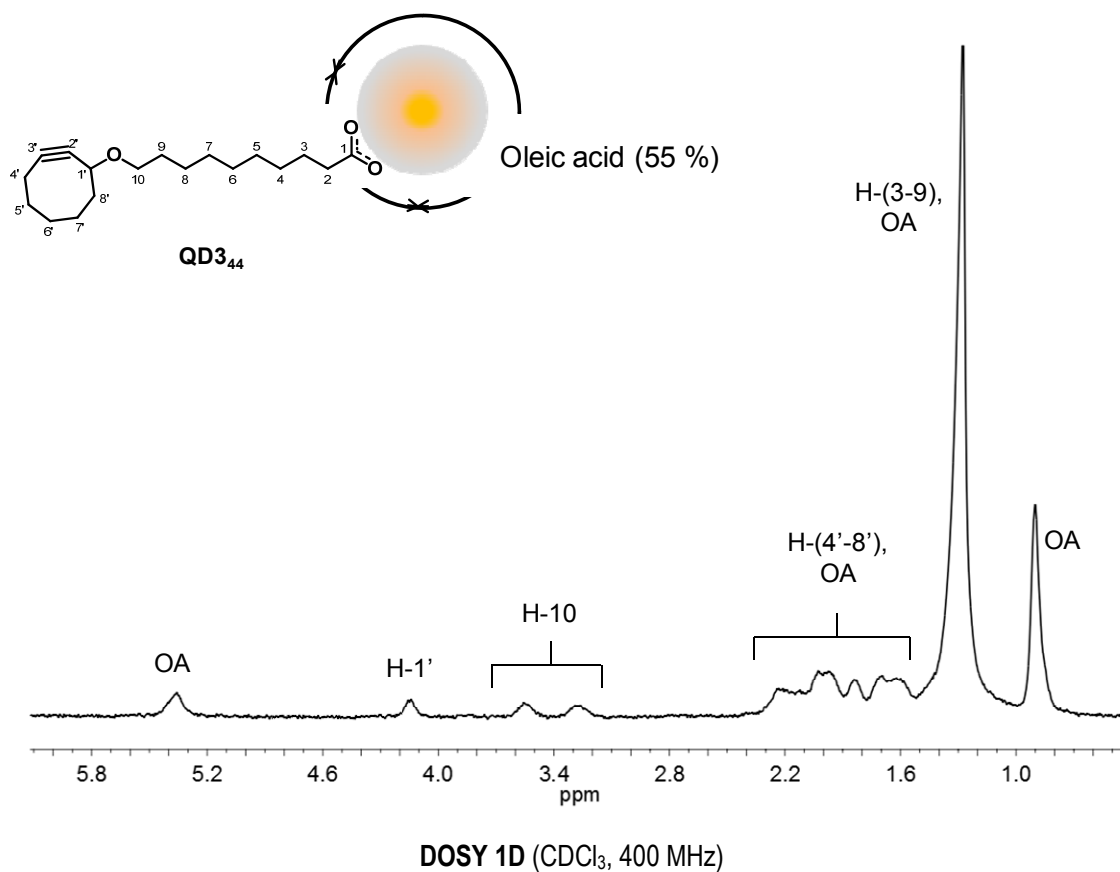


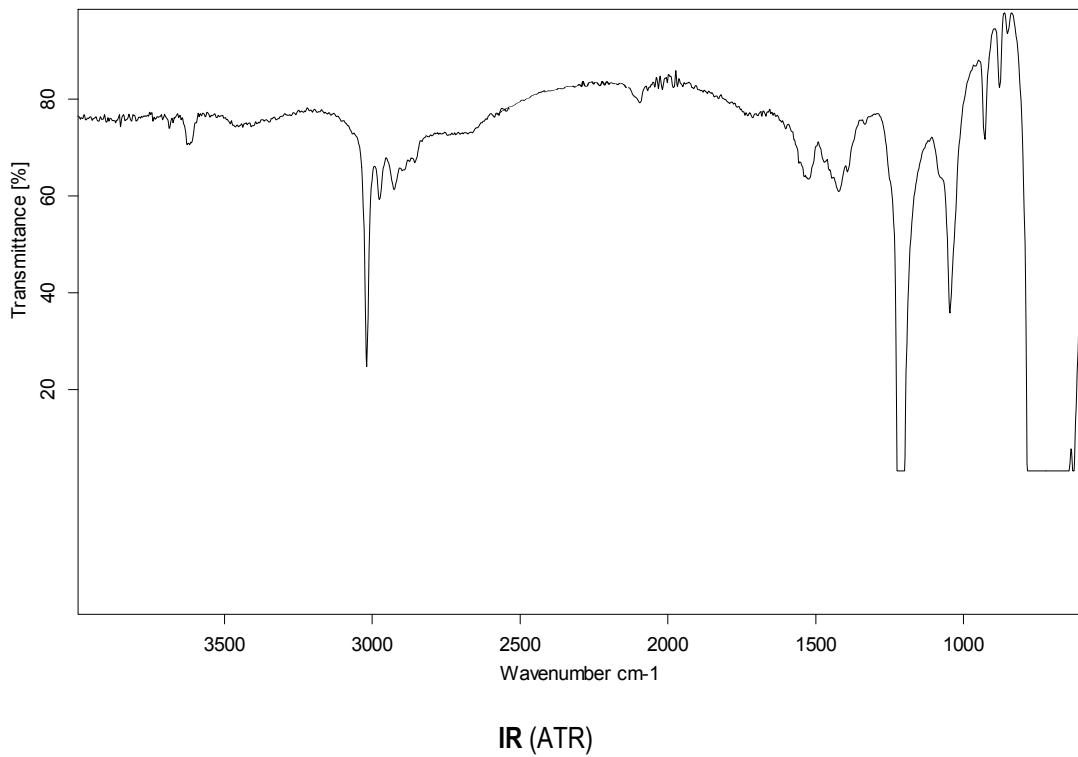
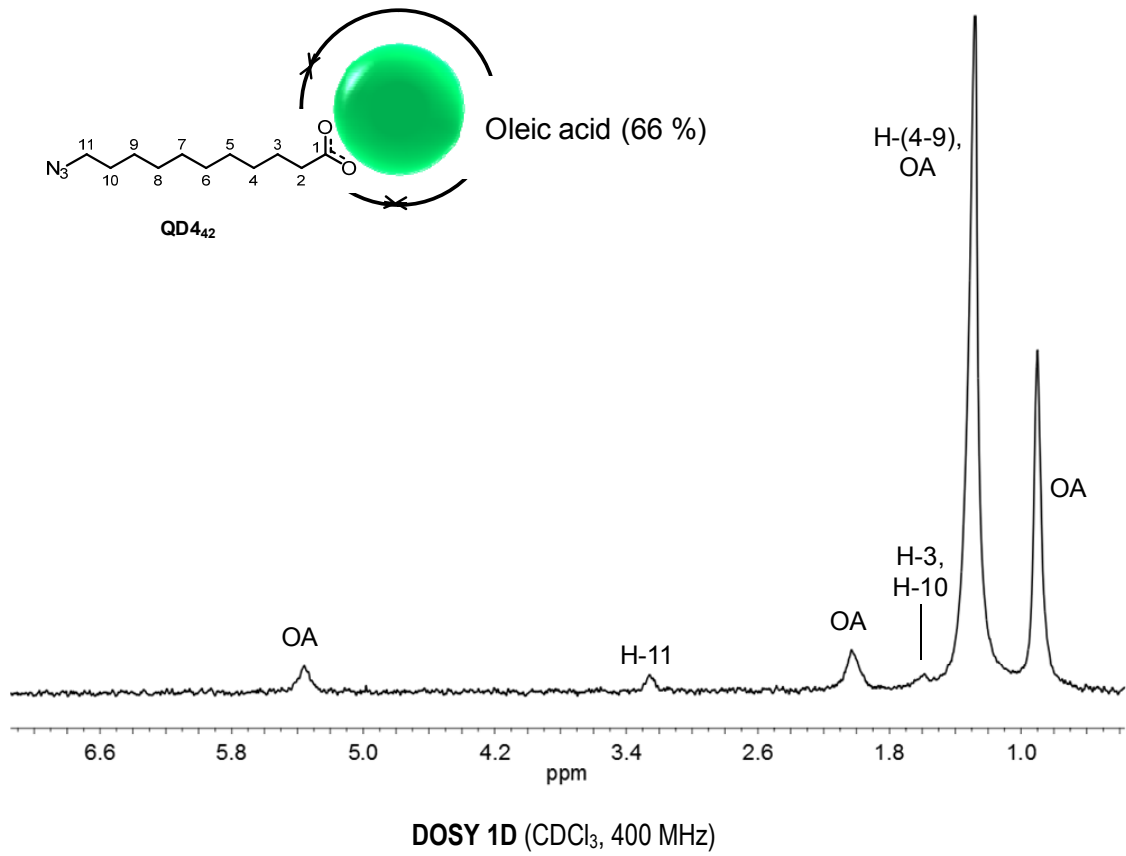
IR (ATR)

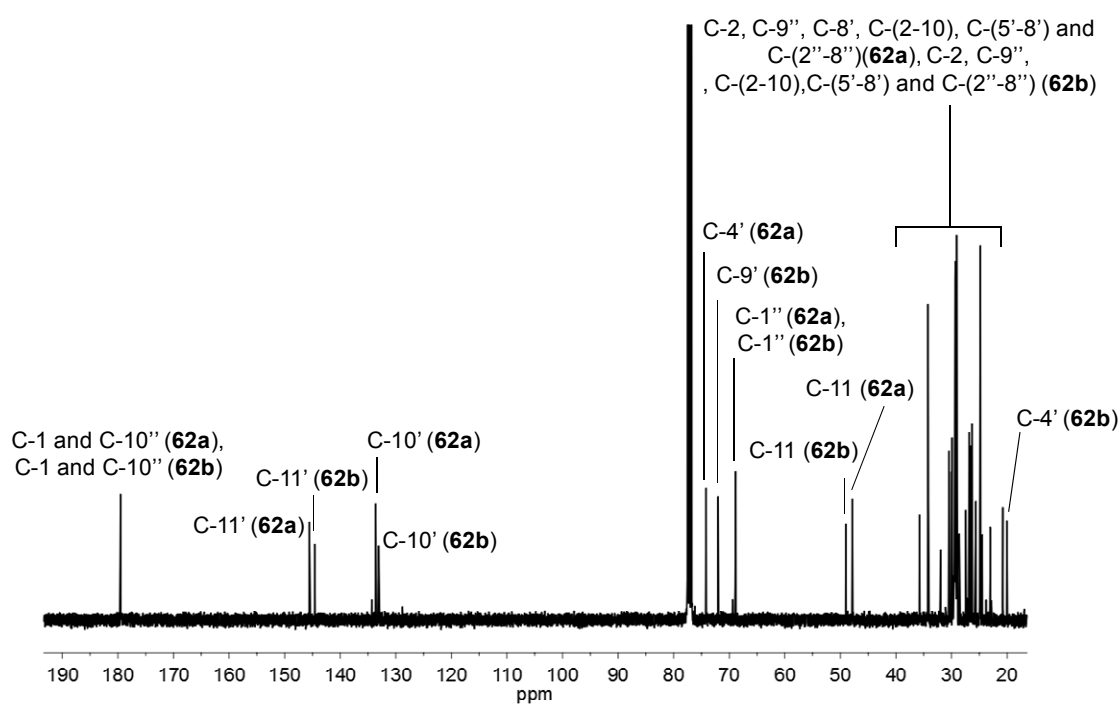
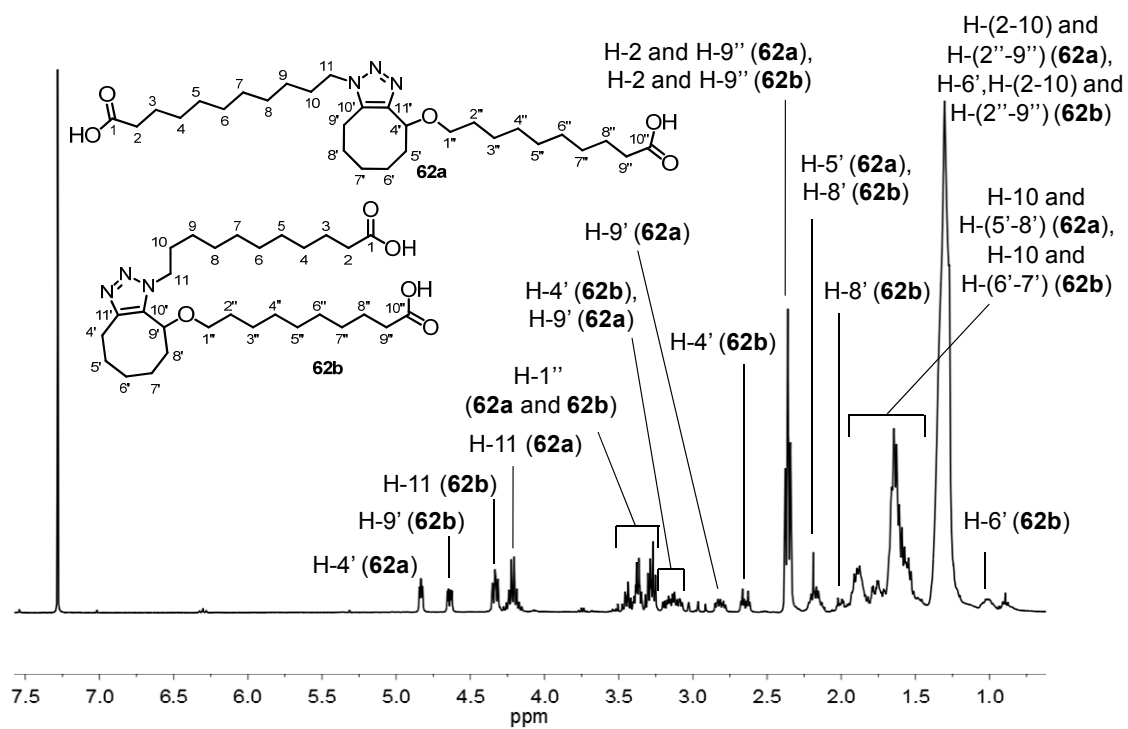


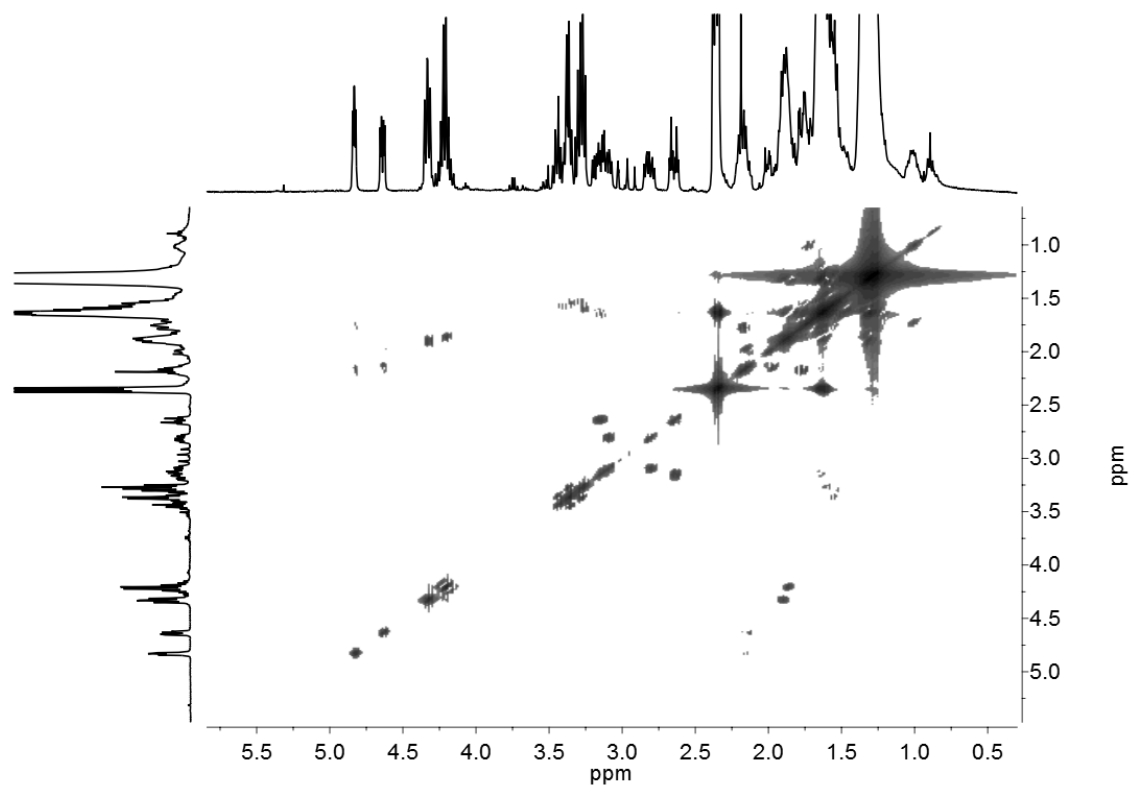
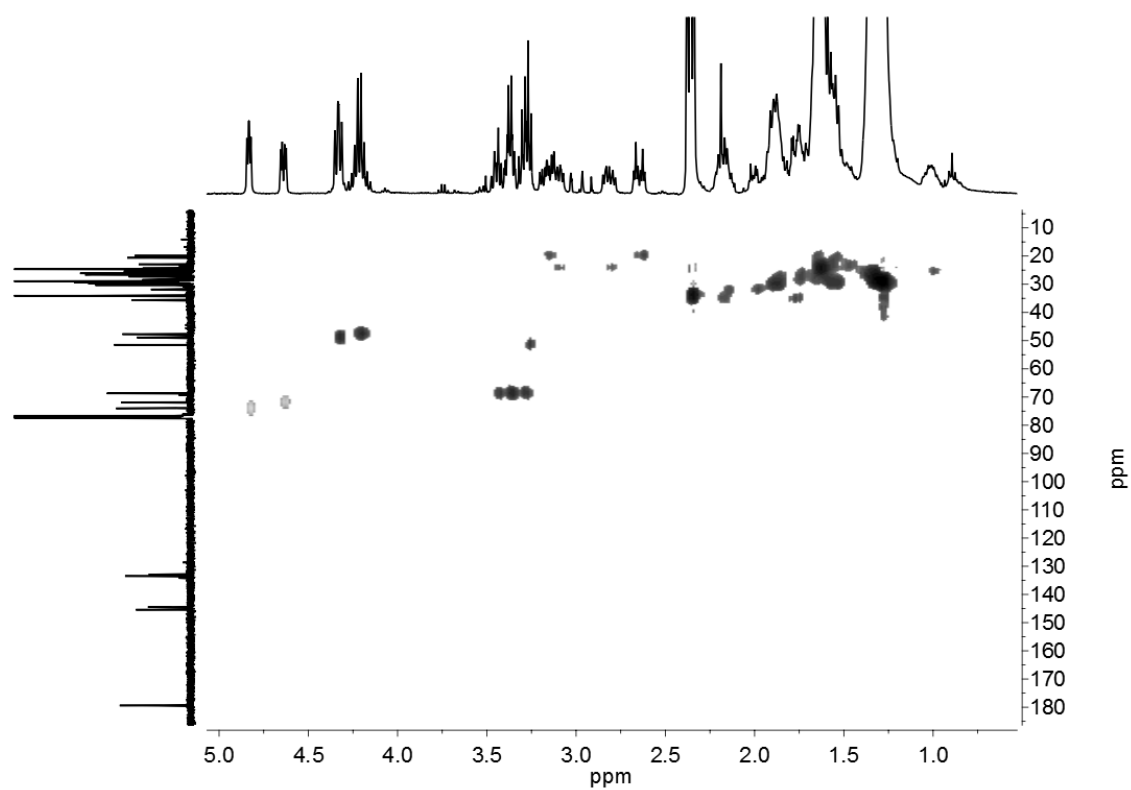
DOSY 1D (CDCl₃, 400 MHz)

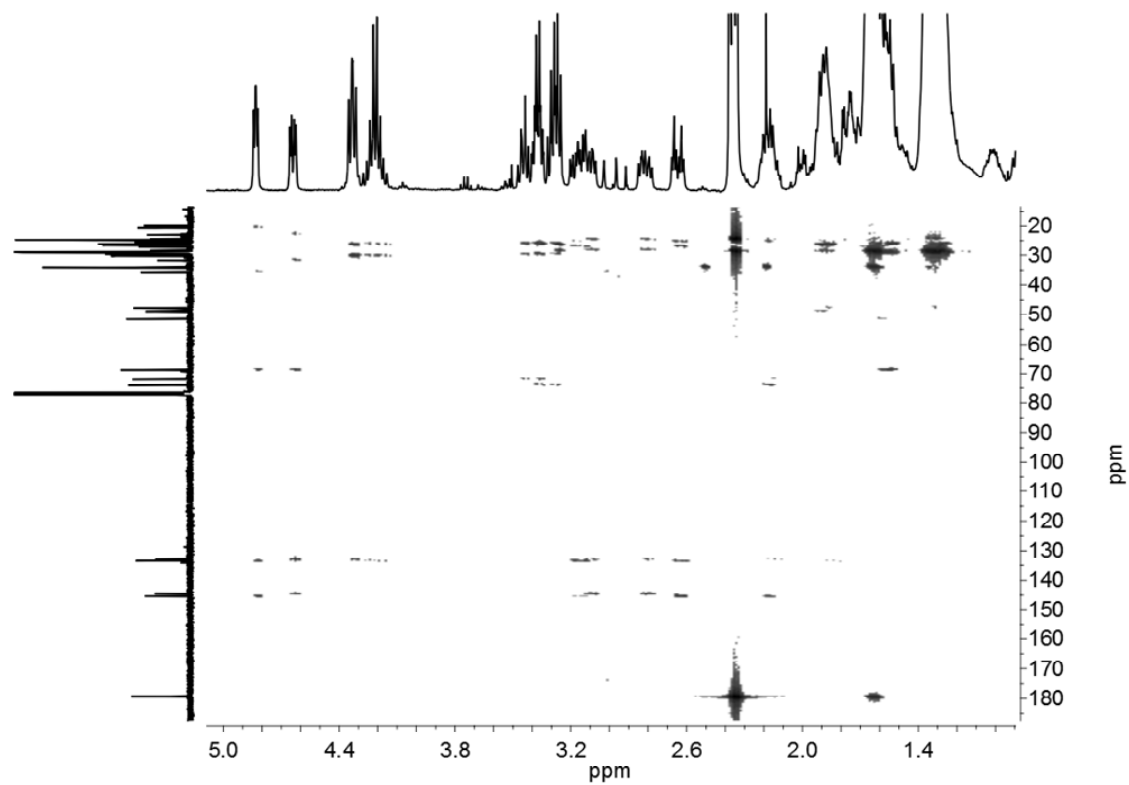
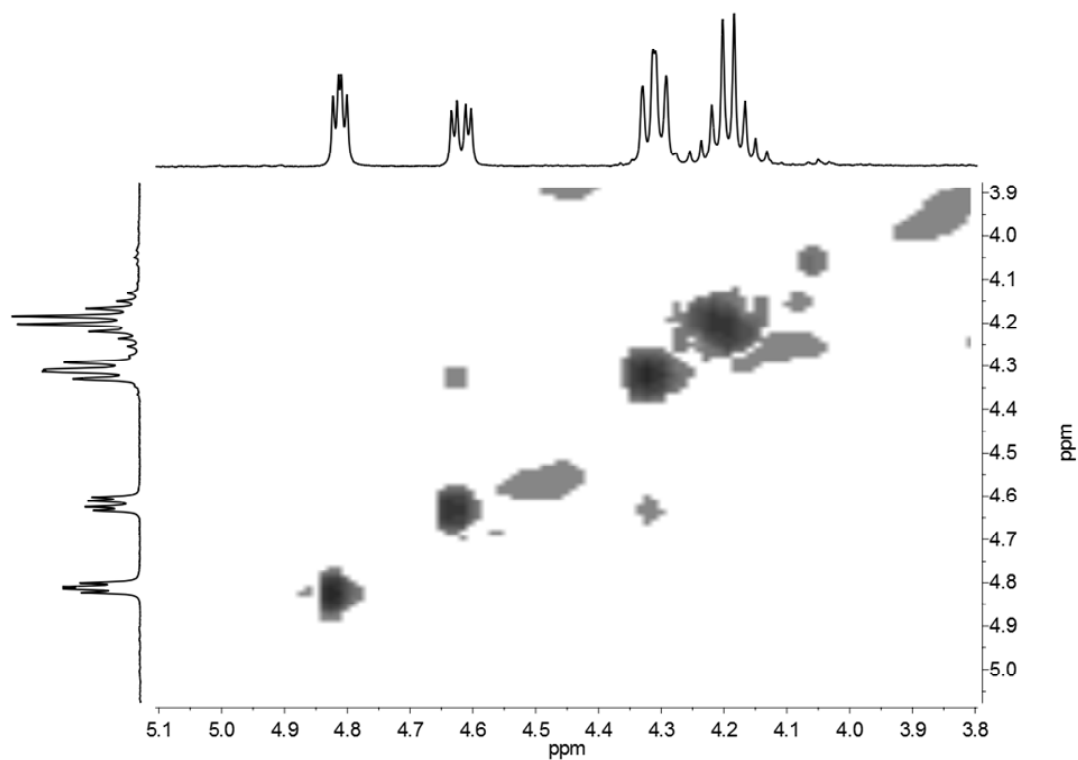
IR (ATR)

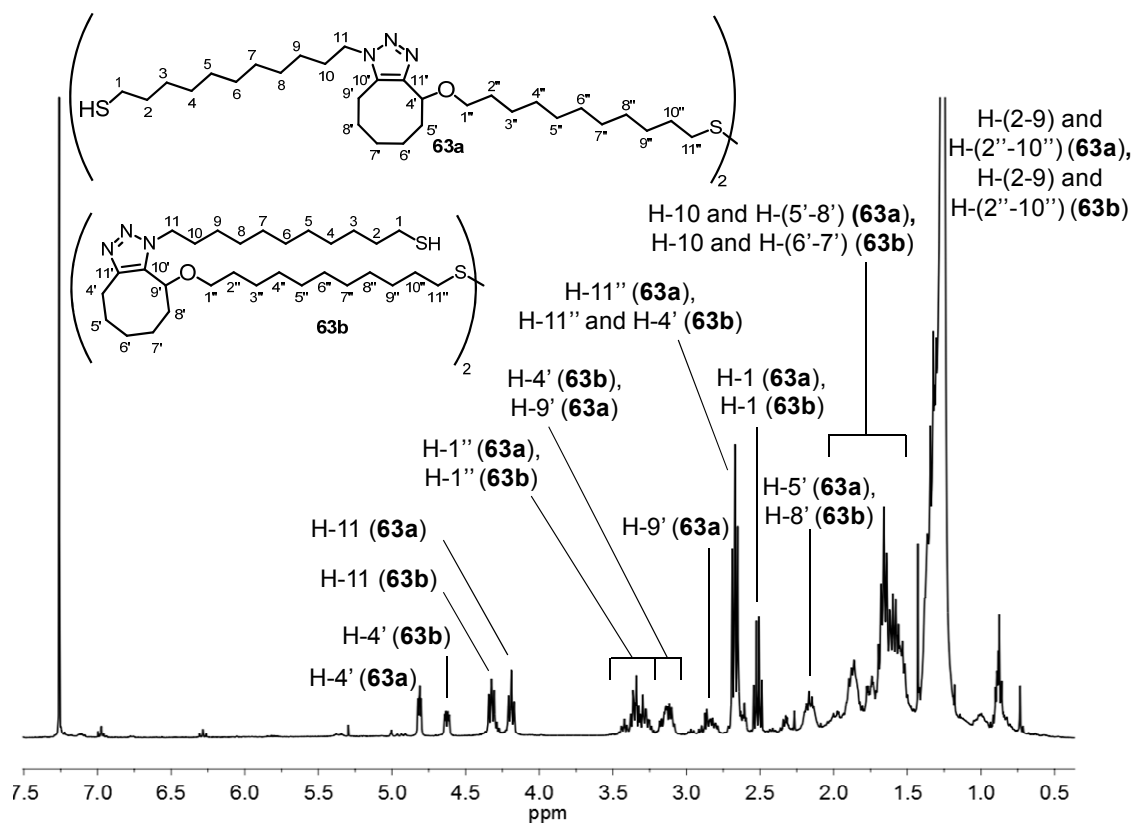
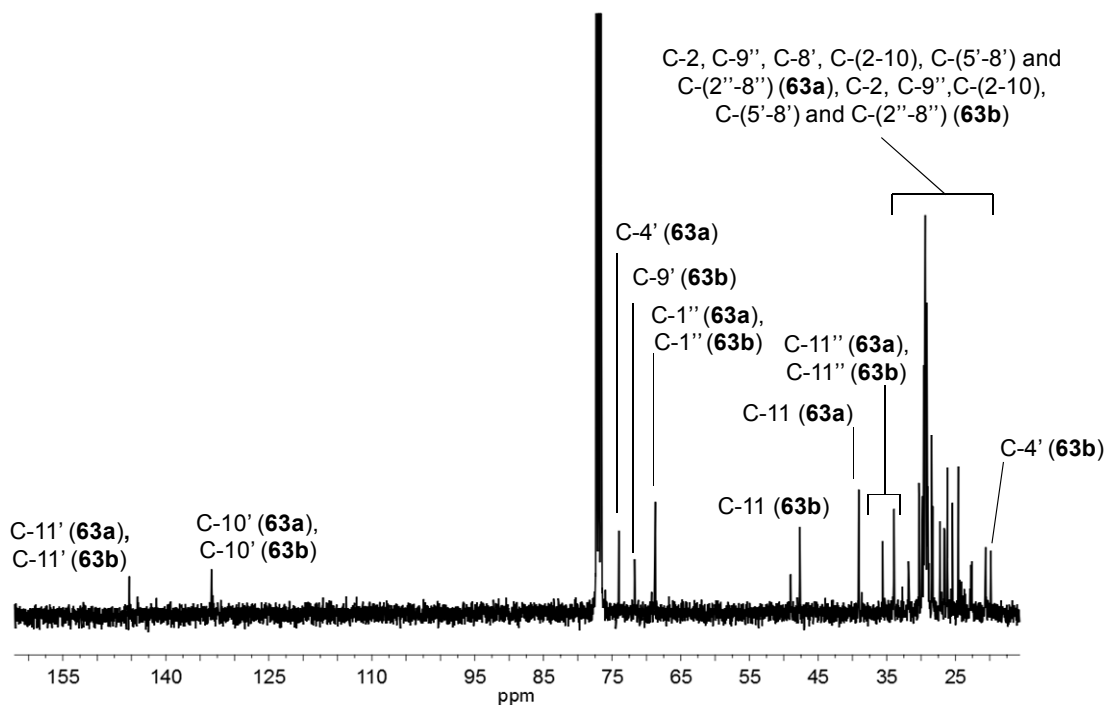


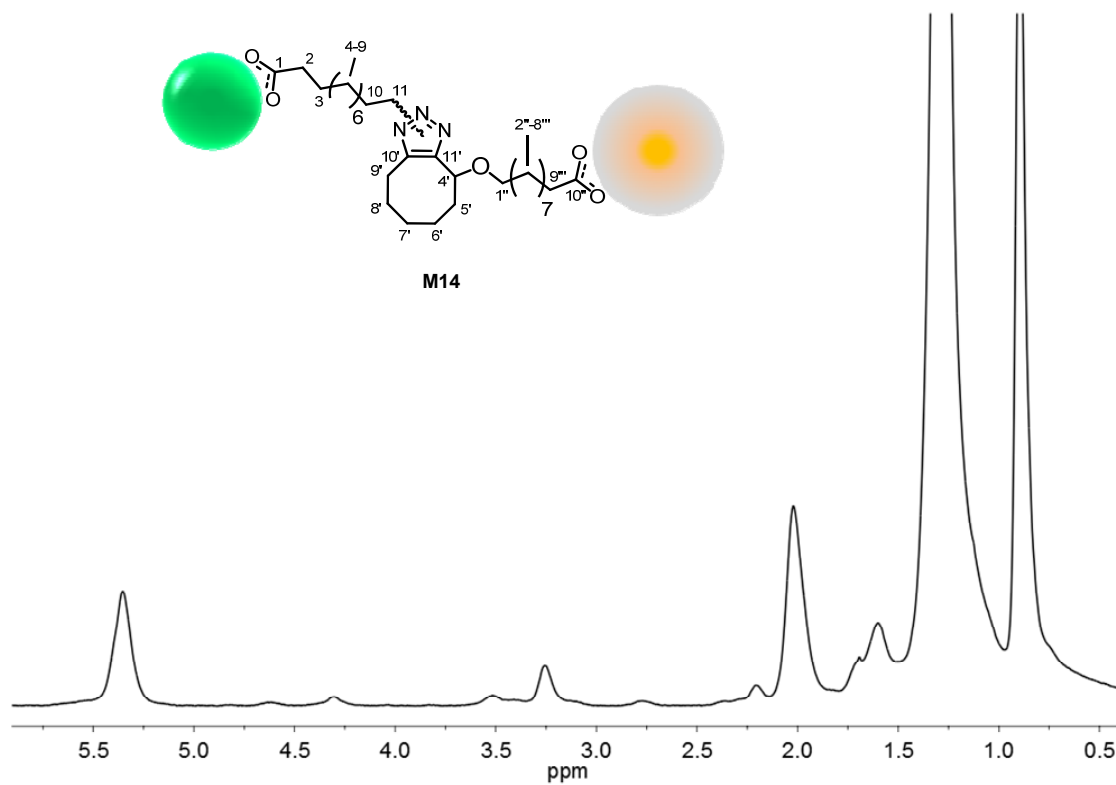
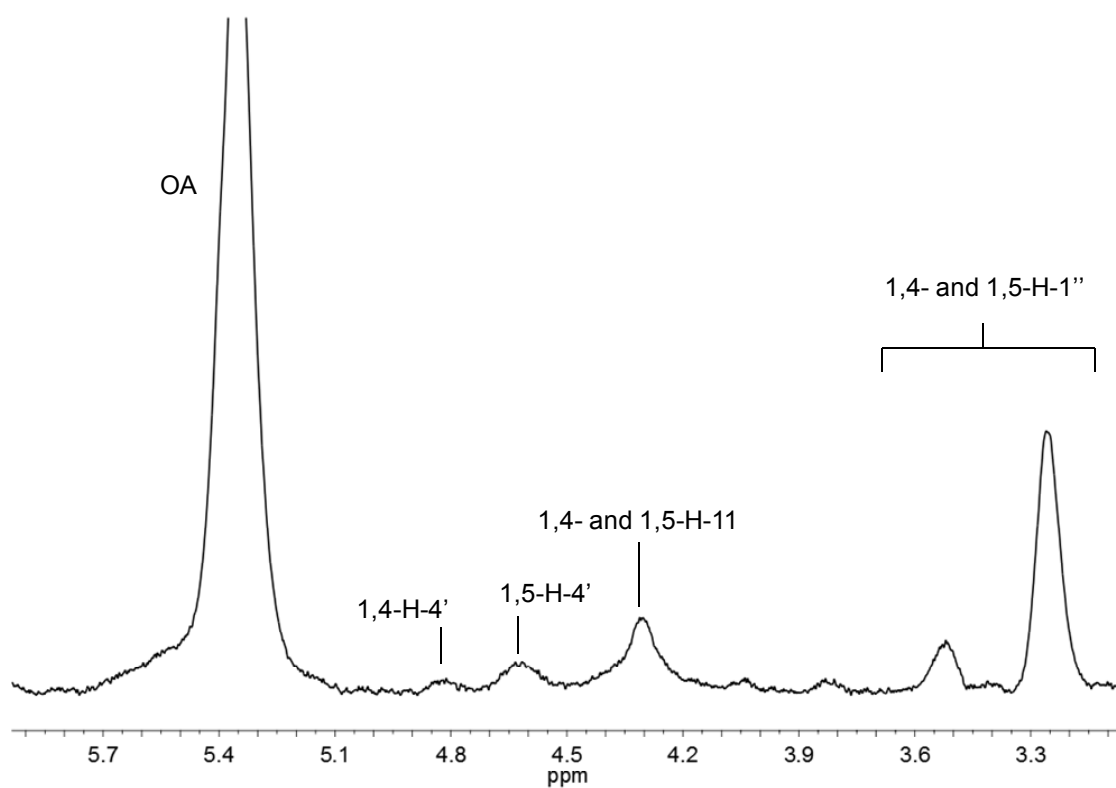




COSY (CDCl₃, 400 MHz)HSQC (CDCl₃, 101 MHz)

HMBC (CDCl₃, 101 MHz)NOESY (CDCl₃, 400 MHz)

 ^1H NMR (CDCl_3 , 400 MHz) ^{13}C NMR (CDCl_3 , 101 MHz)

DOSY 1D (CDCl₃, 400 MHz)3- to 6-ppm region of DOSY 1D (CDCl₃, 400 MHz)