SUPPLEMENTARY INFORMATION

Protonation of the imino nitrogen deactivates the excited state of imidazolin-5-one in the solid state

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Table of Contents:

Figure S1 represent the one dimensional arrangement of compound **I** through hydrogen bonding between C(1)-H(1A)···O(3) (2.58 Å), C(12)-H(01C)...O(3) (2.56 Å) and C(3)-H(3)...O(5) (2.48 Å) (dotted red line). Color code: carbon: yellow; oxygen: red; nitrogen: blue; hydrogen: black, chlorine: light green.

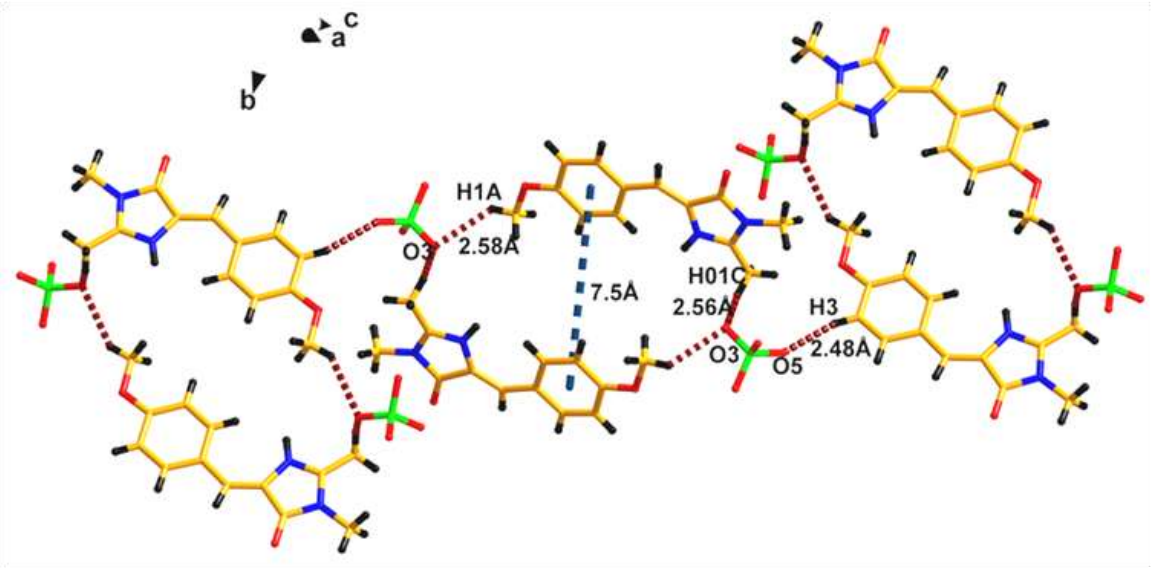


Figure S2:- IR spectra of compound **II,** in acetonitrile solvent (above) and in solid state (below). In solid state, N-H peak of the imidazolinone ring appears at 3477 cm^{-1} (highlighted region).

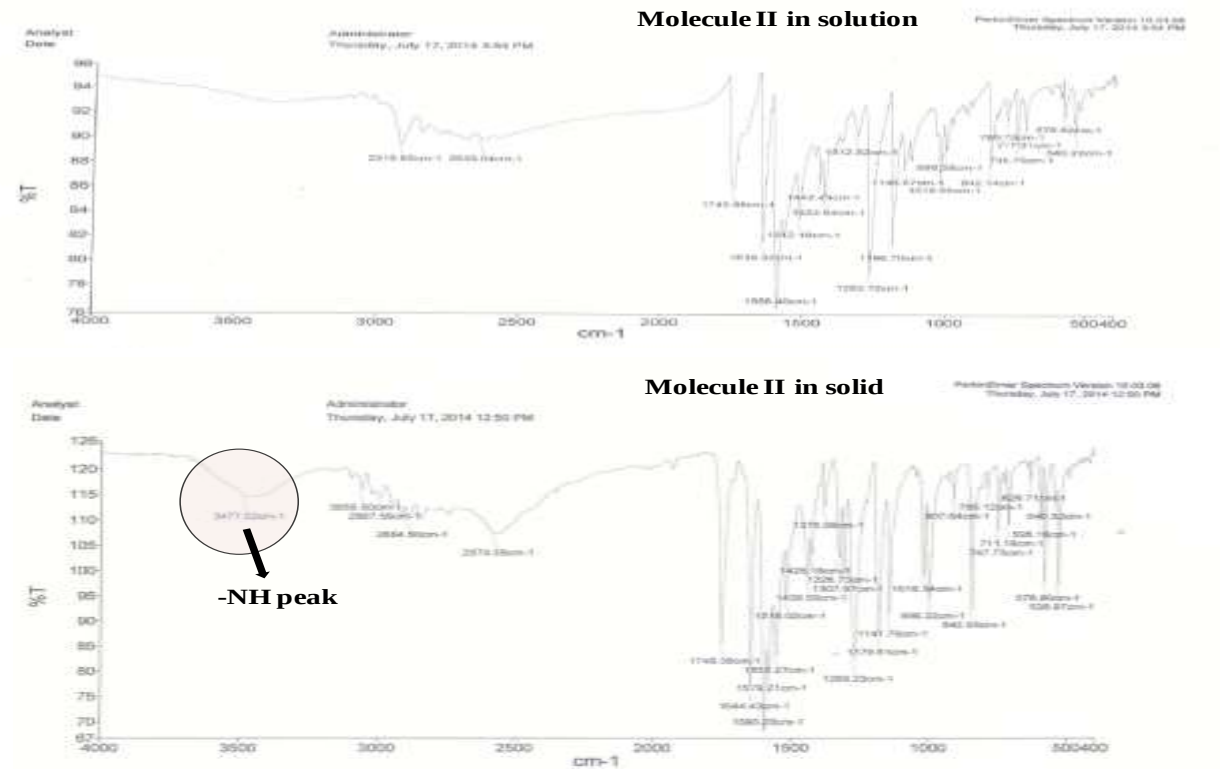
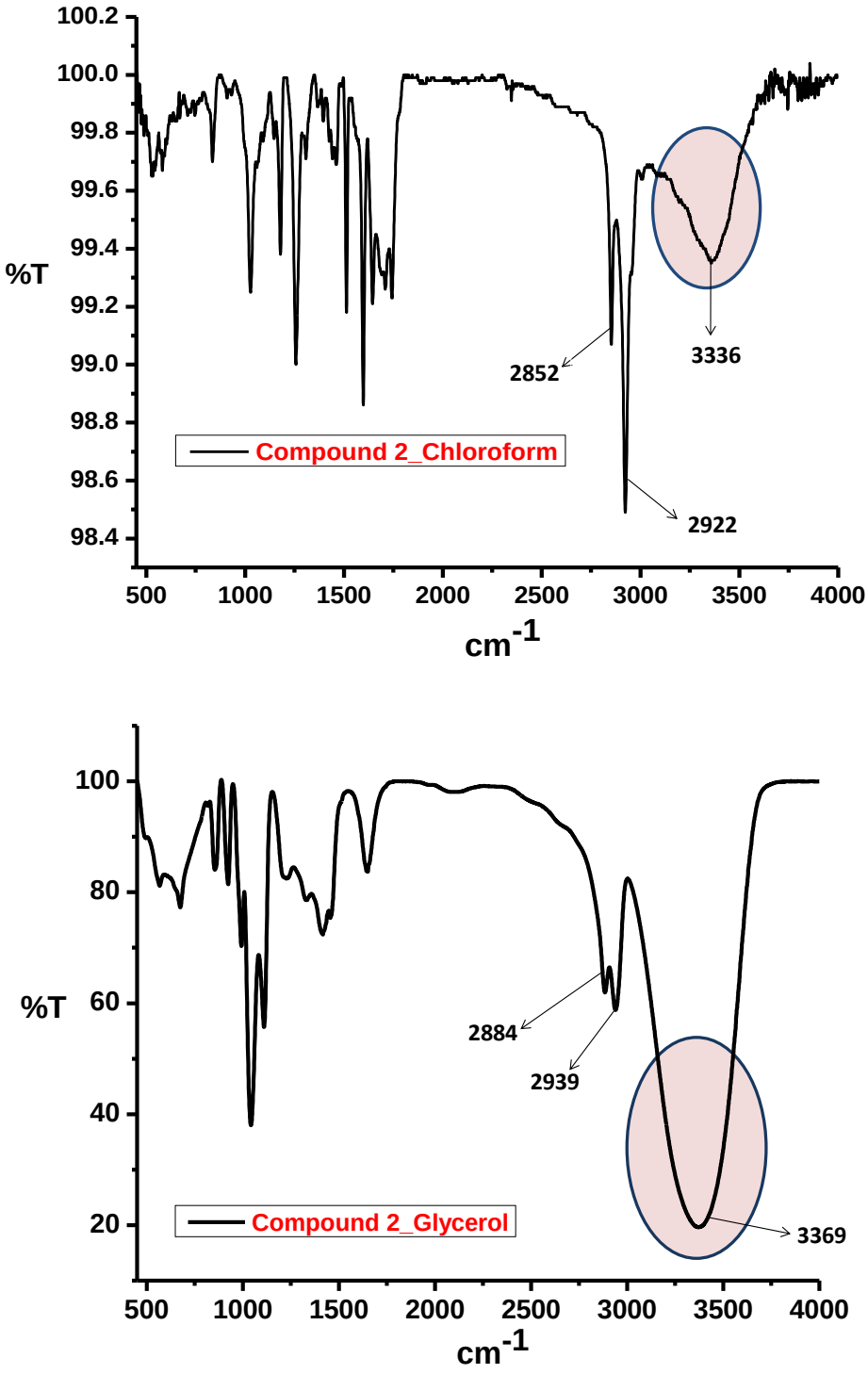


Figure S3: IR spectra of compound **II** in Chloroform (above) and in Glycerol (below). The N-H peak is highlighted.



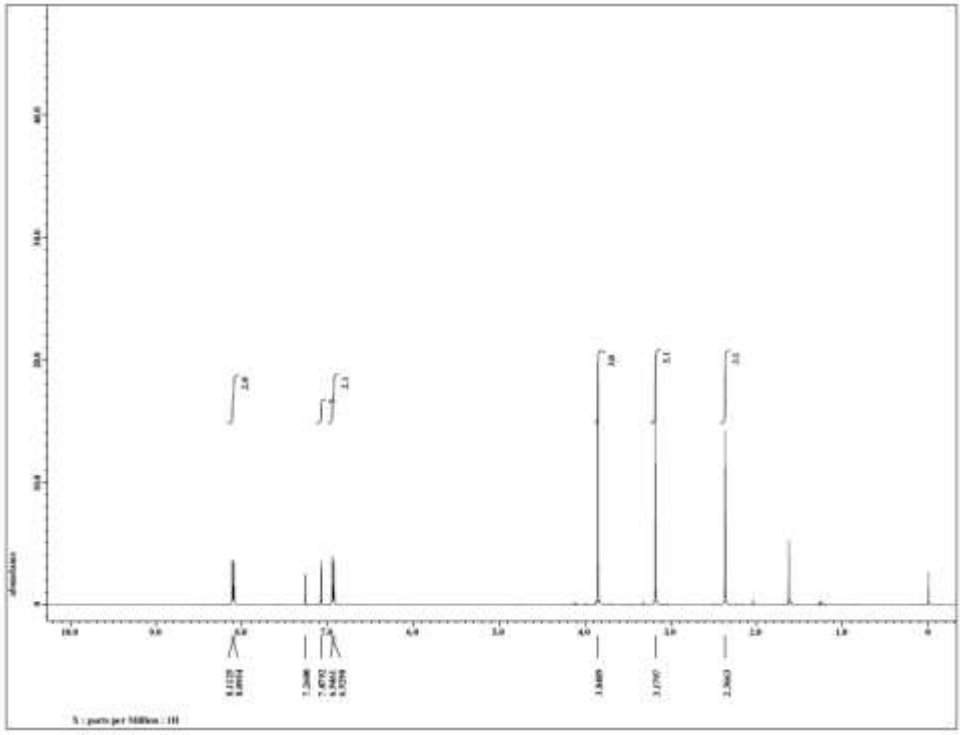
Characterization of ligand and compound I-II: - The ^{1}H NMR of the molecule **I** and **II** was similar to the *p*-MBDI (ligand). Therefore, here we are reporting the Mass spectra and CHN analysis of molecule **I** and **II**.

(Z)-4-(4-methoxybenzylidene)-1,2-dimethyl-1H-imidazol-5(4H)-one (*p*MBDI) (ligand): Yellow solid compound. Yield: 70%; M.p.: 130-132 ºC; R_f 0.4 (40% Ethyl acetate: Petroleum ether), IR (KBr) ν_{max}/cm^{-1}: 3078, 2997, 2837, 1703, 1636, 1596, 1427, 1253, 1176. ^{1}H NMR ($CDCl_3$, 500 MHz): δ 2.36 (s, 3H, -CH_3), 3.17 (s, 3H, -NCH_3), 3.84 (s, 3H, -OCH_3), 6.93 (d, *J*/Hz = 8.55, 2H, -ArH), 7.07 (s, 1H, =CHAr), 8.10 (d, *J*/Hz = 8.55, 2H, -ArH), ^{13}C-NMR ($CDCl_3$, 125 MHz): δ 15.7, 26.7, 55.4, 114.3, 127.1, 126.6, 134.1, 136.7, 161.3, 161.4, 170.7. ESI-MS+ m/z Calcd. for **[**$C_{13}H_{14}N_2O_2$]: 230.1055 $[M+H]^+$, found 231.1133.

(Z)-4-(4-methoxybenzylidene)-1,2-dimethyl-5-oxo-4,5-dihydro-1H-imidazol-3-ium perchlorate (compound I):- ESI-MS+ m/z Calcd. for **[**$C_{13}H_{15}N_2O_2$]ClO_4: 231.1134 $[M^+]$, found 231.1137. Anal. Calcd for $C_{13}H_{15}N_2O_6Cl_1$: C, 47.21; H, 4.57; N, 8.47. Found: C, 47.26; H, 4.42; N, 8.55.

(Z)-4-(4-methoxybenzylidene)-1,2-dimethyl-5-oxo-4,5-dihydro-1H-imidazol-3-ium chloride (compound II):- ESI-MS+ m/z Calcd. for [$C_{13}H_{15}N_2O_2$]Cl: 231.1134 $[M^+]$, found 231.1130. Anal. Calcd for $C_{13}H_{15}N_2O_2Cl_1$: C, 58.54; H, 5.67; N, 10.50. Found: C, 58.46; H, 5.72; N, 10.64.

Figure S4: ^{1}H and ^{13}C spectra of (Z)-4-(4-methoxybenzylidene)-1,2-dimethyl-1H-imidazol-5(4H)-one (ligand):



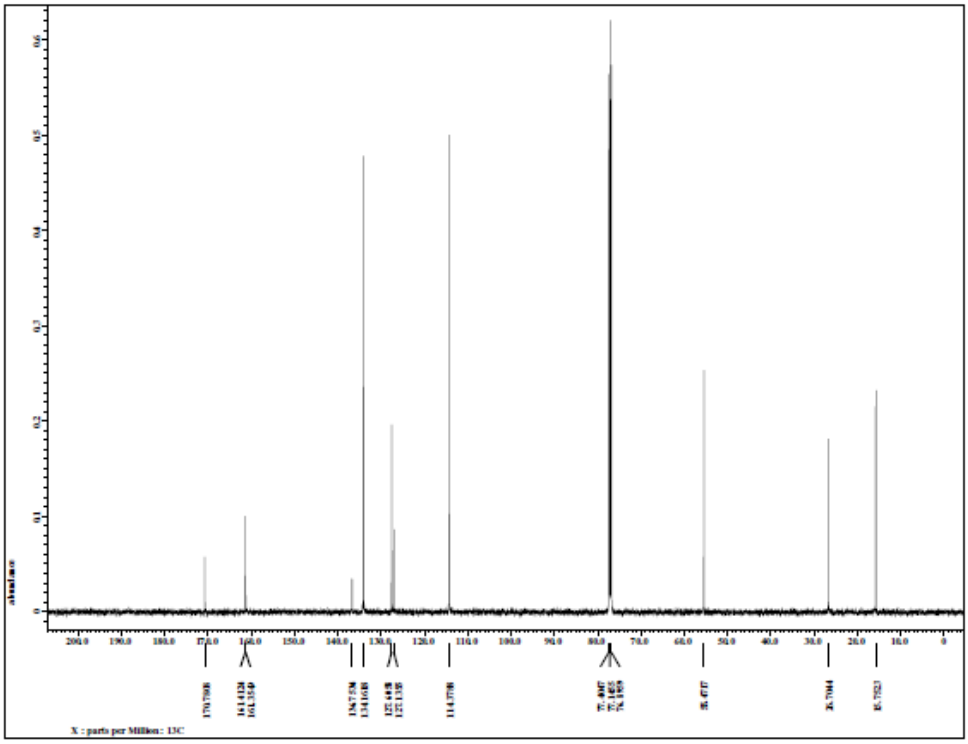


Figure S5: Mass Spectra of (Z)-4-(4-methoxybenzylidene)-1,2-dimethyl-5-oxo-4,5-dihydro-1H-imidazol-3-ium perchlorate (compound I)

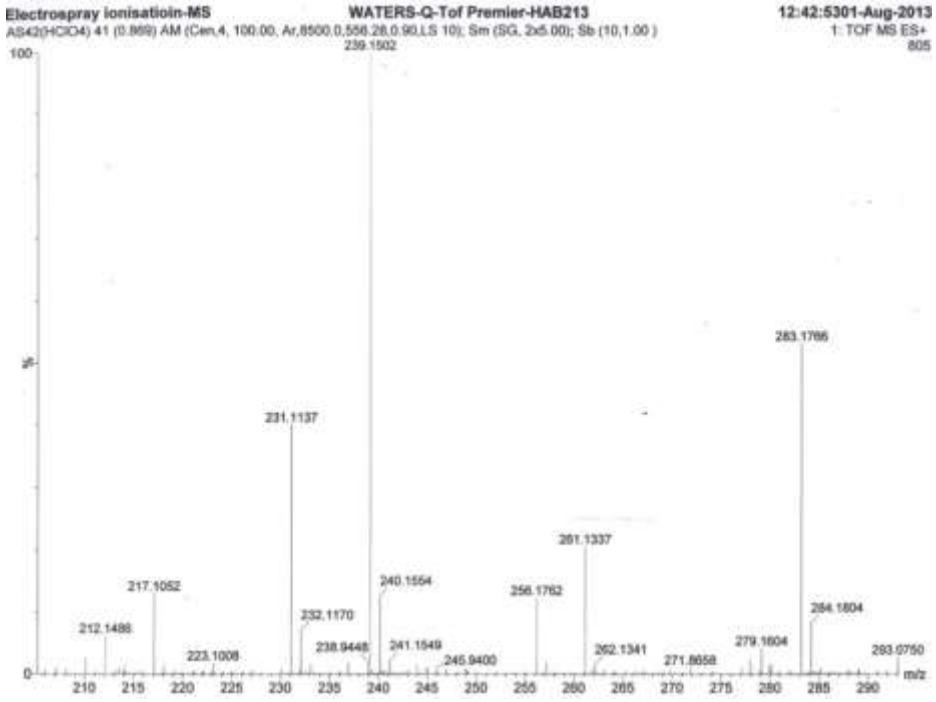


Figure S6: Mass spectra of (Z)-4-(4-methoxybenzylidene)-1,2-dimethyl-5-oxo-4,5-dihydro-1H-imidazol-3-ium chloride (compound II)