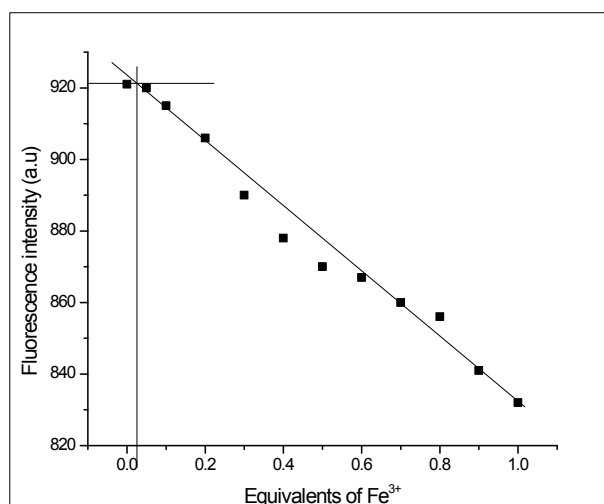


## Synthesis of a dihydroquinoline based fluorescent cyanine for selective, naked eye, and turn off detection of Fe<sup>3+</sup> ions.

K.Vijay, C. Nandi, and Shriniwas D. Samant\*

Section	Contents
1	Detection Limit Calculation
2	Fluorescence Study
3	Spectral data

### 1 Detection Limit Calculation



The detection limit of probe 8 for Fe<sup>3+</sup> was estimated to be of  $20.2 \times 10^{-9}$  M. To establish the detection limit, a graph of minimum equivalents of Fe<sup>3+</sup> versus fluorescence intensity was plotted. The point where a good sensitivity was observed was obtained by extrapolating the lines.

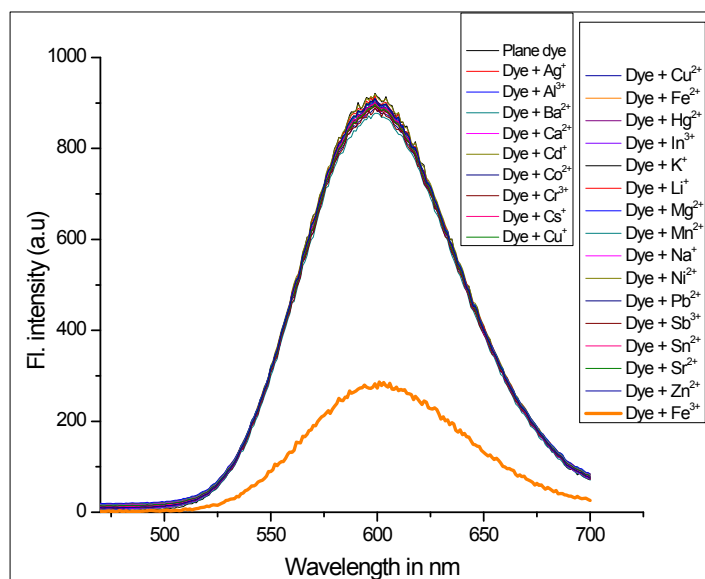
Equation used for calculating detection limit (DL)

Detection Limit = Conc. of probe 8 x Equiv. of titrant at which change observed.

Therefore;

$$DL = 9.13 \times 10^{-7} \times 0.02 = 20.2 \times 10^{-9} \text{ M.}$$

### 2 Fluorescence Study

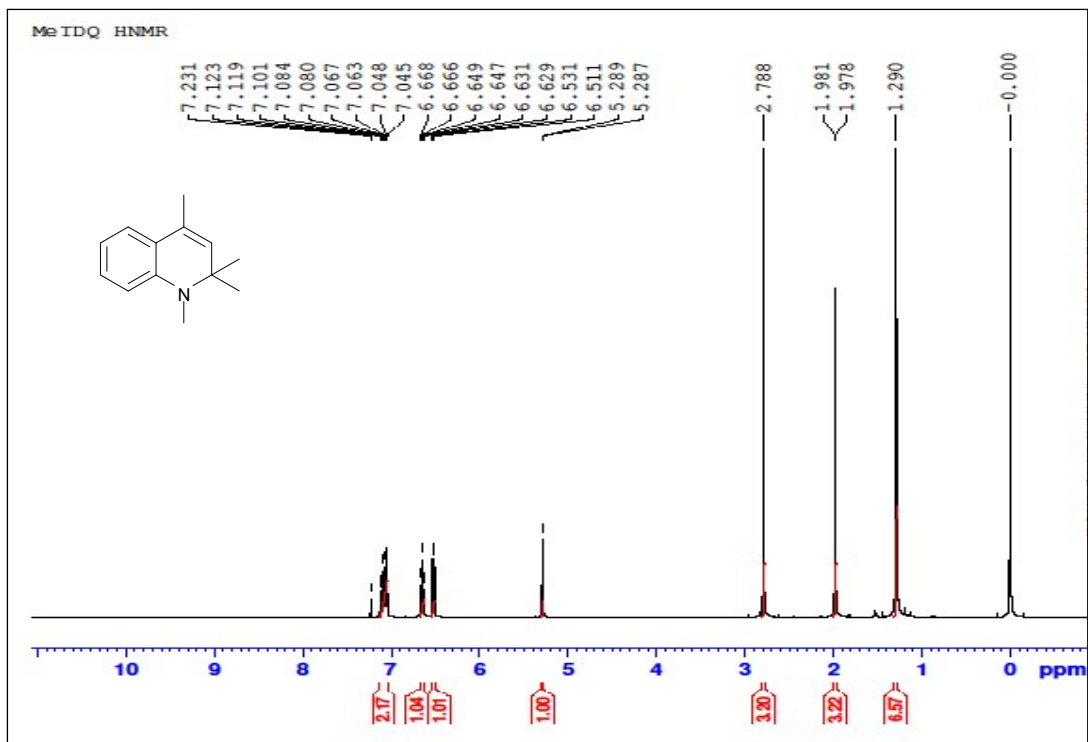


Fluorescence response curve of probe 8 ( $9.13 \times 10^{-7}$  M) on mixing with 10 equivalents of various metals.

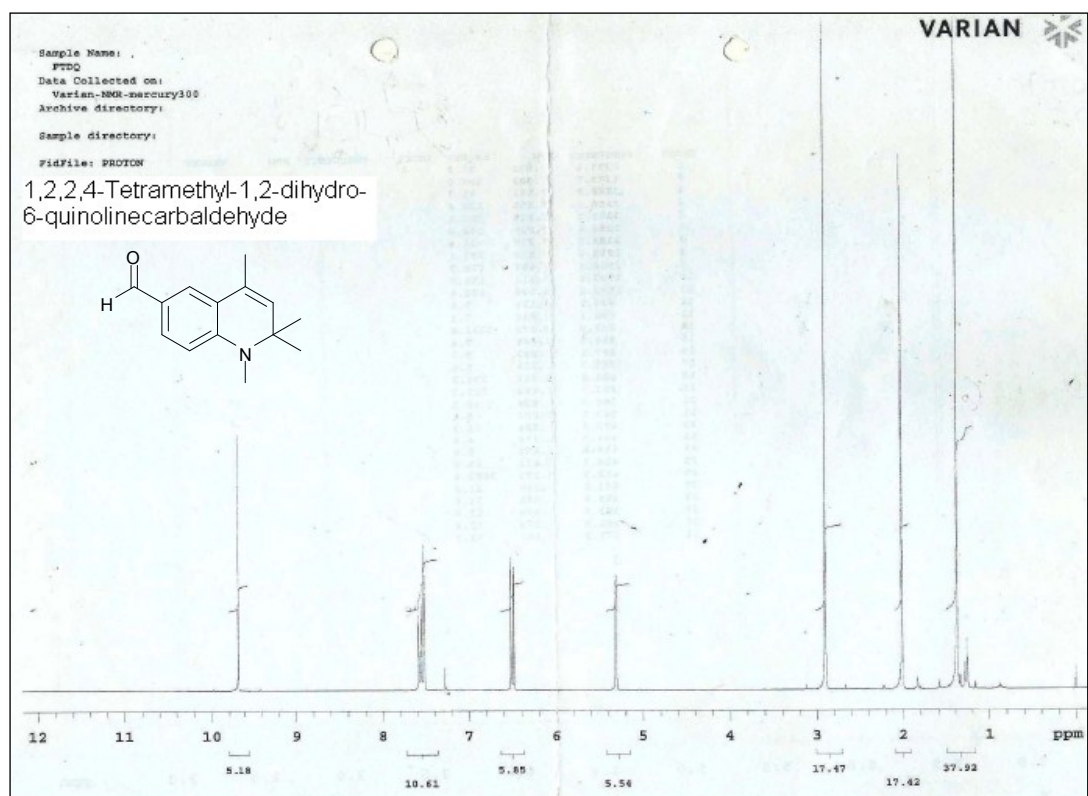
The metals tested were from the corresponding compounds of  $\text{AgNO}_3$ ,  $\text{AlCl}_3$ ,  $\text{BaCl}_2 \cdot 2\text{H}_2\text{O}$ ,  $\text{CaCl}_2$ ,  $\text{CdCl}_2 \cdot 5\text{H}_2\text{O}$ ,  $\text{CoCl}_2 \cdot 2\text{H}_2\text{O}$ ,  $\text{CrCl}_3 \cdot 6\text{H}_2\text{O}$ ,  $\text{CsCl}$ ,  $\text{CuCl}$ ,  $\text{CuCl}_2$ ,  $\text{FeCl}_2 \cdot 4\text{H}_2\text{O}$ ,  $\text{HgCl}_2$ ,  $\text{InCl}_3$ ,  $\text{KCl}$ ,  $\text{LiCl}$ ,  $\text{MgCl}_2 \cdot 6\text{H}_2\text{O}$ ,  $\text{MnCl}_2 \cdot 2\text{H}_2\text{O}$ ,  $\text{NaCl}$ ,  $\text{NiCl}_2 \cdot 6\text{H}_2\text{O}$ ,  $\text{PbCl}_2$ ,  $\text{SbCl}_3$ ,  $\text{SnCl}_2 \cdot 2\text{H}_2\text{O}$ ,  $\text{SrCl}_2 \cdot 6\text{H}_2\text{O}$ , and  $\text{ZnCl}_2$ .

### 3 NMR Spectra

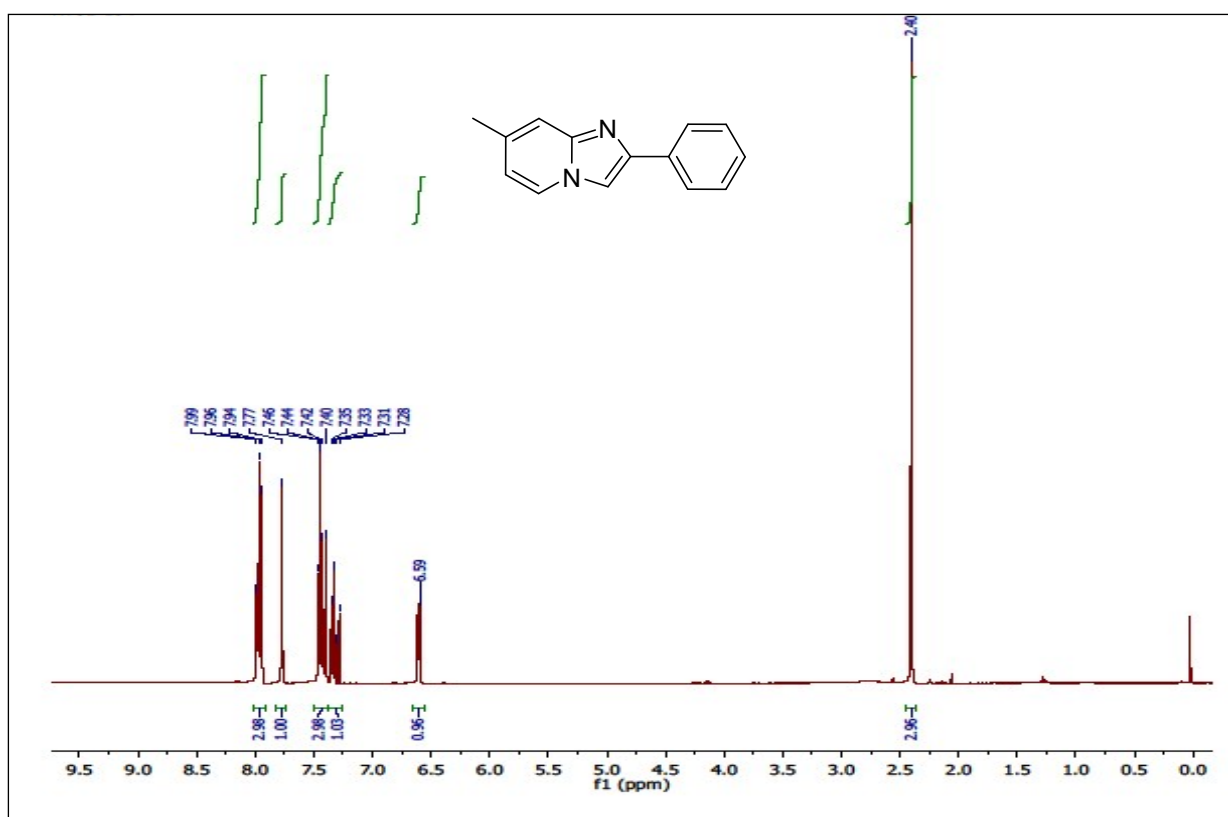
#### i. 1,2,2,4-Tetramethyl-1,2-dihydroquinoline



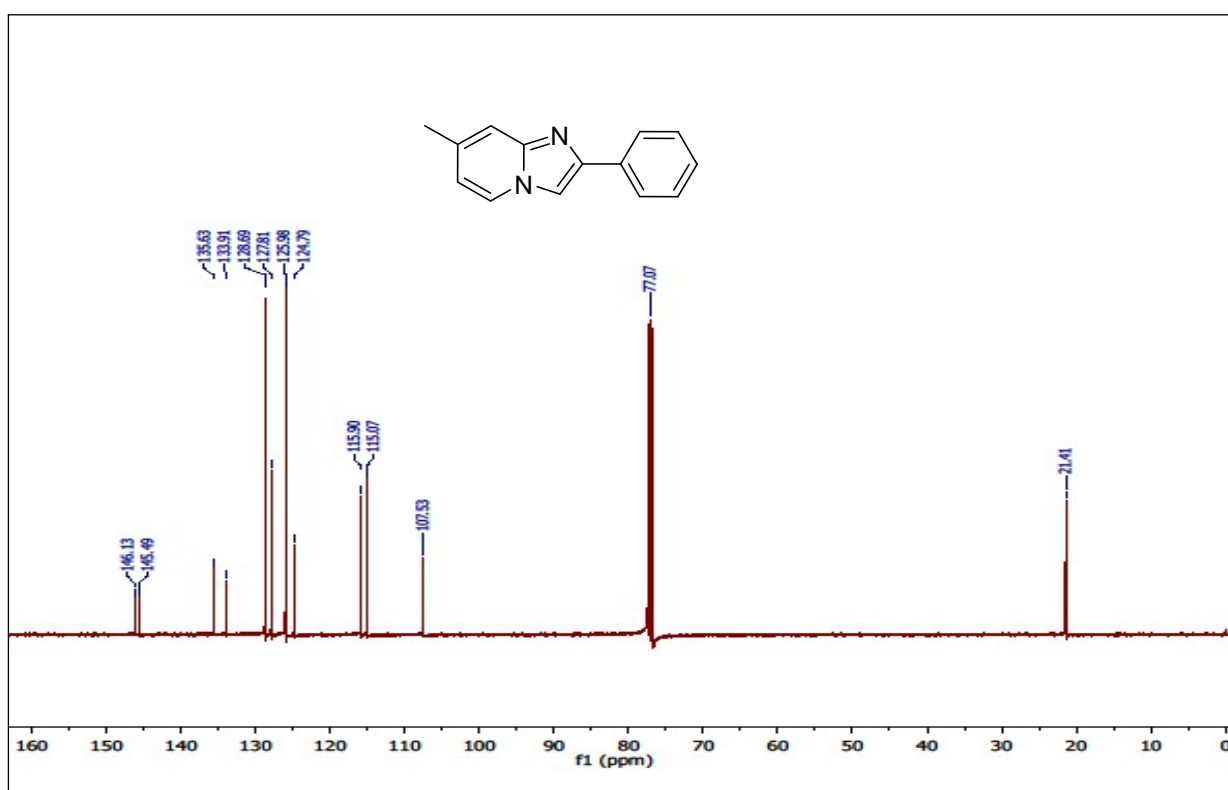
#### ii. 1,2,2,4-Tetramethyl-1,2-dihydro-6-quinolinecarbaldehyde



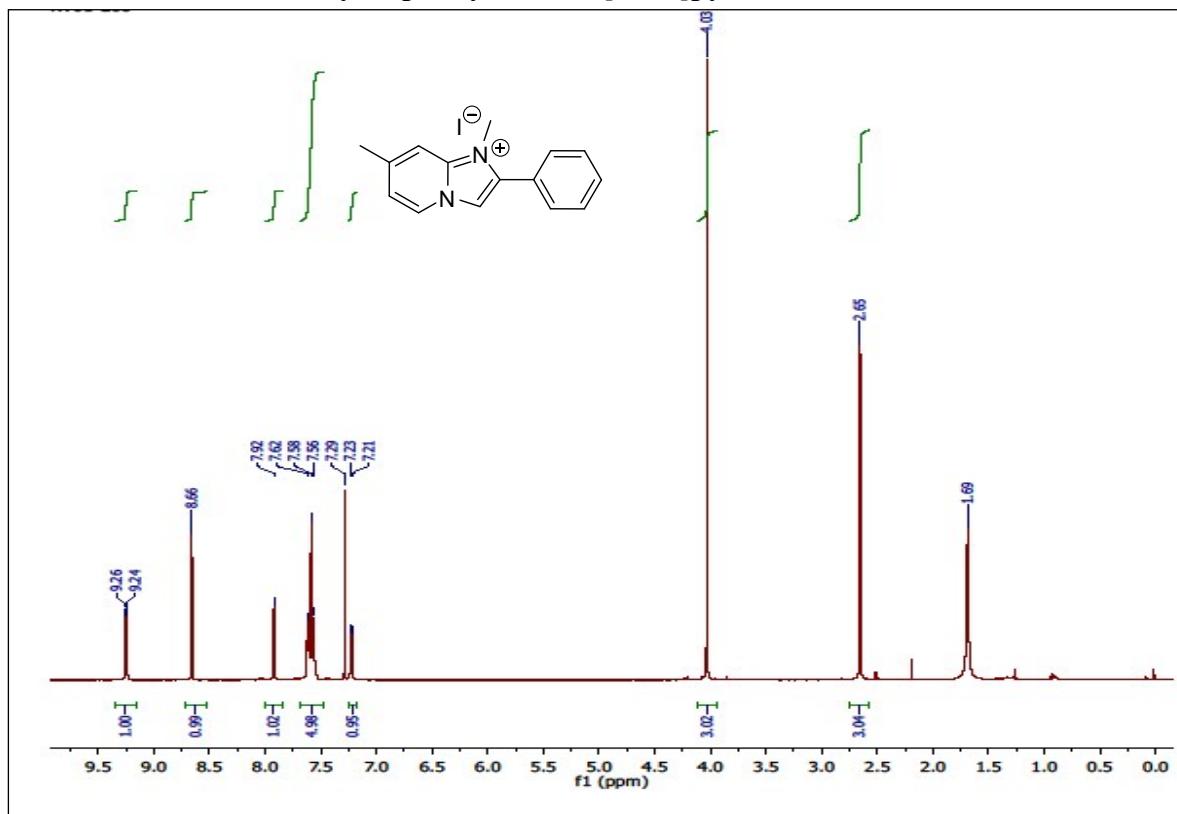
iii.  $^1\text{H}$ NMR of 7-methyl-2-phenylimidazo[1,2-a]pyridine



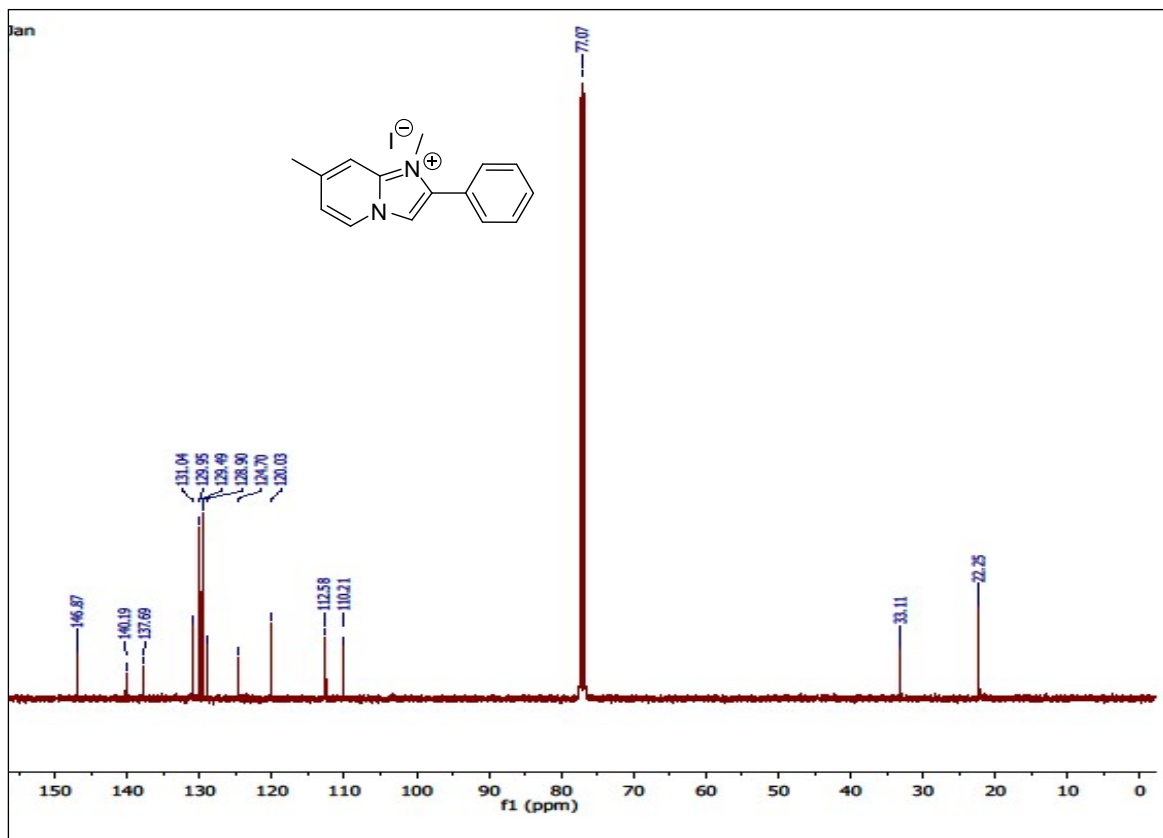
iv.  $^{13}\text{C}$ NMR of 7-methyl-2-phenylimidazo[1,2-a]pyridine



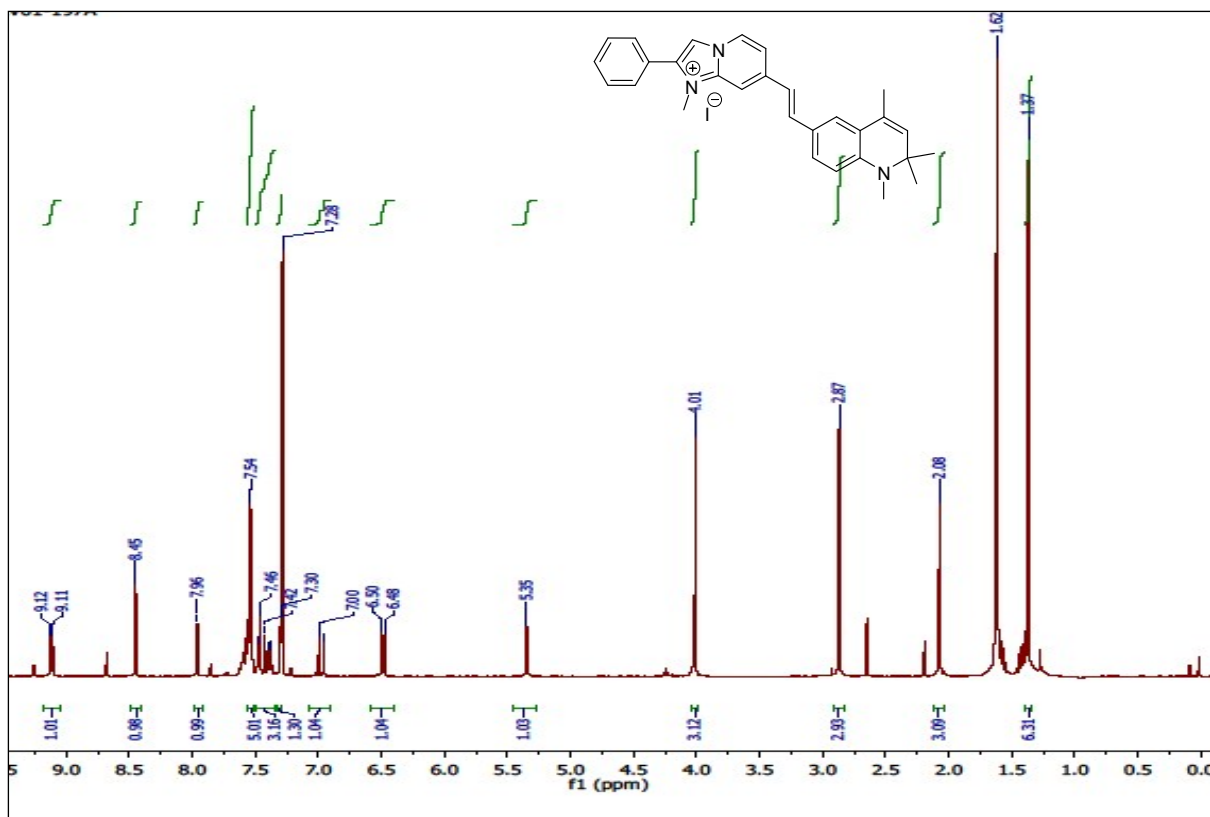
v. <sup>1</sup>HNMR of 7-methyl-2-phenylimidazo[1,2-a]pyridinium iodide



vi. <sup>13</sup>CNMR of 7-methyl-2-phenylimidazo[1,2-a]pyridinium iodide



- vii. <sup>1</sup>HNMR of (E)-1-methyl-2-phenyl-7-(2-(1,2,2,4-tetramethyl-1,2-dihydroquinolin-6-yl)vinyl)imidazo[1,2-a]pyridin-1-ium iodide:



- viii. <sup>13</sup>CNMR of (E)-1-methyl-2-phenyl-7-(2-(1,2,2,4-tetramethyl-1,2-dihydroquinolin-6-yl)vinyl)imidazo[1,2-a]pyridin-1-ium iodide:

