Electronic Supplementary Information

Switching between ring closed and open N-incorporated heterocycles with tuneable charges and modular reactivity based upon 5-(2-bromoethyl)phenanthridinium bromide

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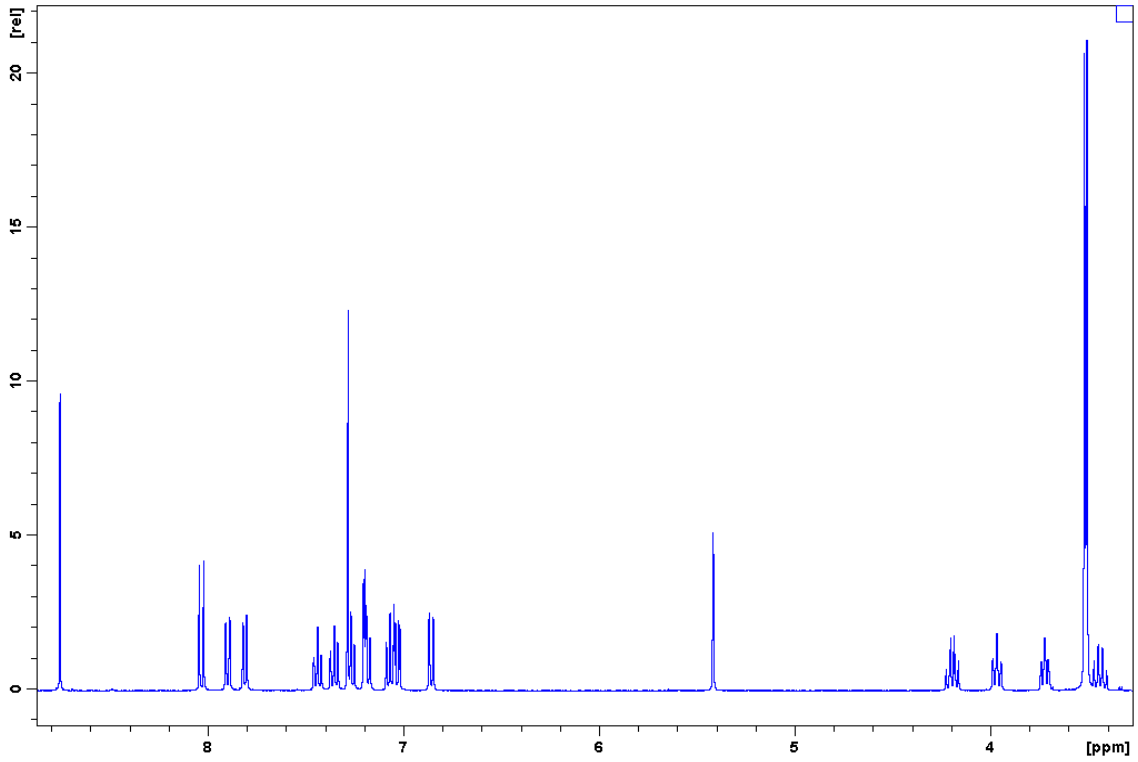
Table of Contents:

^{1}H NMR spectra (in D_6-DMSO)

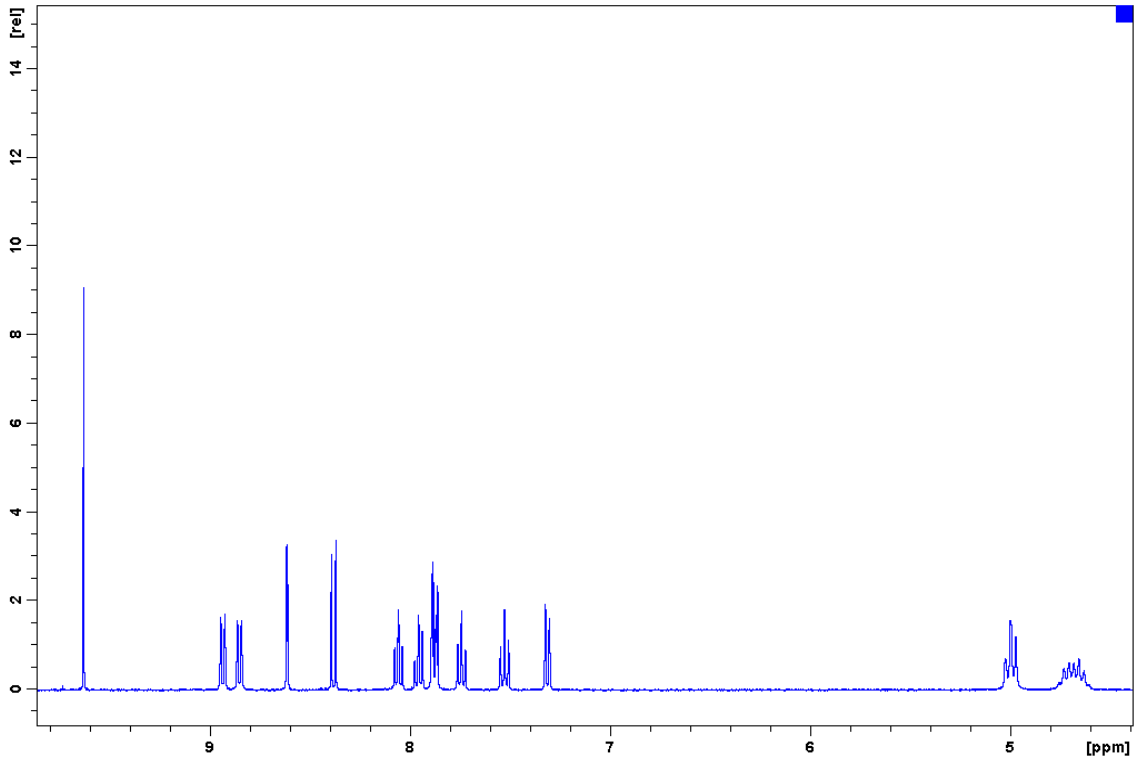
^{1}H NMR reaction spectrum

UV-vis reaction spectra

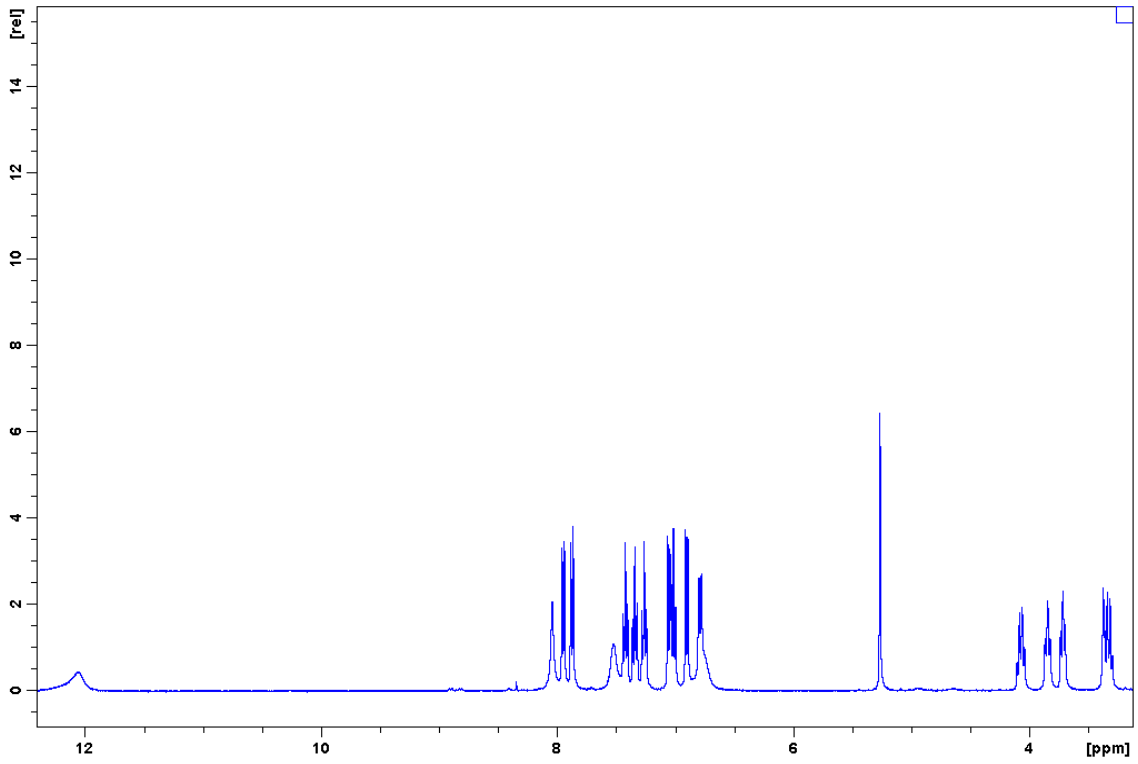
1-Benzothiazol-6-yl-1,2,3,12*b*-tetrahydroimidazo[1,2-*f*]phenanthridine (in D_6-DMSO) **(1)**



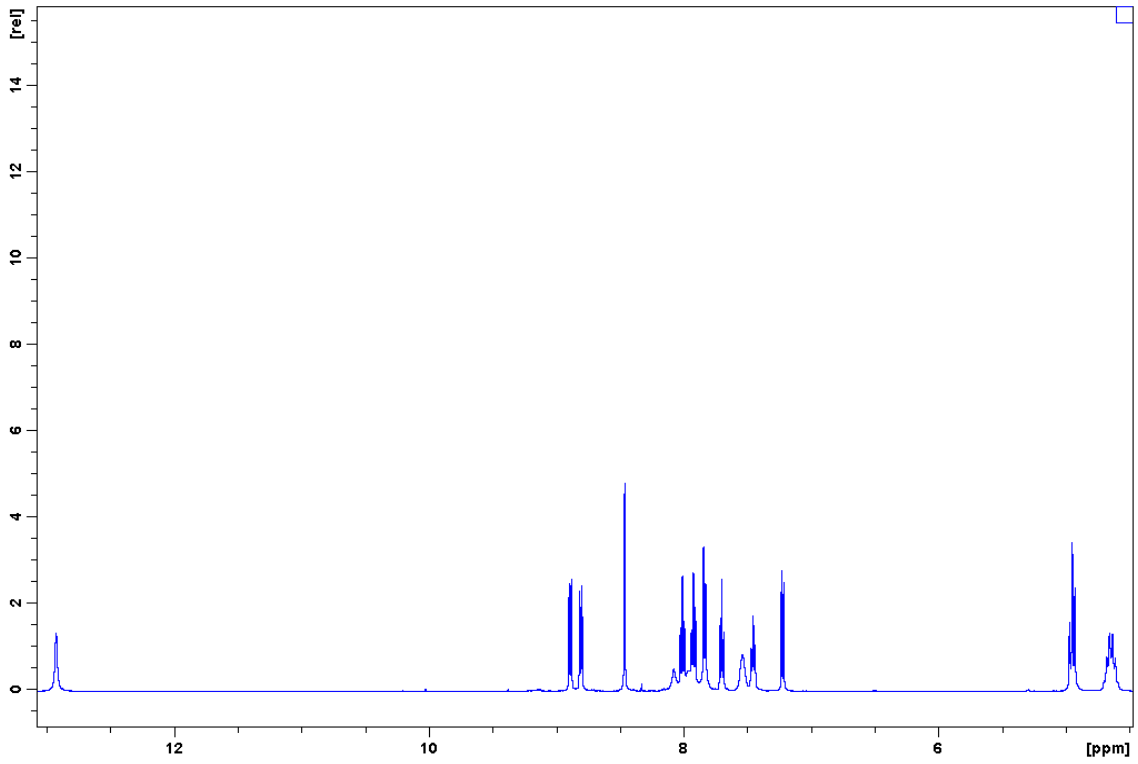
1-Benzothiazol-6-yl-2,3-dihydro-1*H*-imidazo[1,2-*f*]phenanthridin-4-ylium bromide (in D_6-DMSO) **(2)**



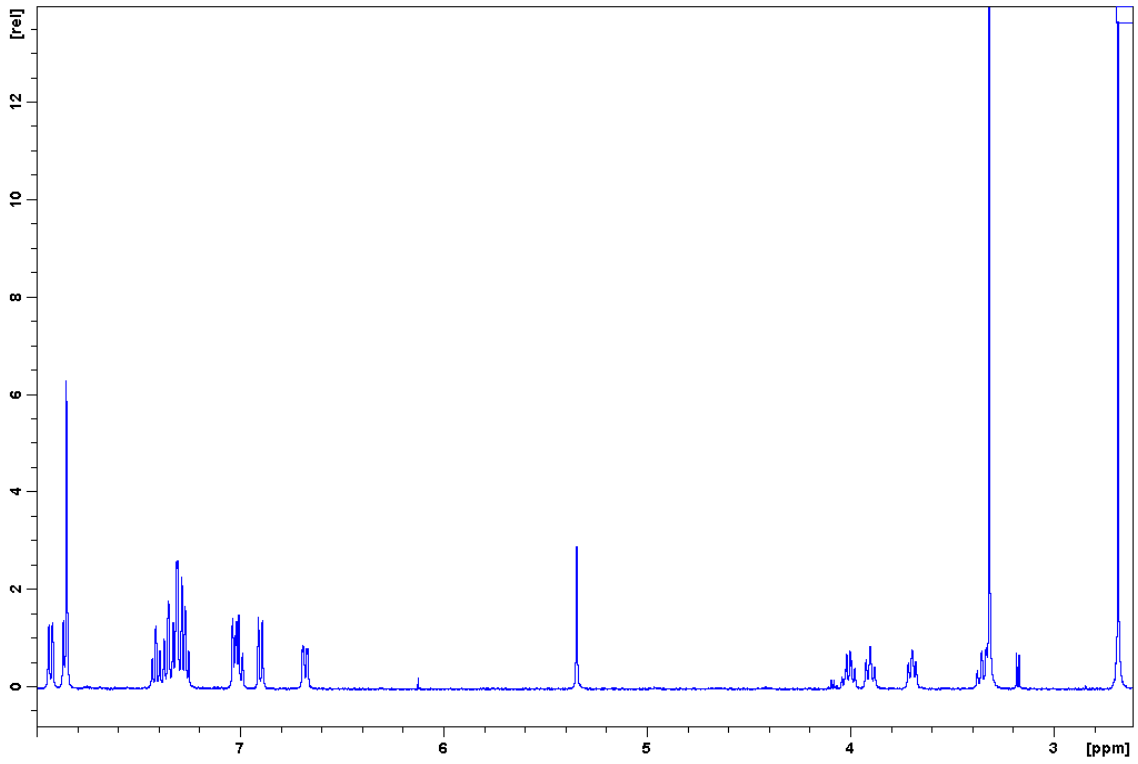
1-(1H-Benzoimidazol-5-yl)-1,2,3,12*b*-tetrahydroimidazo[1,2-*f*]phenanthridine (in D_6-DMSO) **(3)**



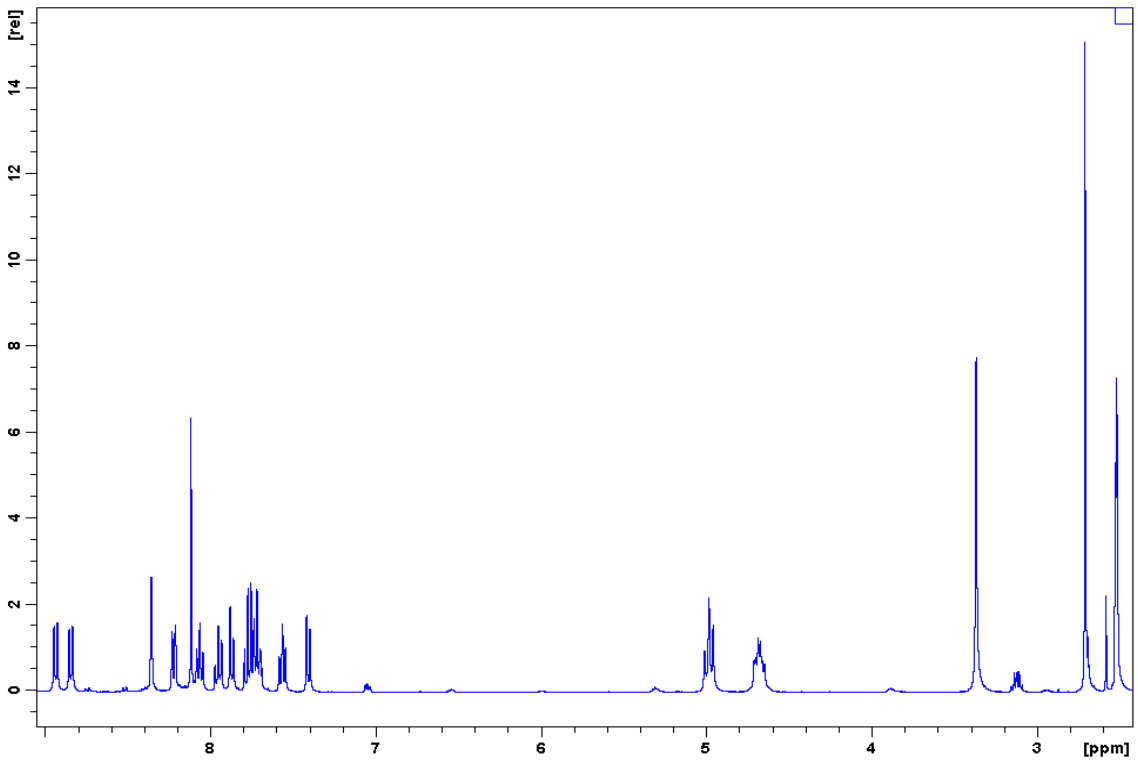
1-(1H-Benzoimidazol-5-yl)-2,3-dihydro-1*H*-imidazo[1,2-*f*]phenanthridin-4-ylium bromide (in D_6-DMSO) **(4)**



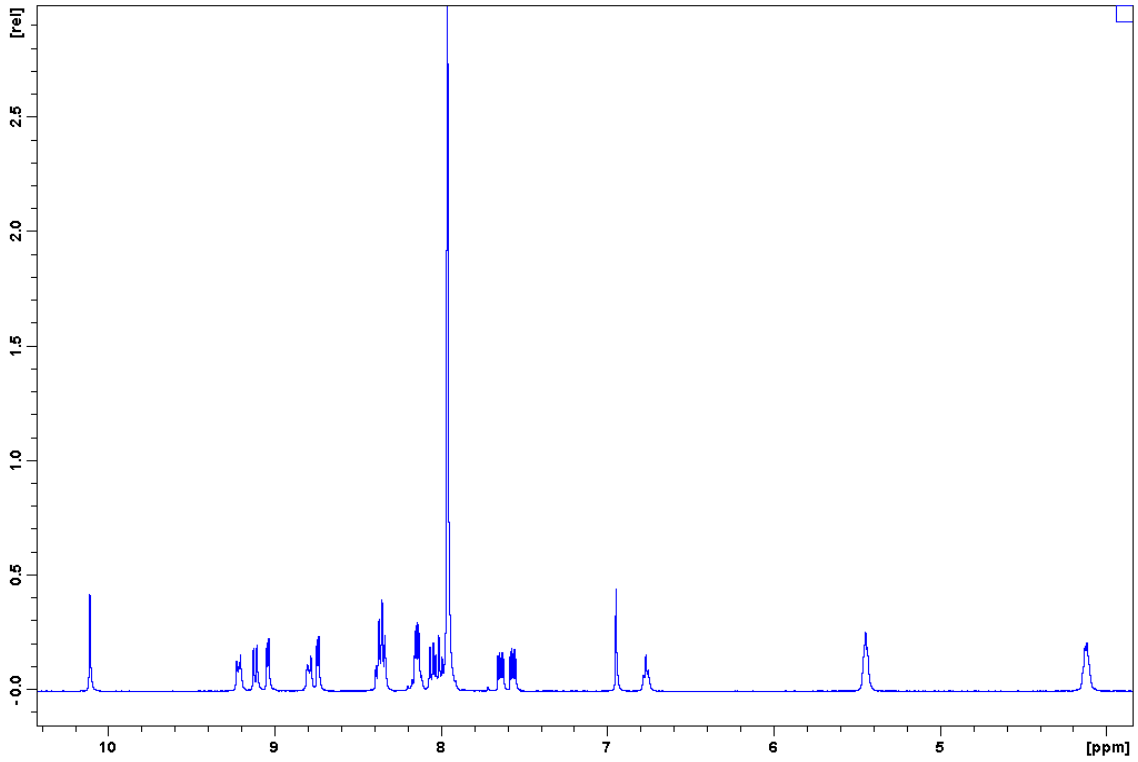
1-[3-(2-Methyl-thiazol-4-yl)-phenyl]-1,2,3,12*b*-tetrahydroimidazo[1,2-*f*]phenanthridine (in D_6-DMSO) **(5)**



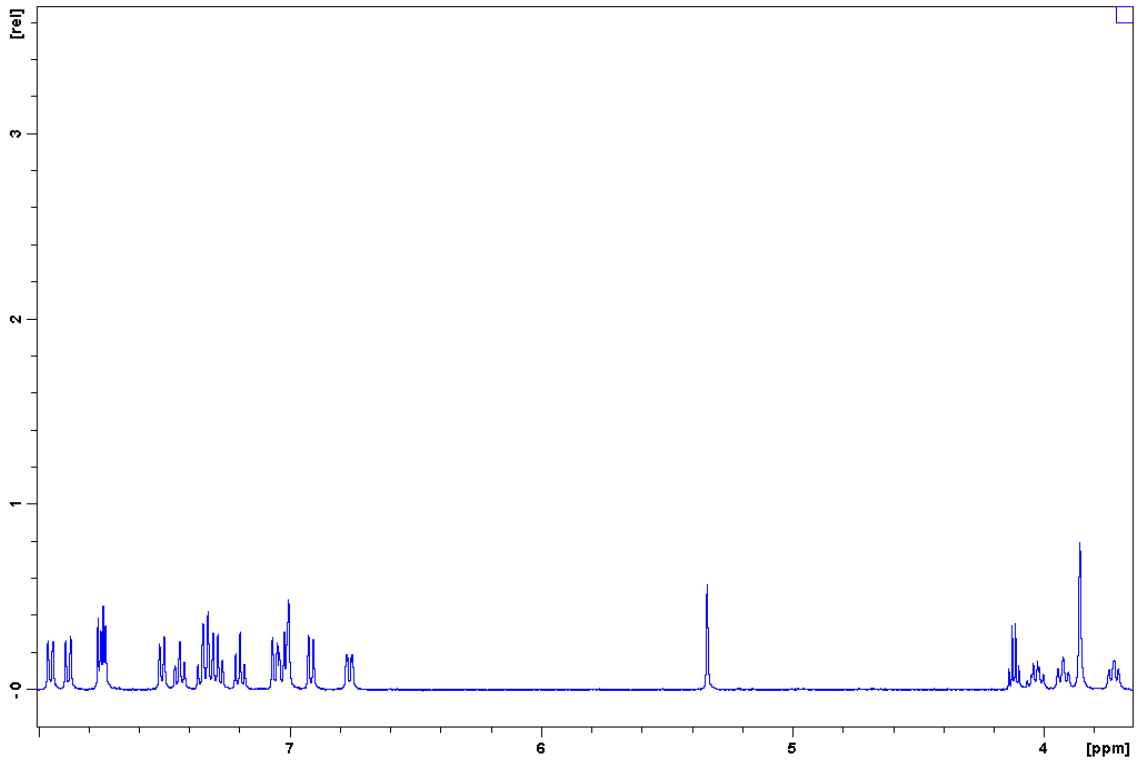
1-[3-(2-Methyl-thiazol-4-yl)-phenyl]-2,3-dihydro-1*H*-imidazo[1,2-*f*]phenanthridin-4-ylium bromide (in D_6-DMSO) **(6)**



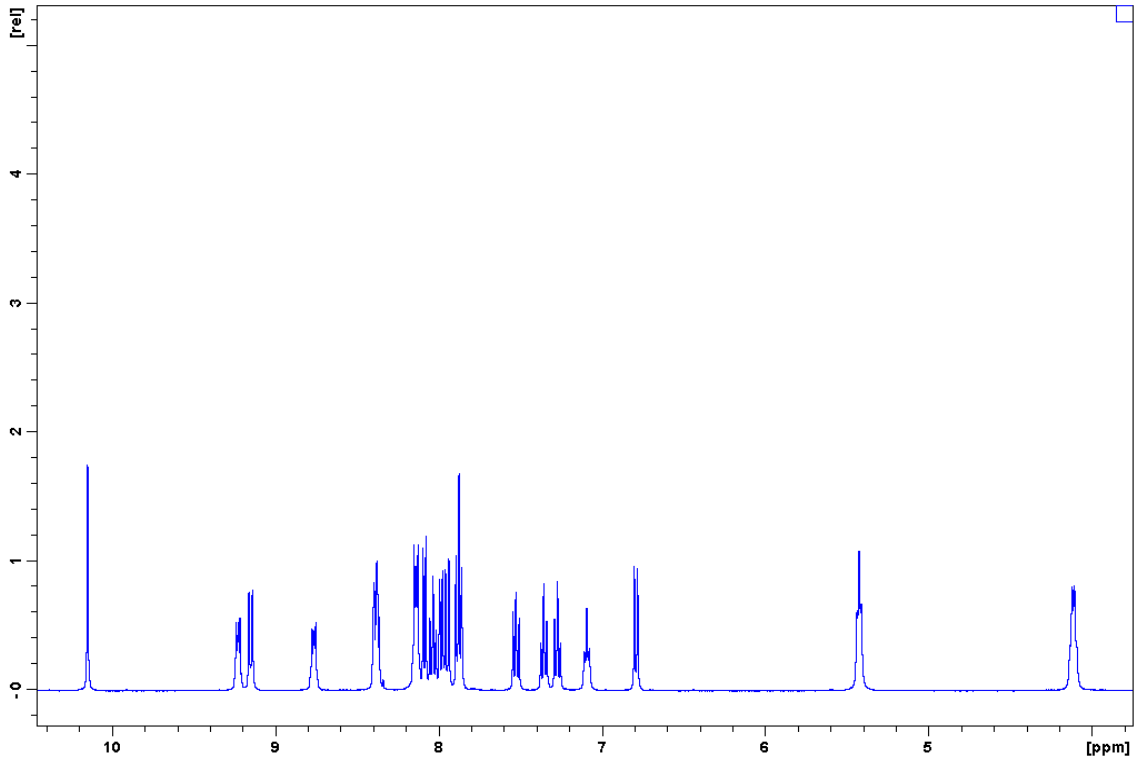
5-[2-([1,10]Phenanthrolin-5-ylamino)-ethyl]phenanthridinium bromide (in D_6-DMSO) **(7)**



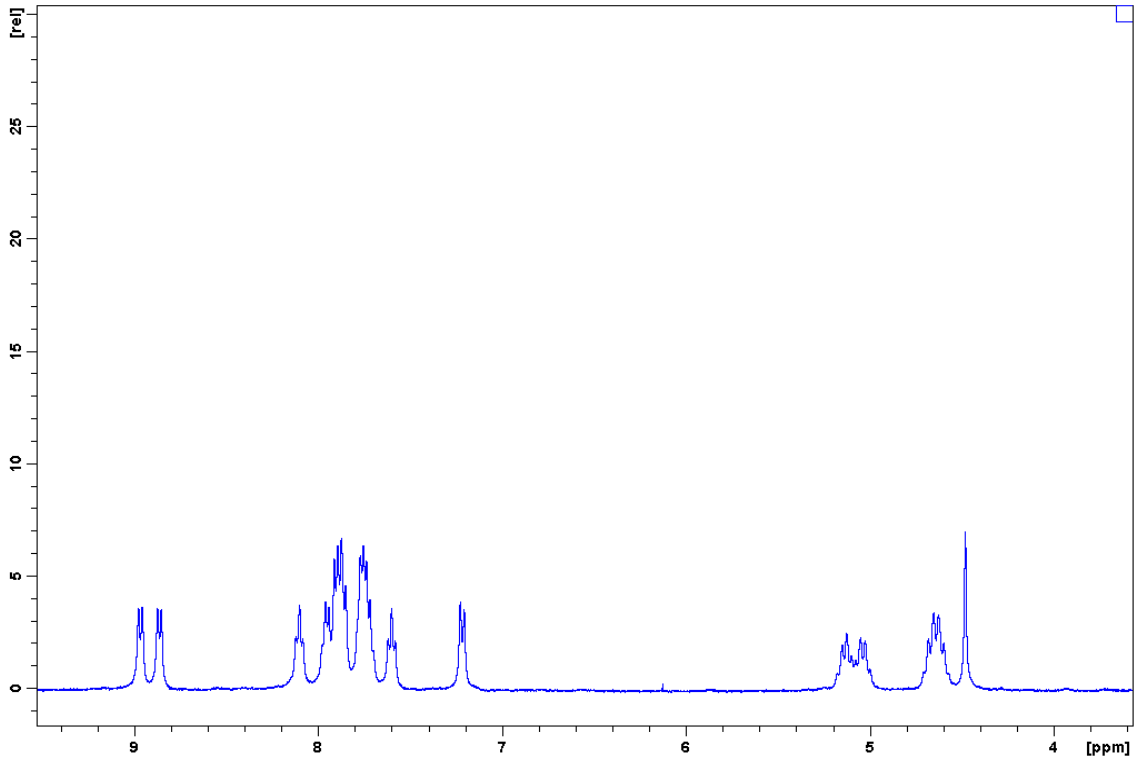
1-(9H-Fluoren-2-yl)-1,2,3,12*b*-tetrahydroimidazo[1,2-*f*]phenanthridine (in D_6-DMSO) **(8)**



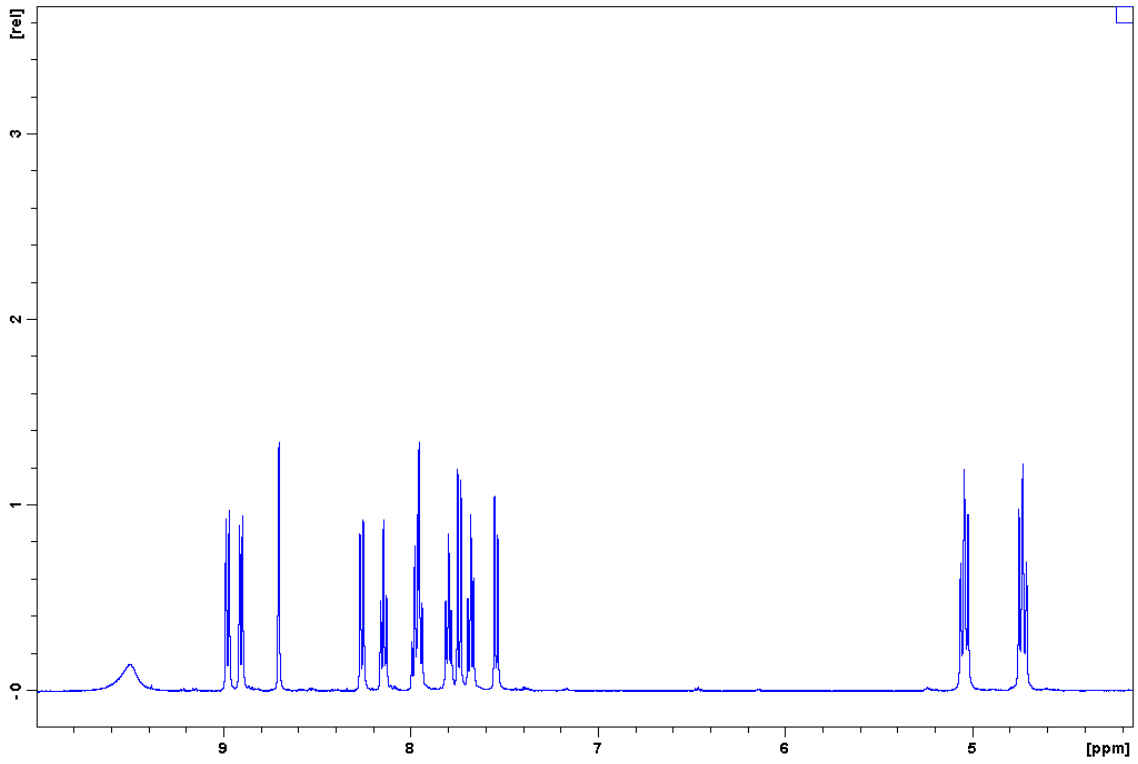
5-[2-(Fluoranthen-3-ylamino)-ethyl]phenanthridinium bromide (in D_6-DMSO) **(9)**



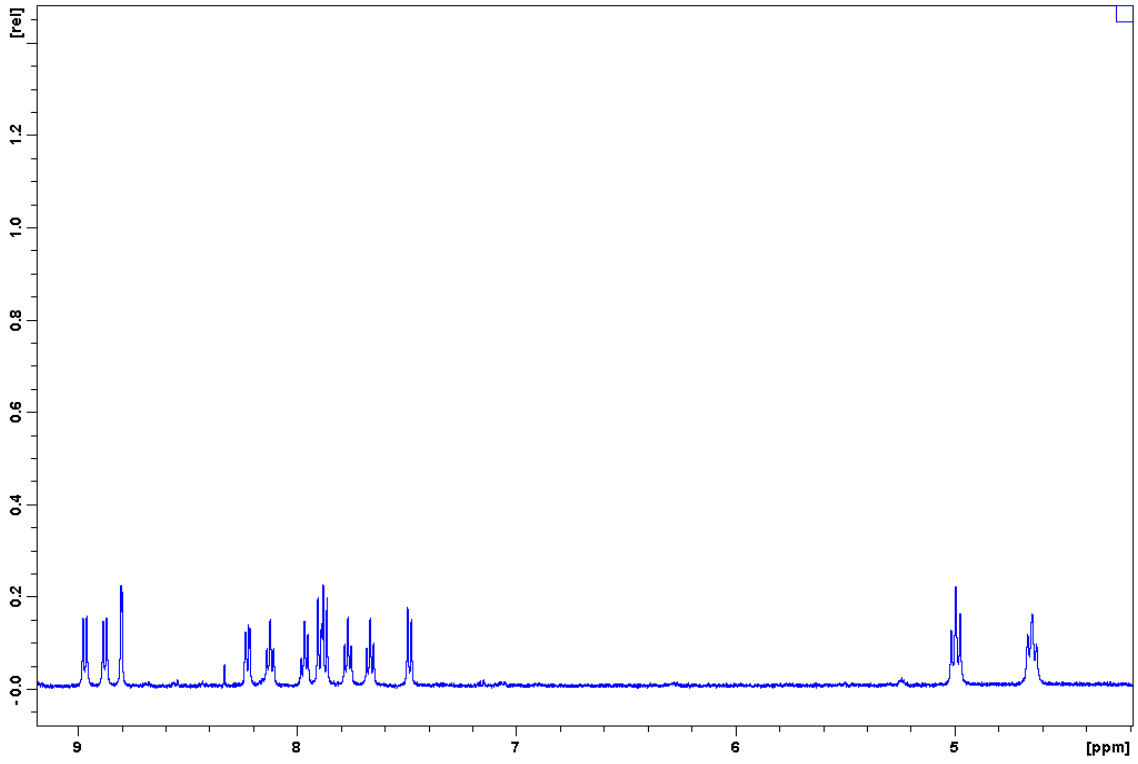
1-(2-Ethynyl-phenyl)-2,3-dihydro-1*H*-imidazo[1,2-*f*]phenanthridin-4-ylium bromide (in D_6-DMSO) **(10)**



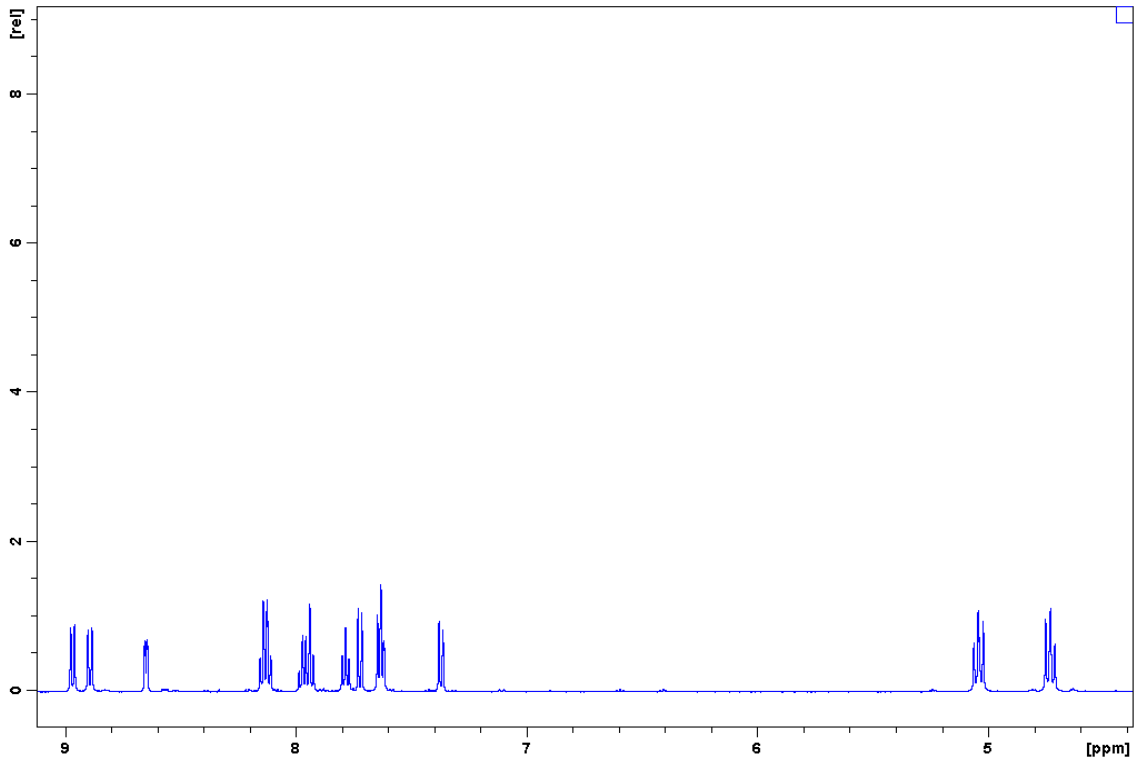
1-(5-Chloro-pyridin-2-yl)-2,3-dihydro-1*H*-imidazo[1,2-*f*]phenanthridin-4-ylium bromide (in D_6-DMSO) **(11)**



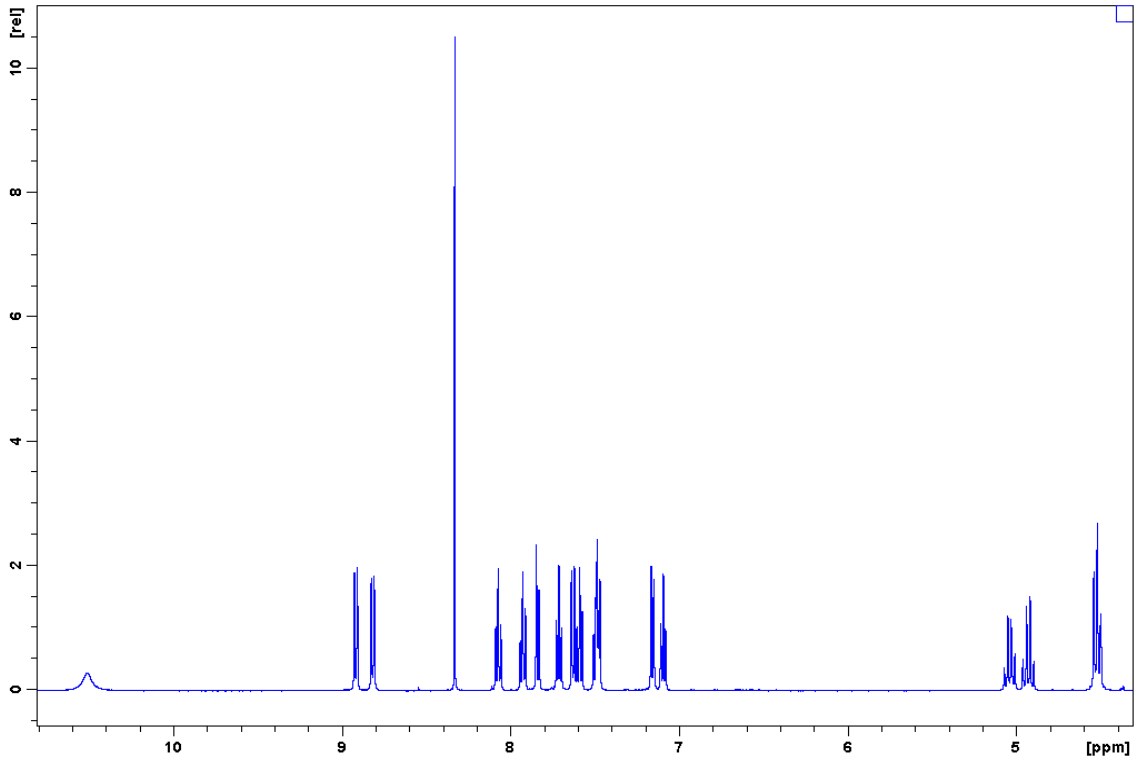
1-(6-Chloro-pyridin-3-yl)-2,3-dihydro-1*H*-imidazo[1,2-*f*]phenanthridin-4-ylium bromide (in D_6-DMSO) **(12)**



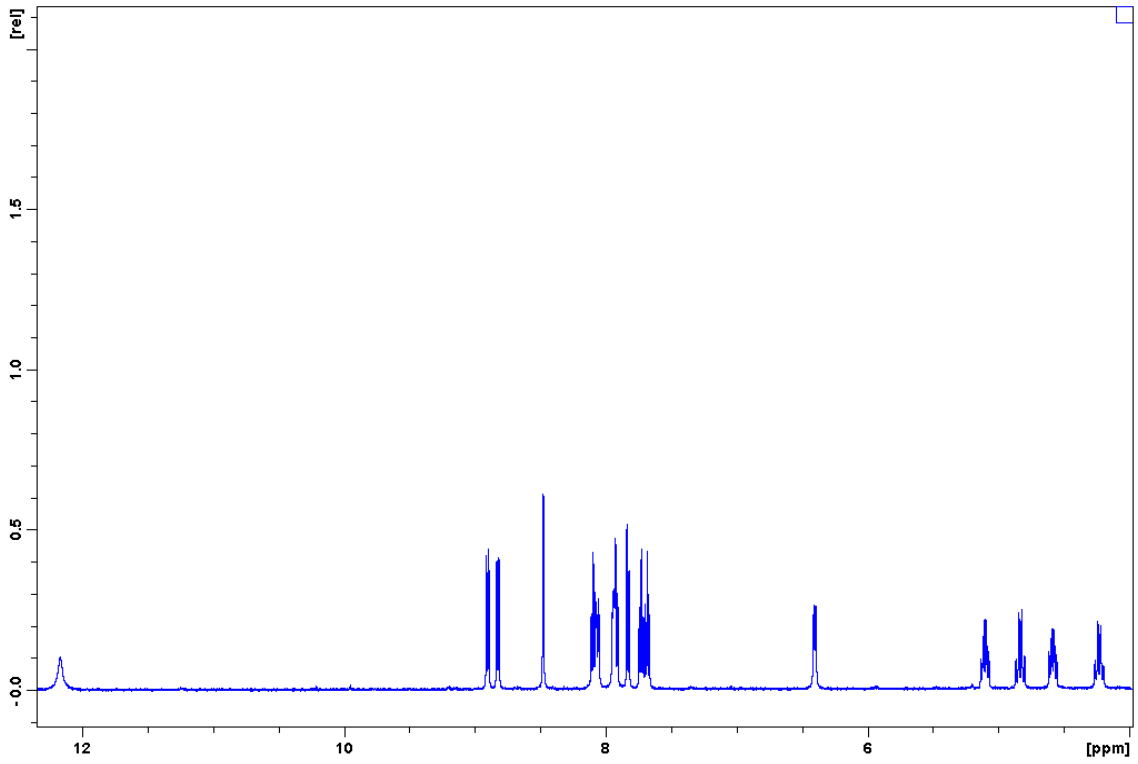
1-Pyridin-2-yl-2,3-dihydro-1*H*-imidazo[1,2-*f*]phenanthridin-4-ylium bromide (in D_6-DMSO) **(13)**



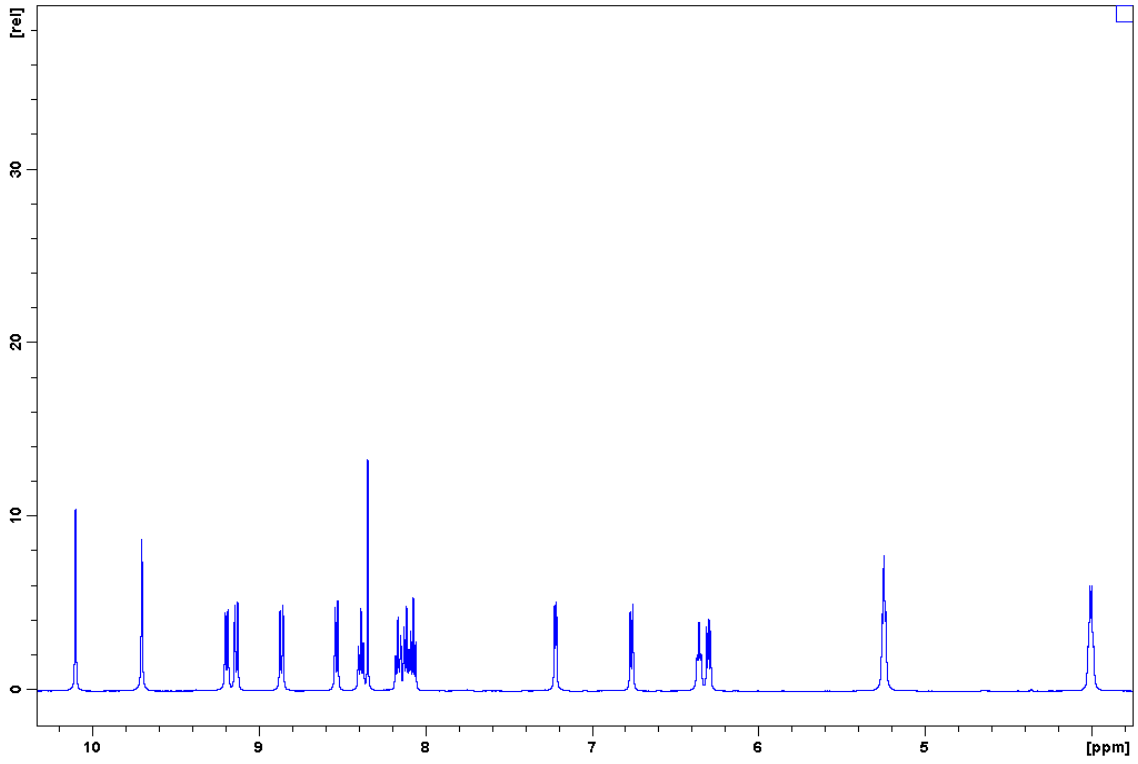
1-(2-Hydroxy-phenyl)-2,3-dihydro-1*H*-imidazo[1,2-*f*]phenanthridin-4-ylium bromide (in D_6-DMSO) **(14)**



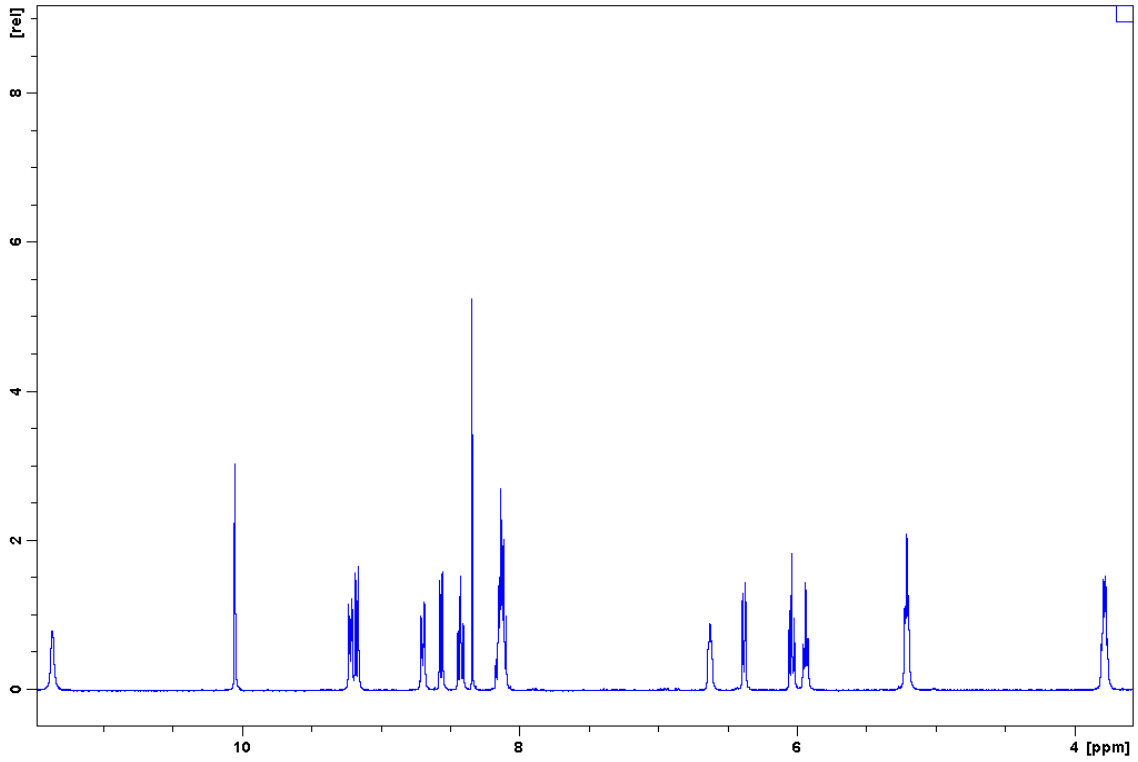
1-(4-Hydroxy-pyridin-3-yl)-2,3-dihydro-1*H*-imidazo[1,2-*f*]phenanthridin-4-ylium bromide (in D_6-DMSO) **(15)**



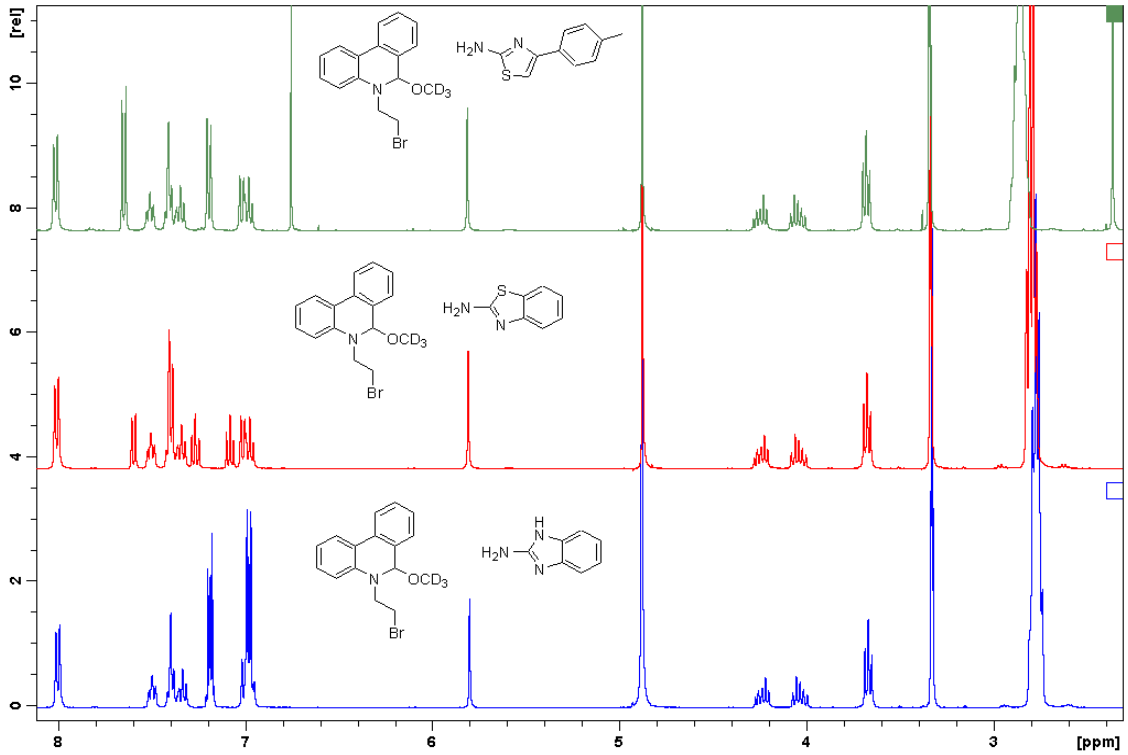
5-[2-(3-Hydroxy-pyridin-2-ylamino)-ethyl]phenanthridinium bromide (in D_6-DMSO) **(16)**



5-[2-(2-Hydroxy-pyridin-3-ylamino)-ethyl]phenanthridinium bromide (D_6-DMSO **) (17)**

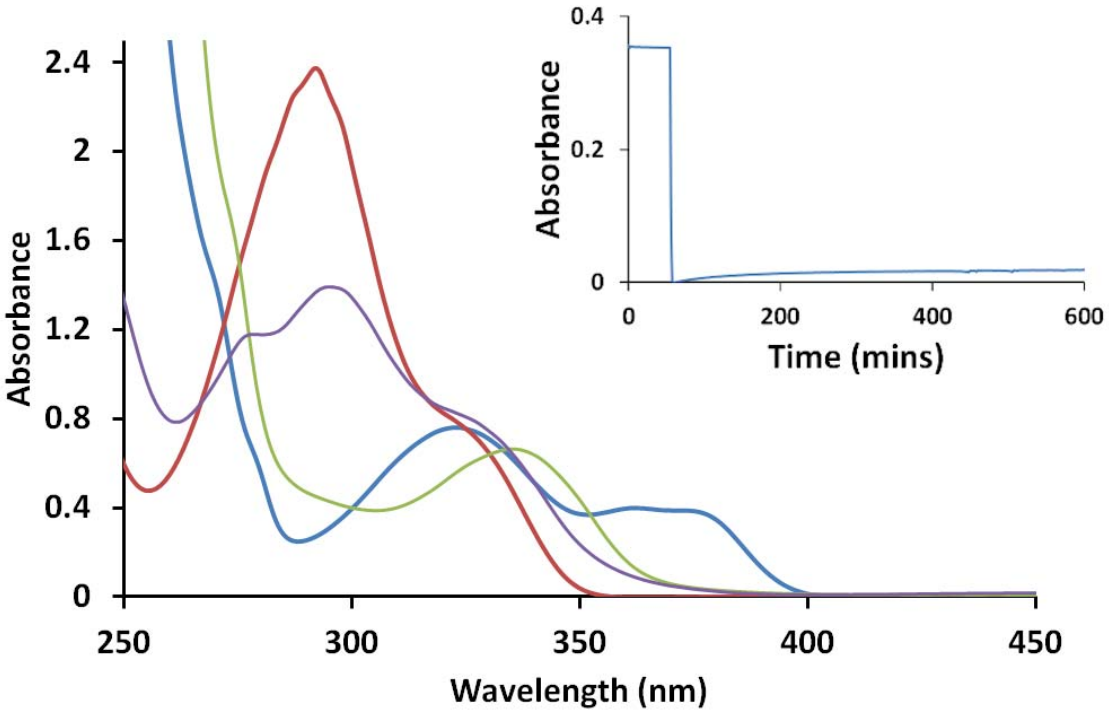


Pseudo base formation reaction for failed reactions (in CH_3OD)



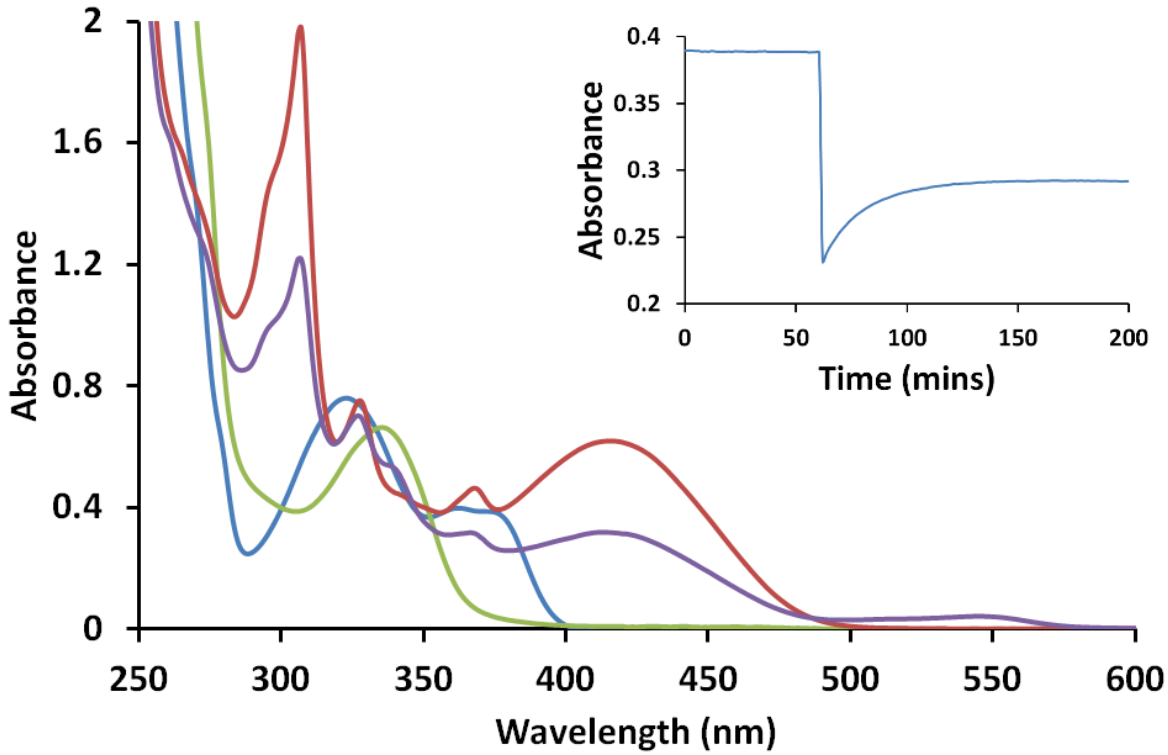
^{1}H NMR spectrum in green (top) from reaction of BEP (1eq.), 2-amino-4(p-tolyl)thiazole (1eq.) and triethylamine (3eq.) in CH_3OD.
^{1}H NMR spectrum in red (middle) from reaction of BEP (1eq.), 2-benzothiazoleamine (1eq.) and triethylamine (3eq.) in CH_3OD.
^{1}H NMR spectrum in blue (bottom) from reaction of BEP (1eq.), 2-aminobenzimidazole (1eq.) and triethylamine (3eq.) in CH_3OD.

1-(9H-Fluoren-2-yl)-1,2,3,12*b*-tetrahydroimidazo[1,2-*f*]phenanthridine **(8)**



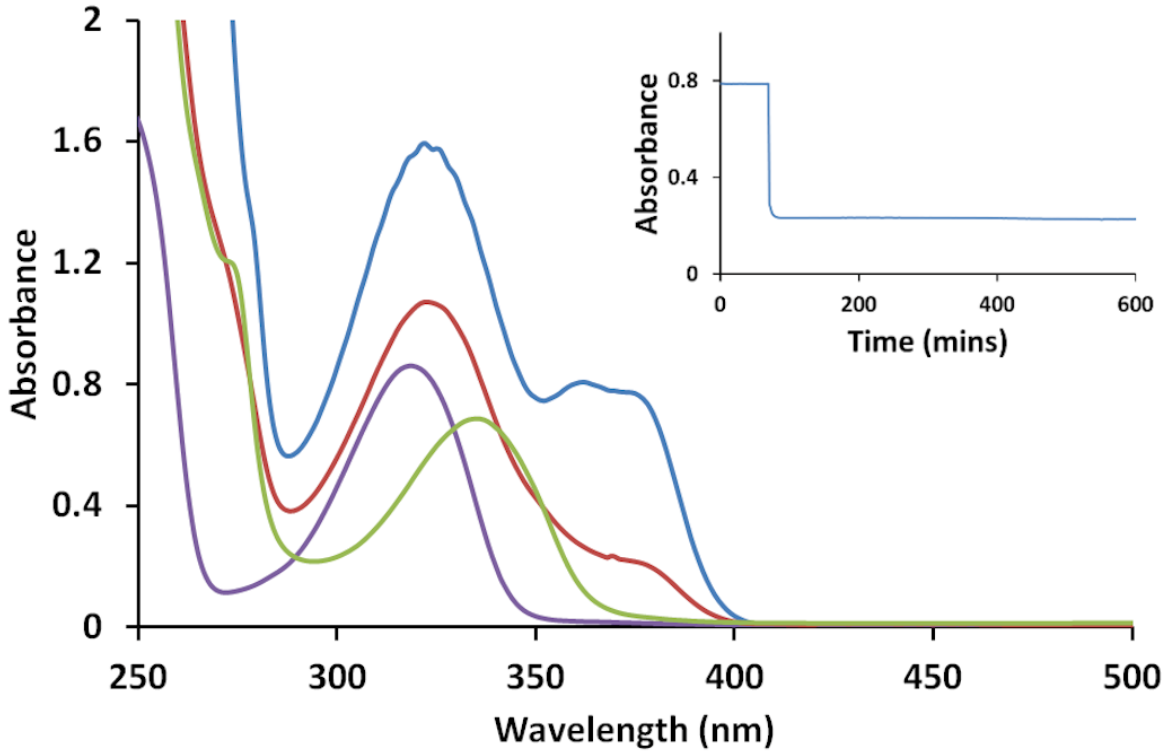
Spectrum for the products, reactants and reaction mixture for the reaction between 0.1mM BEP solution (2mL, 1 eq.) and 0.1mM 2-aminofluorene and triethylamine solution (2mL, 1 and 3 eq. respectively) (i) 0.1mM BEP, blue curve; (ii) 0.1mM 2-aminofluorene, red curve; (iii) product solution after 10hours, purple curve; (iv) 0.05mM pseudo base, green curve. (Inset) Plot of absorbance changes at 373nm against time.

5-[2-(Fluoranthen-3-ylamino)-ethyl]phenanthridinium bromide **(9)**



Spectrum for the products, reactants and reaction mixture for the reaction between 0.1mM BEP solution (2mL, 1 eq.) and 0.1mM 3-aminofluoranthene and triethylamine solution (2mL, 1 and 3 eq. respectively) (i) 0.1mM BEP, blue curve; (ii) 0.1mM 3-aminofluoranthene, red curve; (iii) product solution after 10hours, purple curve; (iv) 0.05mM pseudo base, green curve. (Inset) Plot of absorbance changes at 373nm against time.

1-(2-Ethynyl-phenyl)-2,3-dihydro-1*H*-imidazo[1,2-*f*]phenanthridin-4-ylium bromide **(10)**



Spectrum for the products, reactants and reaction mixture for the reaction between 0.2mM BEP solution (2mL, 1 eq.) and 0.2mM 2-ethynylamine and triethylamine solution (2mL, 1 and 3 eq. respectively) (i) 0.2mM BEP, blue curve; (ii) 0.2mM 2-ethynylamine, red curve; (iii) product solution after 10hours, purple curve; (iv) 0.01mM pseudo base, green curve. (Inset) Plot of absorbance changes at 373nm against time.