

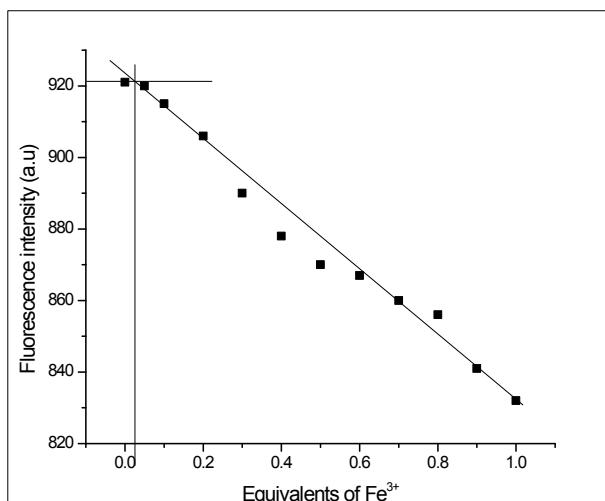
Synthesis of a dihydroquinoline based fluorescent cyanine for selective, naked eye, and turn off detection of Fe^{3+} ions.

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Section Contents

- 1 Detection Limit Calculation
- 2 Fluorescence Study
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1 Detection Limit Calculation



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

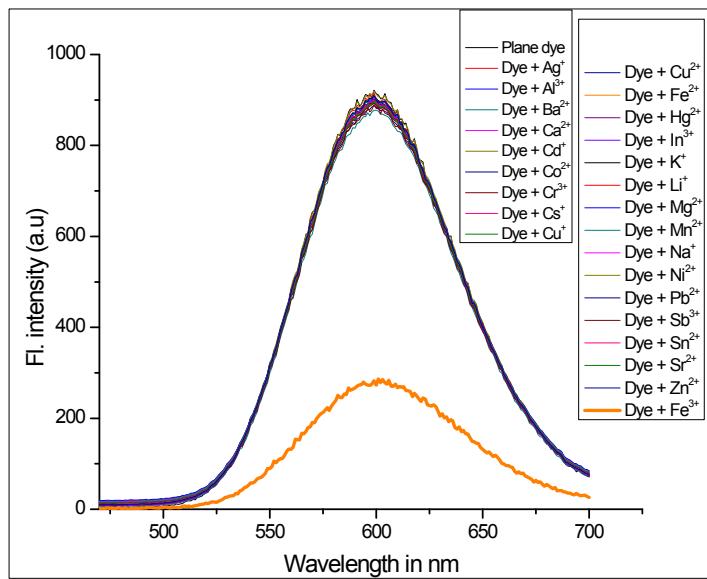
Equation used for calculating detection limit (DL)

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

Therefore;

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

2 Fluorescence Study

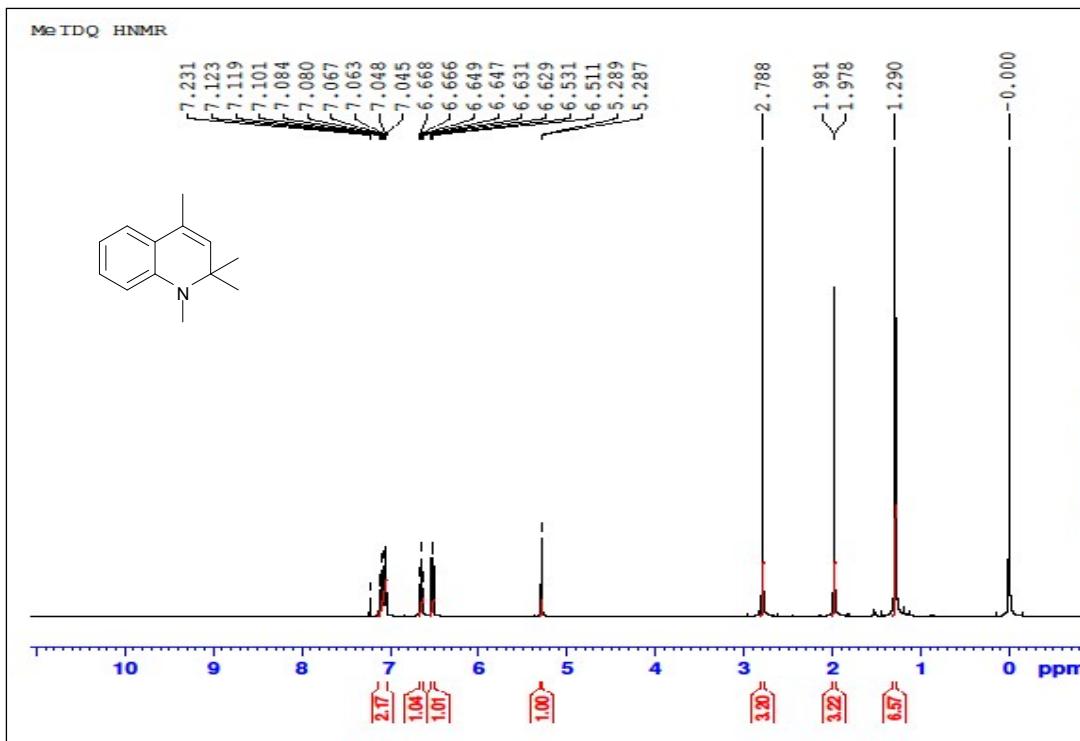


Fluorescence response curve of probe 8 (9.13×10^{-7} M) on mixing with 10 equivalents of various metals.

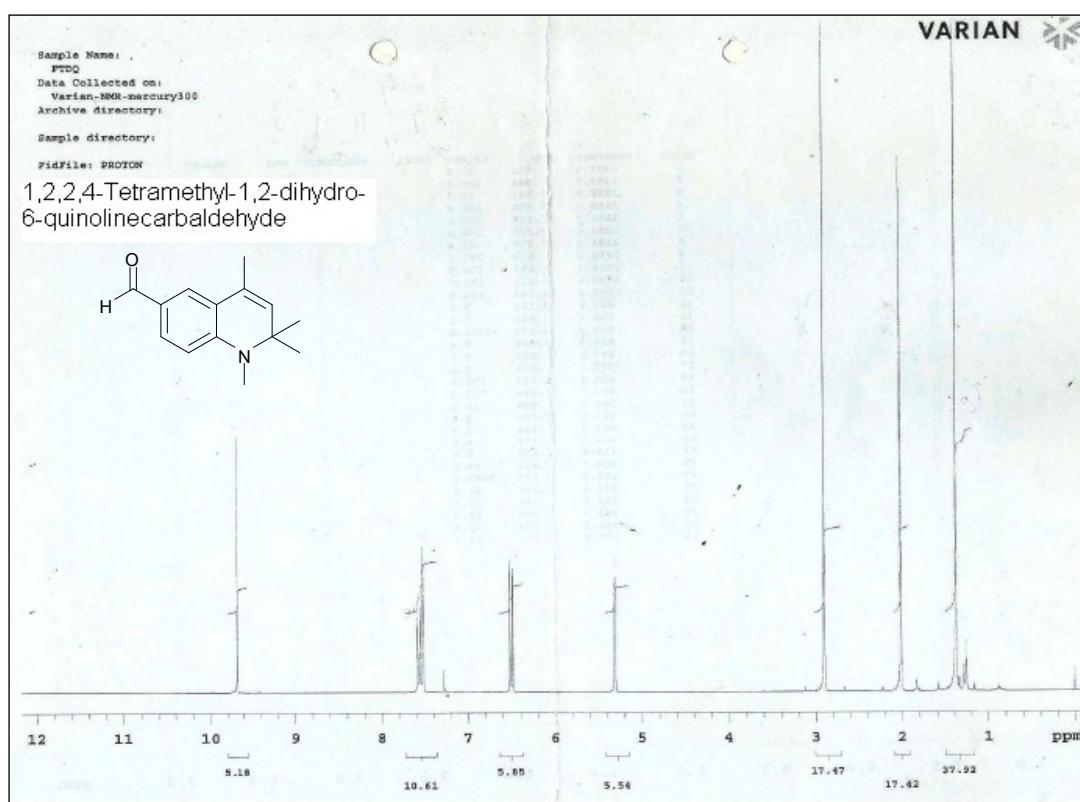
The metals tested were from the corresponding compounds of AgNO_3 , AlCl_3 , $\text{BaCl}_2 \cdot 2\text{H}_2\text{O}$, CaCl_2 , $\text{CdCl}_2 \cdot 5\text{H}_2\text{O}$, $\text{CoCl}_2 \cdot 2\text{H}_2\text{O}$, $\text{CrCl}_3 \cdot 6\text{H}_2\text{O}$, CsCl , CuCl , CuCl_2 , $\text{FeCl}_2 \cdot 4\text{H}_2\text{O}$, HgCl_2 , InCl_3 , KCl , LiCl , $\text{MgCl}_2 \cdot 6\text{H}_2\text{O}$, $\text{MnCl}_2 \cdot 2\text{H}_2\text{O}$, NaCl , $\text{NiCl}_2 \cdot 6\text{H}_2\text{O}$, PbCl_2 , SbCl_3 , $\text{SnCl}_2 \cdot 2\text{H}_2\text{O}$, $\text{SrCl}_2 \cdot 6\text{H}_2\text{O}$, and ZnCl_2 .

3 NMR Spectra

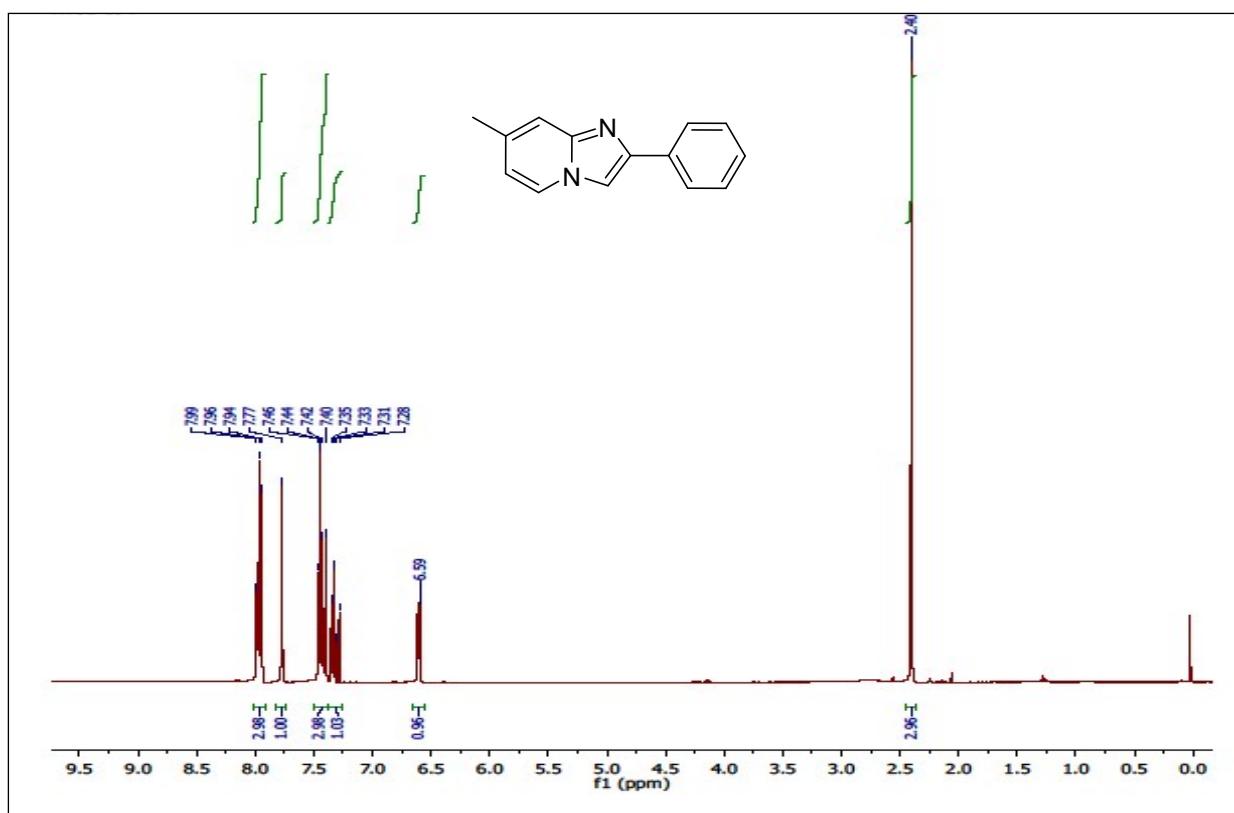
i. 1,2,2,4-Tetramethyl-1,2-dihydroquinoline



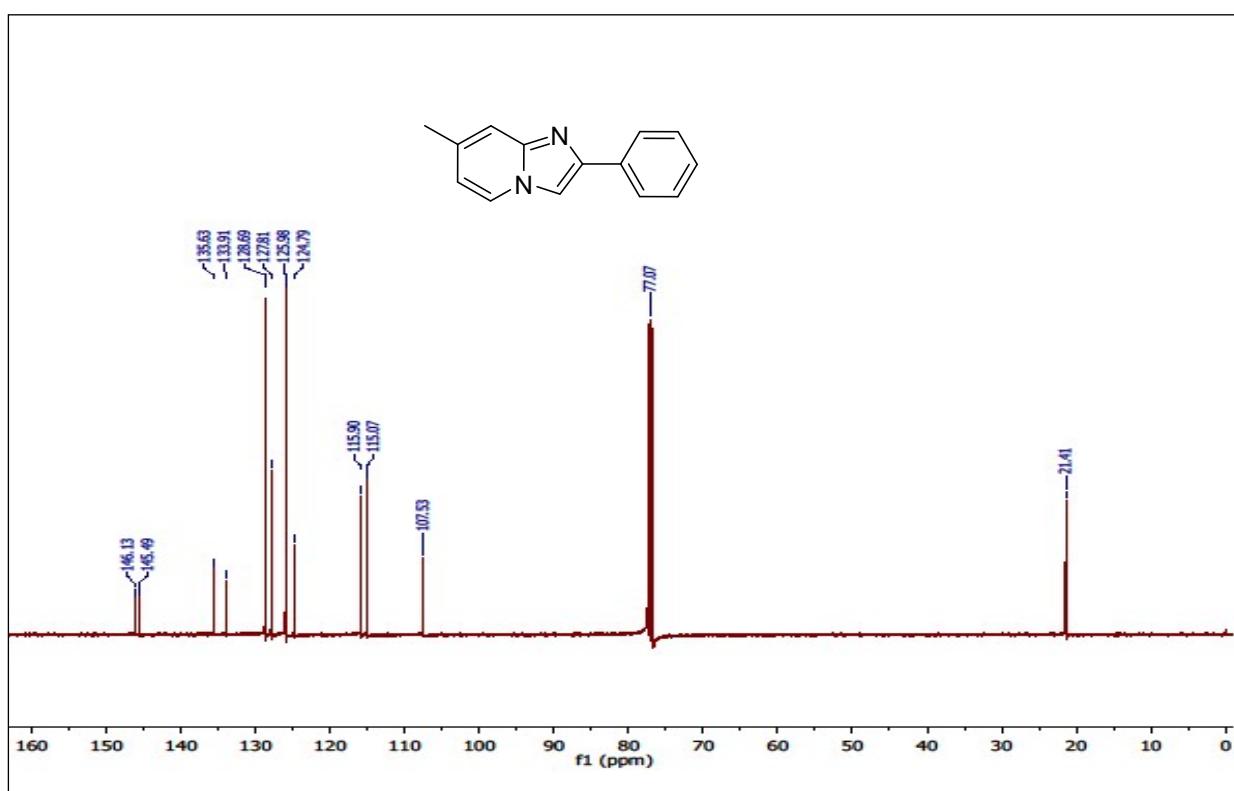
ii. 1,2,2,4-Tetramethyl-1,2-dihydro-6-quinolinecarbaldehyde



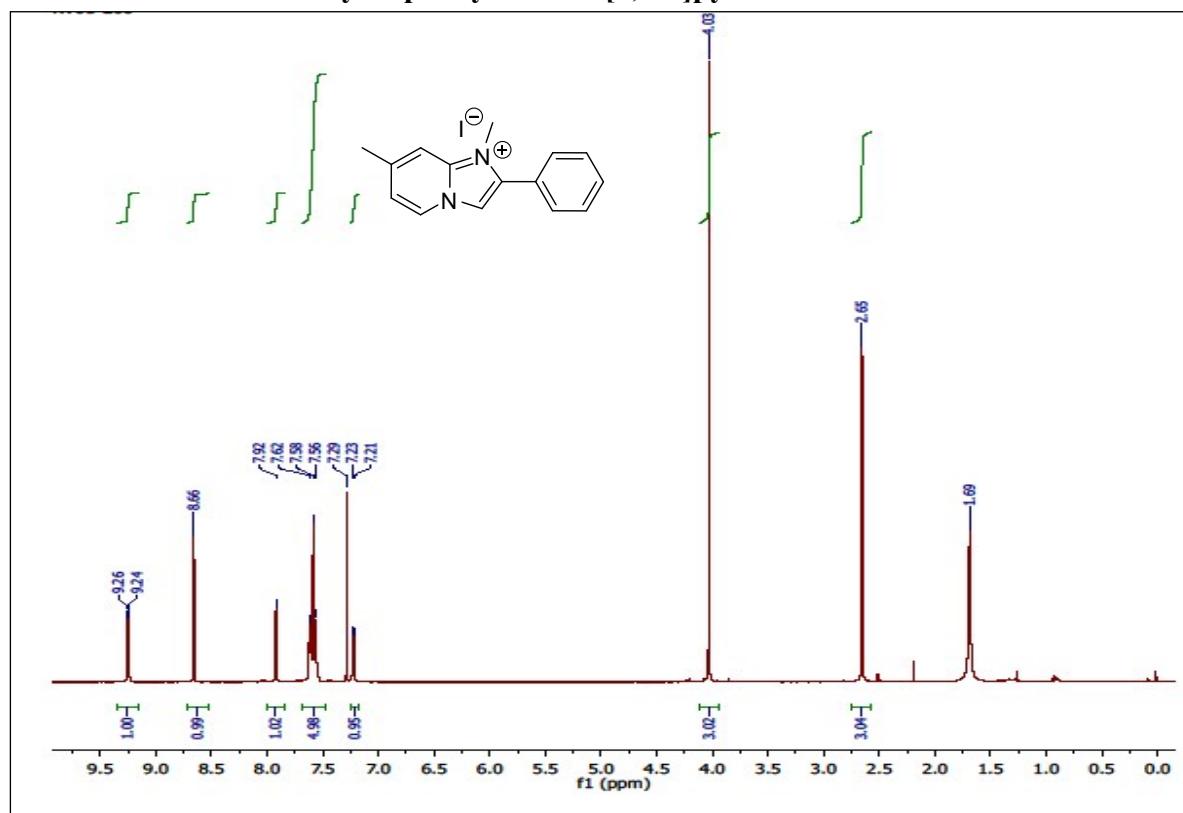
iii. ^1H NMR of 7-methyl-2-phenylimidazo[1,2-a]pyridine



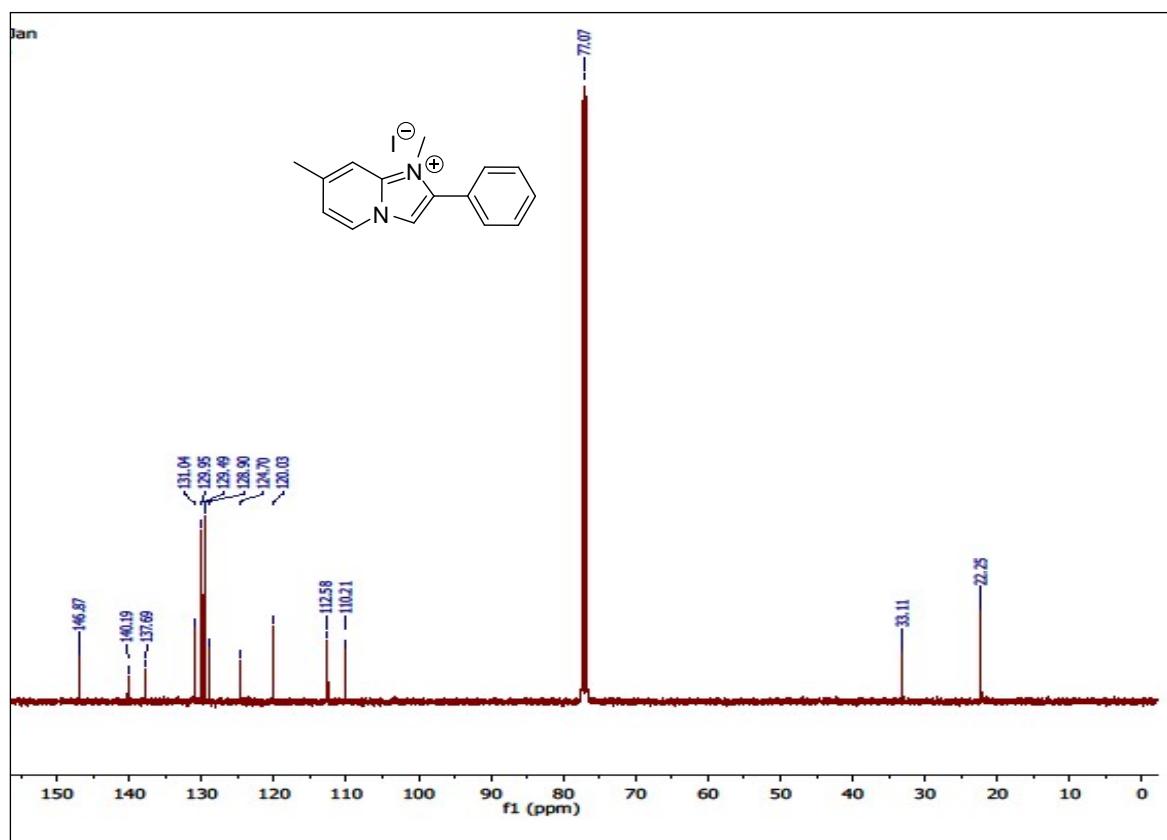
iv. ^{13}C NMR of 7-methyl-2-phenylimidazo[1,2-a]pyridine



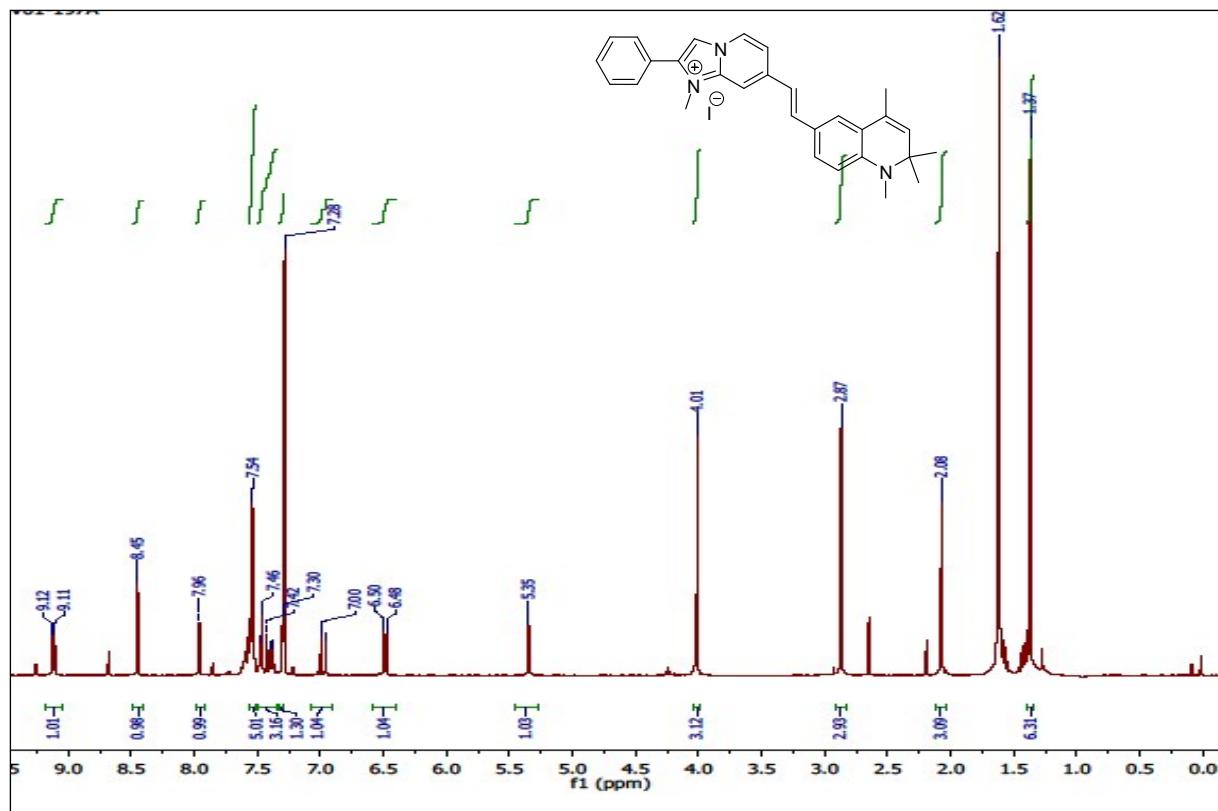
v. ^1H NMR of 7-methyl-2-phenylimidazo[1,2-a]pyridinium iodide



vi. ^{13}C NMR of 7-methyl-2-phenylimidazo[1,2-a]pyridinium iodide



vii. ¹HNMR 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-i^{um} iodide:



viii. ¹³CNMR 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-i^{um} iodide:

