Electronic Supplementary Material (ESI) for RSC Advances.

Supplementary Information

Synthesis of yolk/shell Fe_3O_4@poly(ionic liquid)s-derived nitrogen doped graphitic porous carbon materials and its application as support for nickel catalysts

Mohammad Reza Nabid*, Yasamin Bide, Zahra Habibi

Faculty of Chemistry, Department of Polymer, Shahid Beheshti University, G.C., P.O. Box 1983963113

Tehran, Iran

Email: m-nabid@sbu.ac.ir

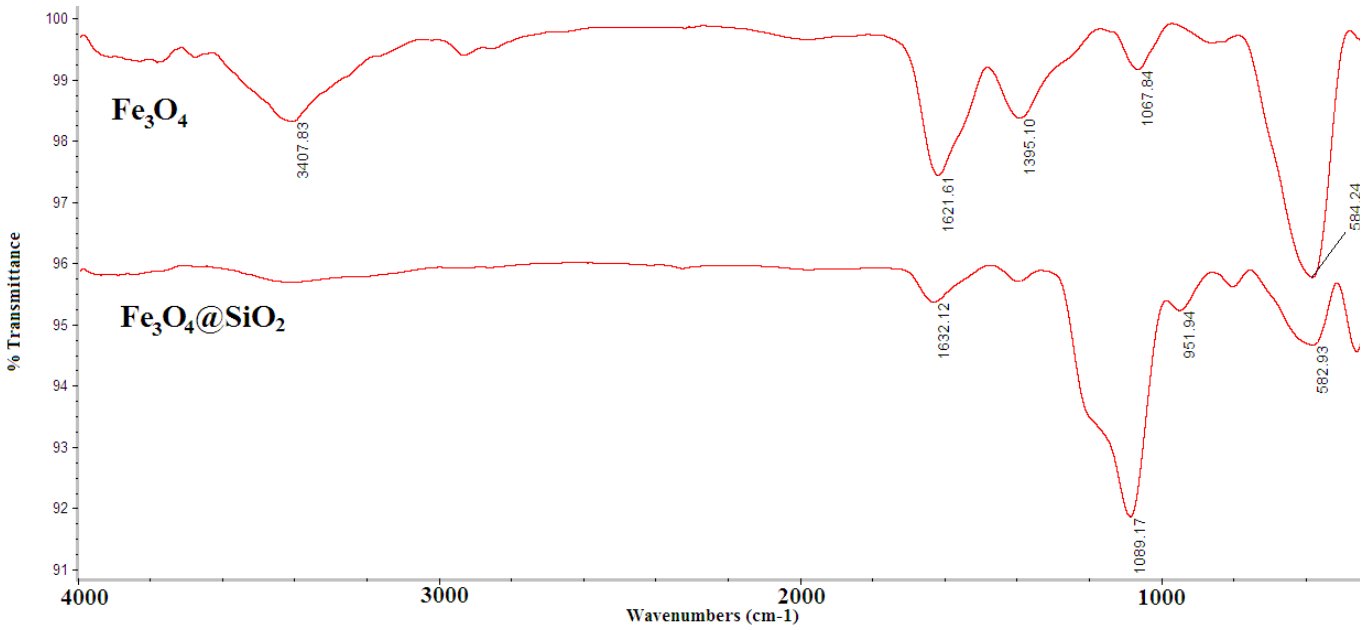

Fig. S1 FT-IR spectra of Fe_3O_4 , and Fe_3O_4@SiO_2

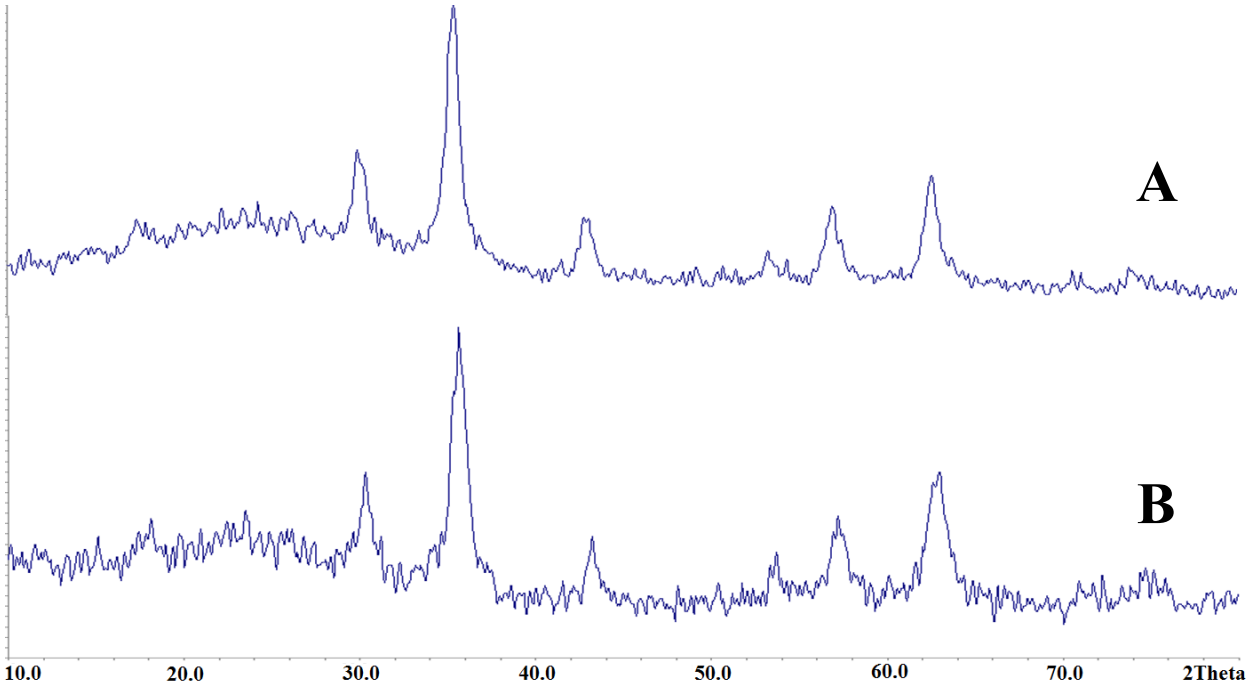

Fig. S2 XRD patterns of Fe_3O_4@SiO_2 (A), and Fe_3O_4@SiO_2@PCMVImCl (B)

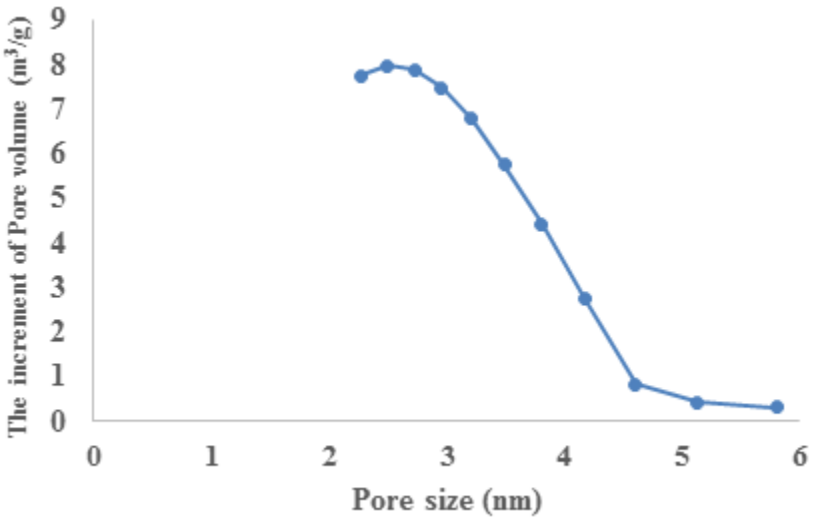

Fig. S3 Pore size distribution plot obtained from the adsorption branch of the isotherm for YS Fe_3O_4@PIL-d-(N)GPC.

Table S1 Influence of solvent, and the amount of catalyst on reduction reaction of 4-nitrotoluene.[a]

Entry	Amount of catalyst (Ni(0) content /mol %)	Solvent	Isolated Yield (%)
1	1	DMSO	80
2	1	MeOH	77
3	1	EtOH	83
4	1	H_2O	90
6	1.2	H_2O	92
7	0.8	H_2O	81
10	0	H_2O	-

[a] Reaction conditions: 1 mmol 4-nitrotoluene, 0.5 mmol $NaBH_4$, 5 mL solvent, NiNPs@YS Fe_3O_4@PIL-d-(N)GPC as catalyst.

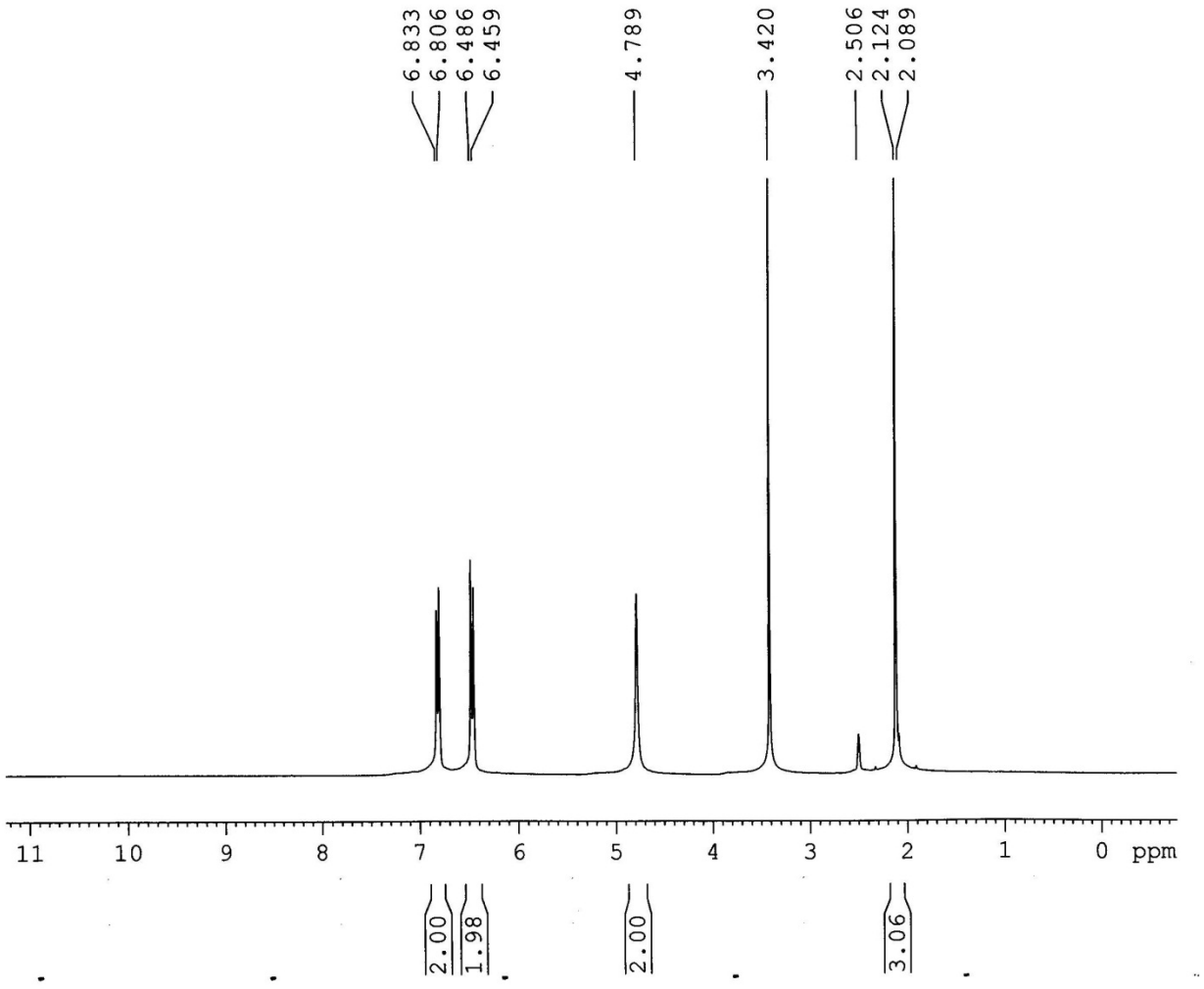

Fig. S4 ^{1}H NMR spectrum of p-toluidine in DMSO-d_6.

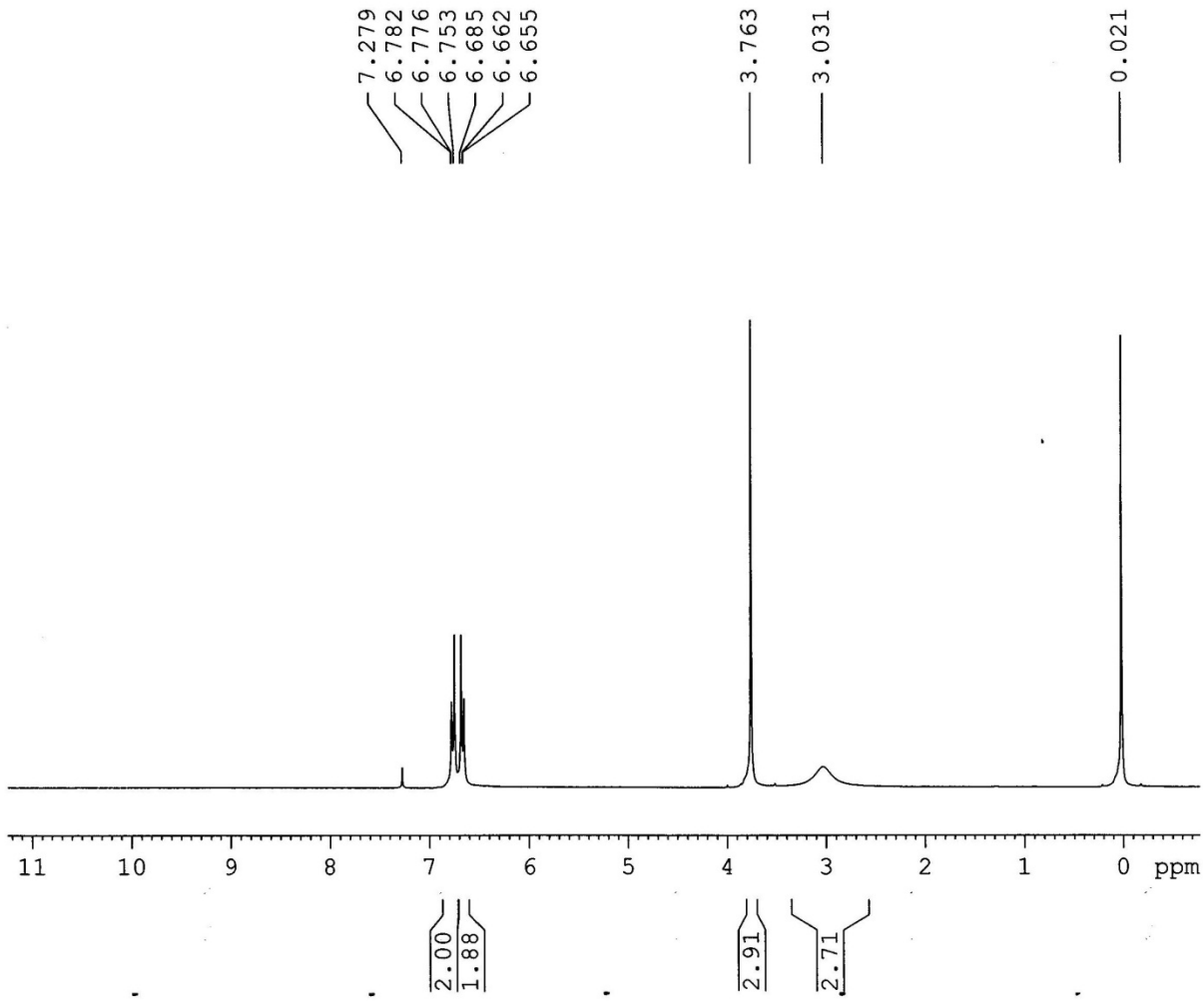

Fig. S5 ^{1}H NMR spectrum of 4-methoxyaniline in $CDCl_3$.

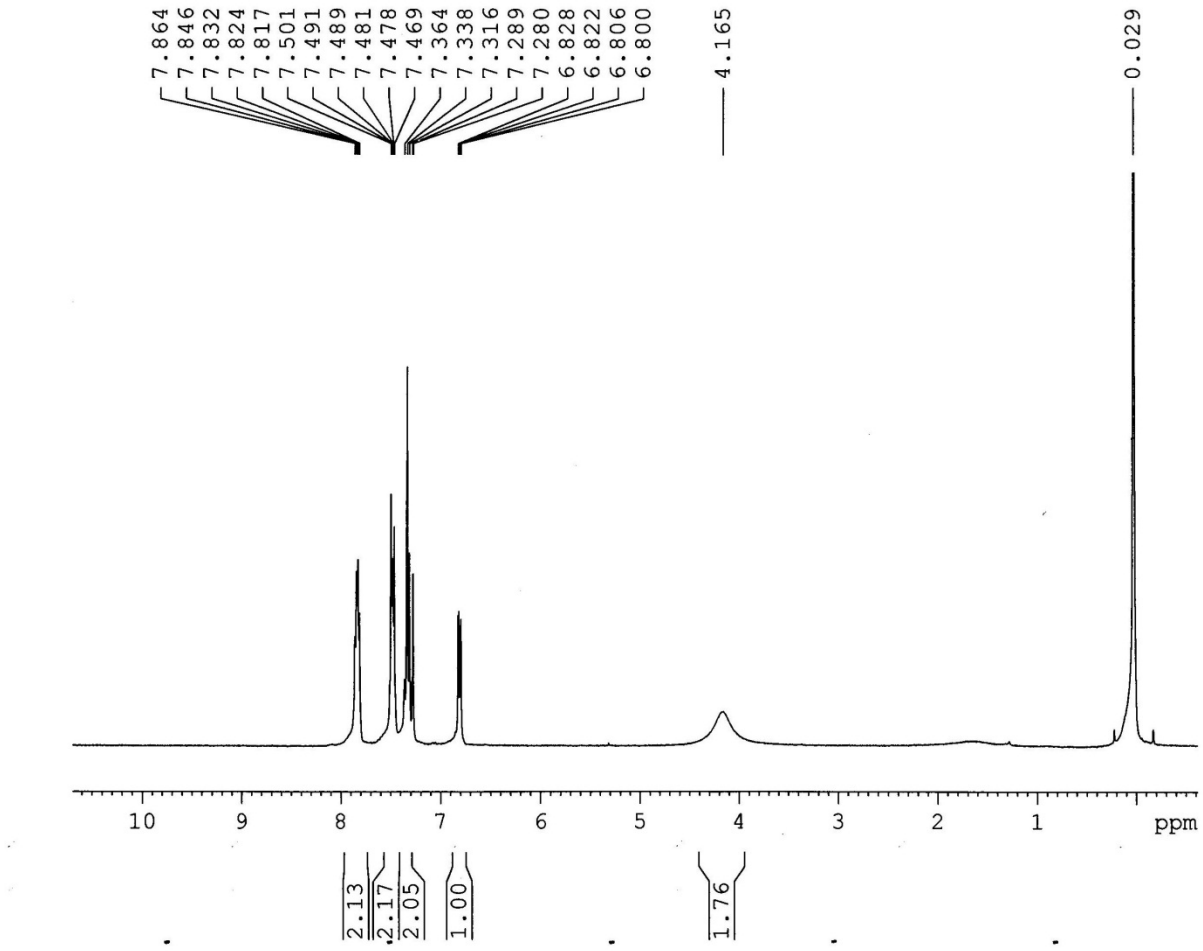

Fig. S6 ^{1}H NMR spectrum of naphthalen-1-amine in $CDCl_3$.

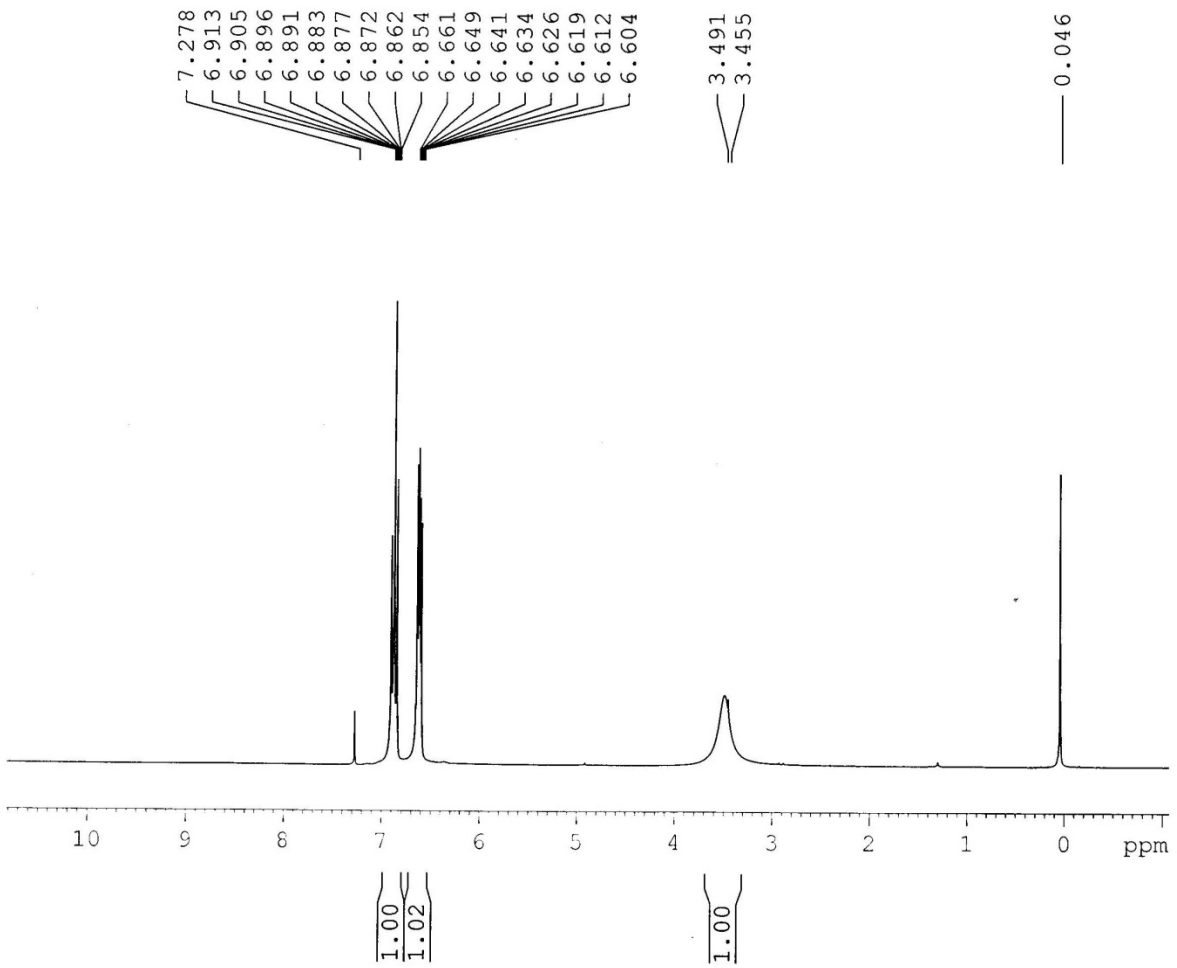

Fig. S7 ^{1}H NMR spectrum of 4-fluoroaniline in $CDCl_3$.

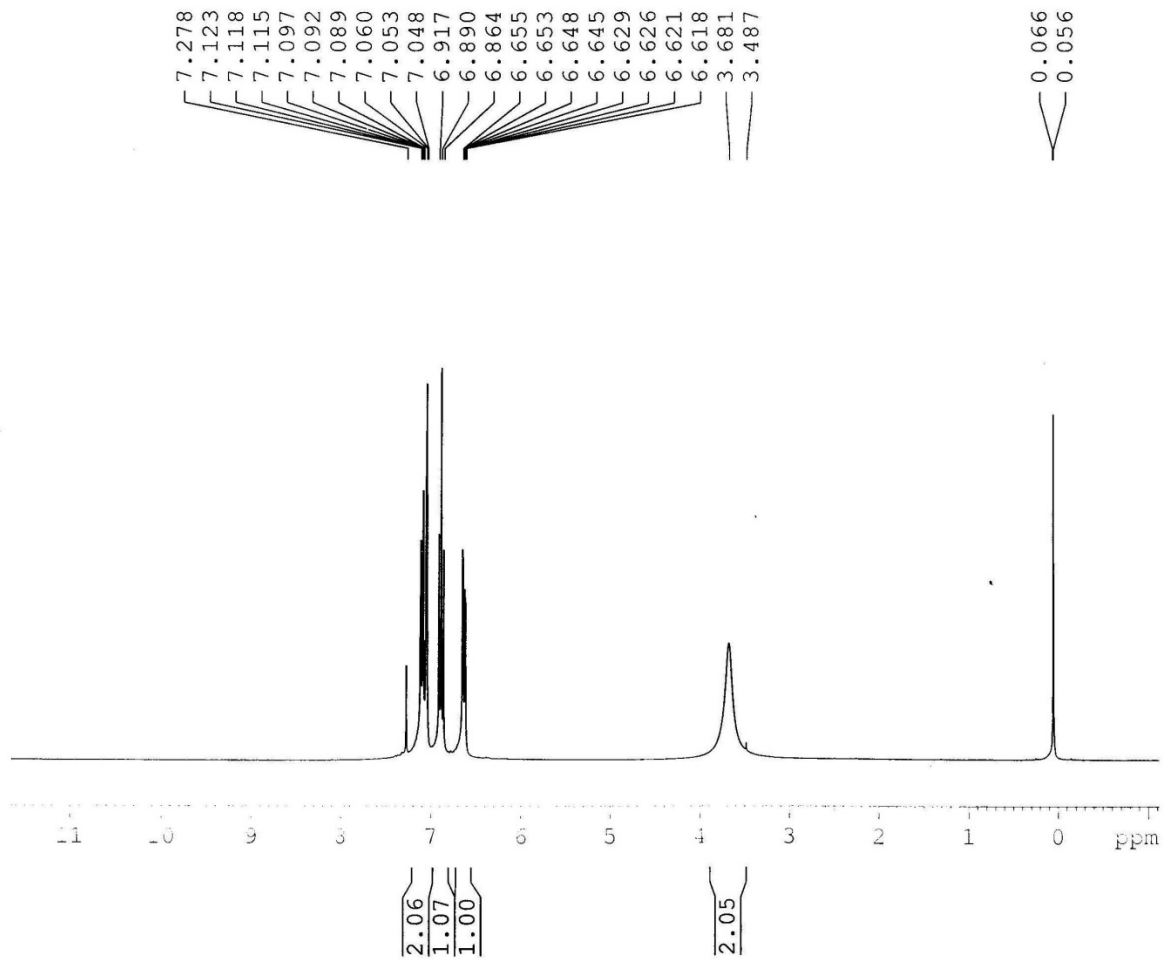

Fig. S8 ^{1}H NMR spectrum of 3-iodoaniline in $CDCl_3$.

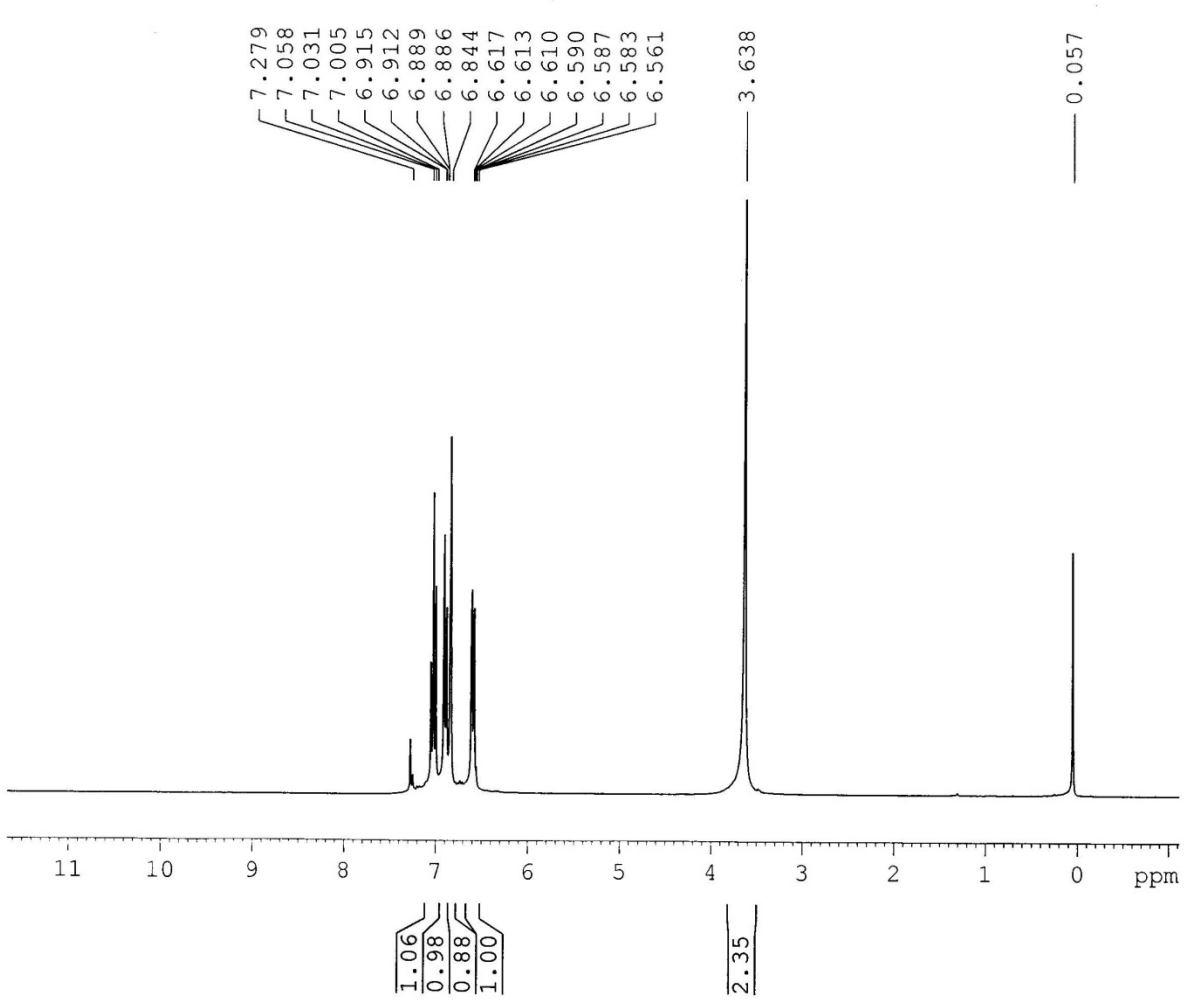

Fig. S9 ^{1}H NMR spectrum of 4-bromoaniline in $CDCl_3$.

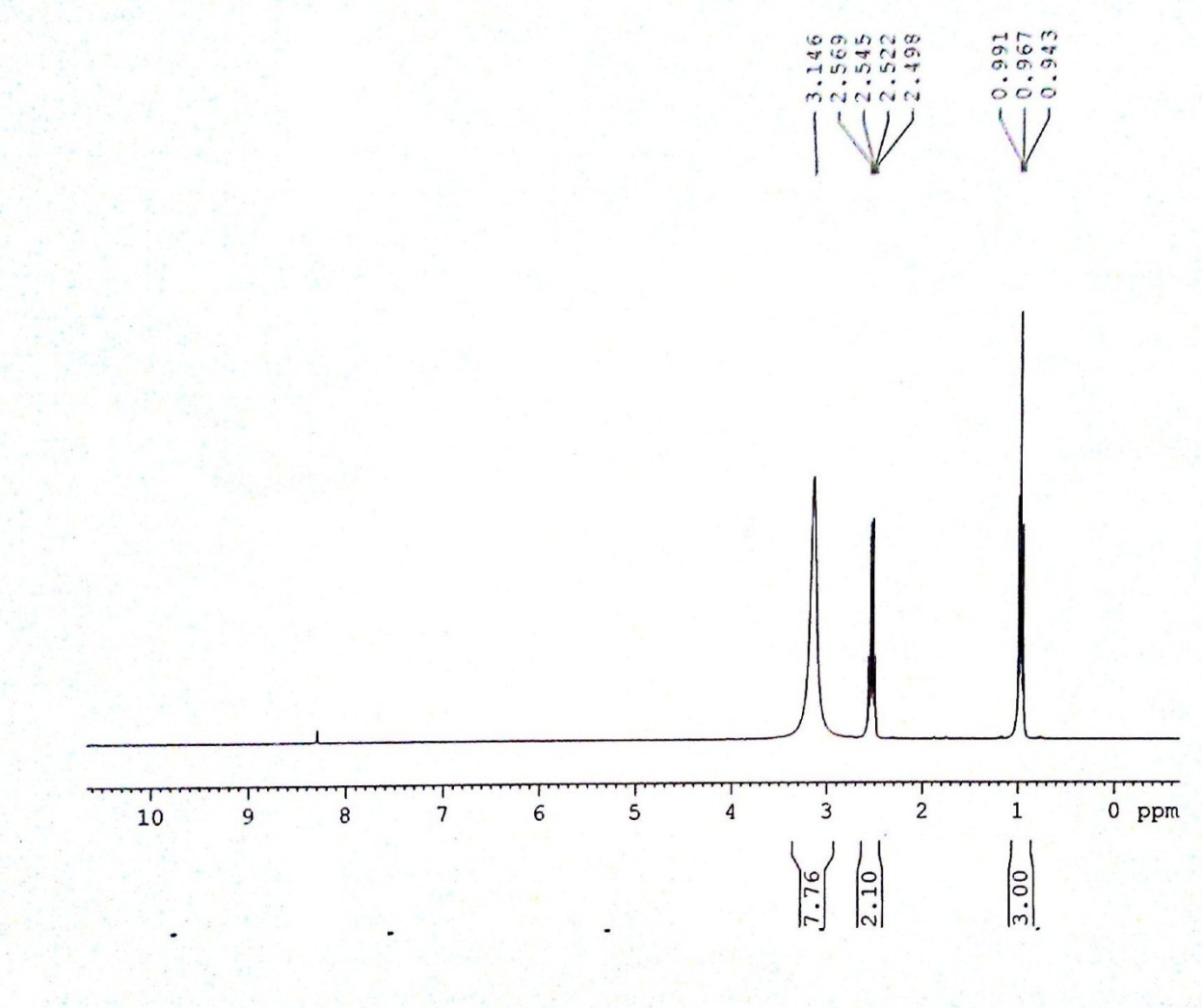

Fig. S10 ^{1}H NMR spectrum of ethanamine in DMSO-d_6.

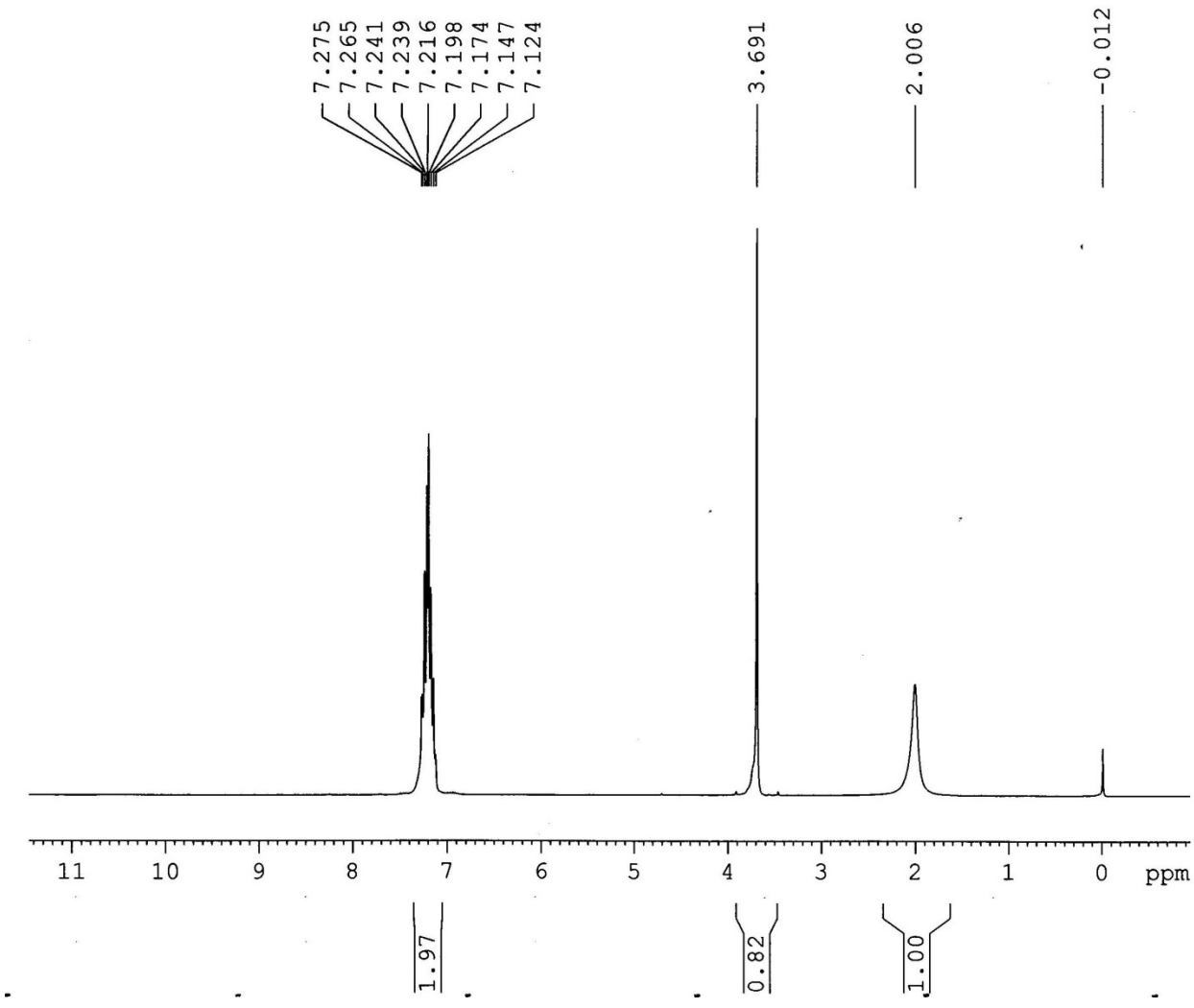

Fig. S11 ^{1}H NMR spectrum of phenylmethanamine in $CDCl_3$.

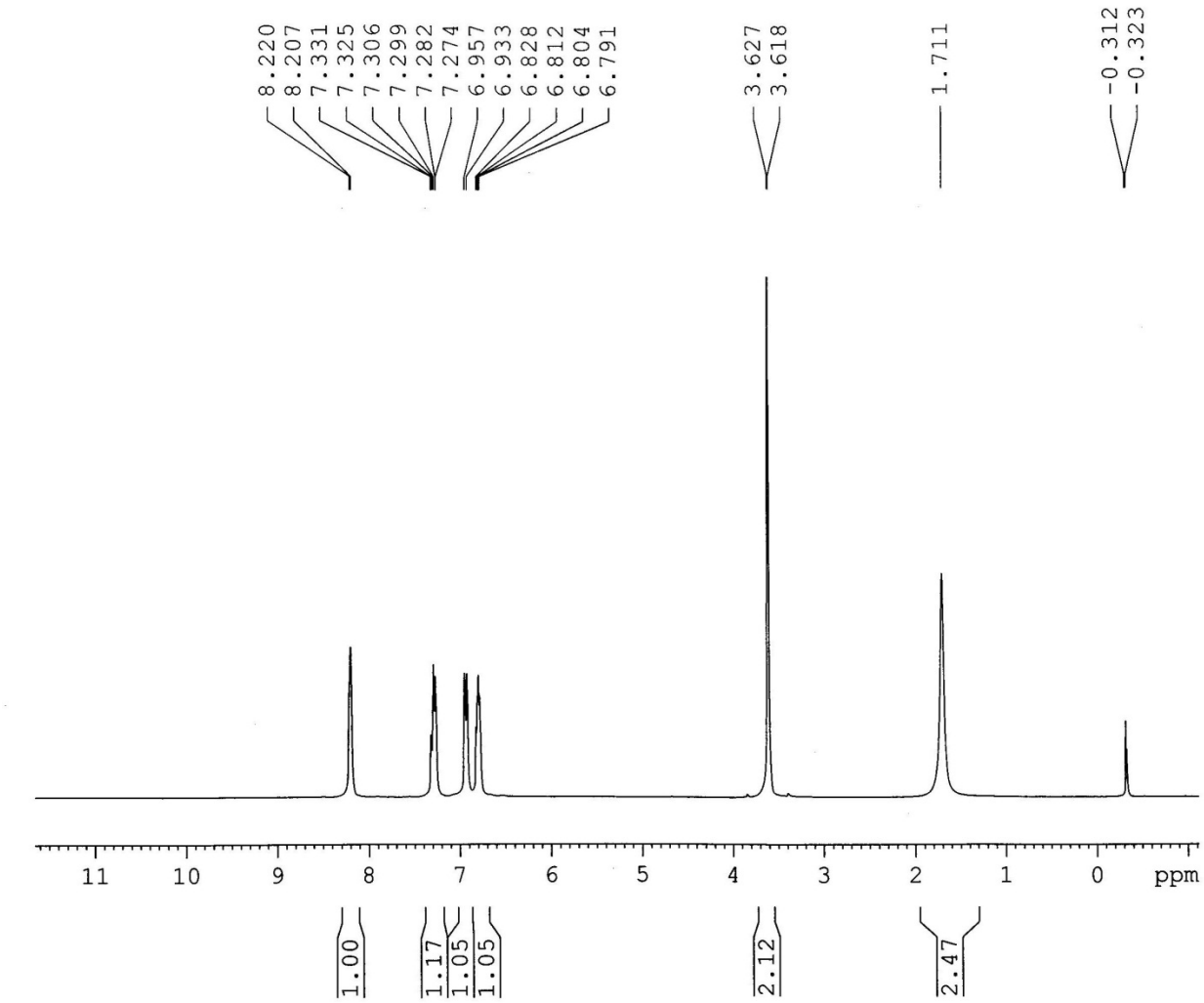

Fig. S12 ^{1}H NMR spectrum of pyridin-2-ylmethanamine in $CDCl_3$.

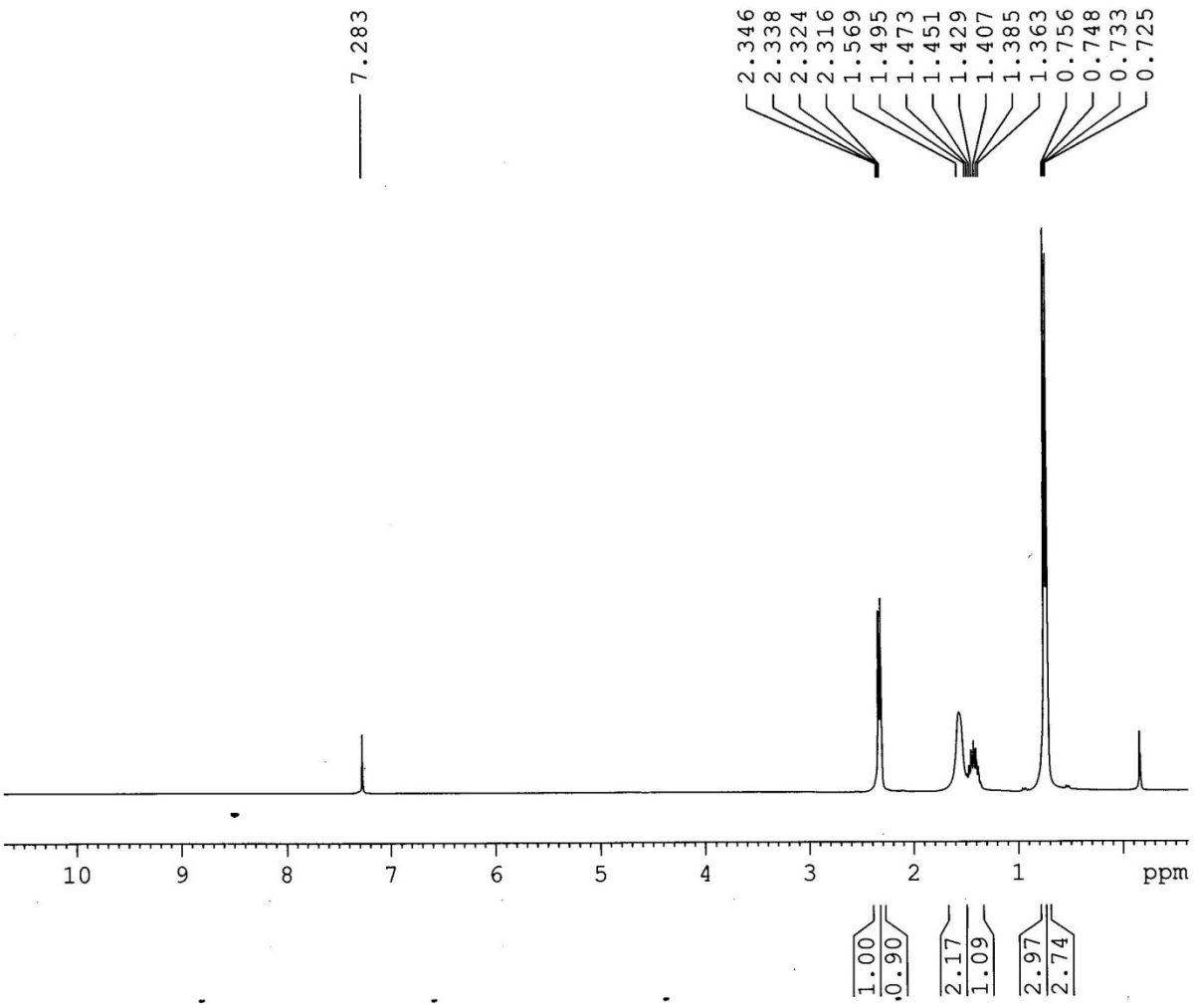

Fig. S13 ^{1}H NMR spectrum of 2-methylpropan-1-amine in $CDCl_3$.

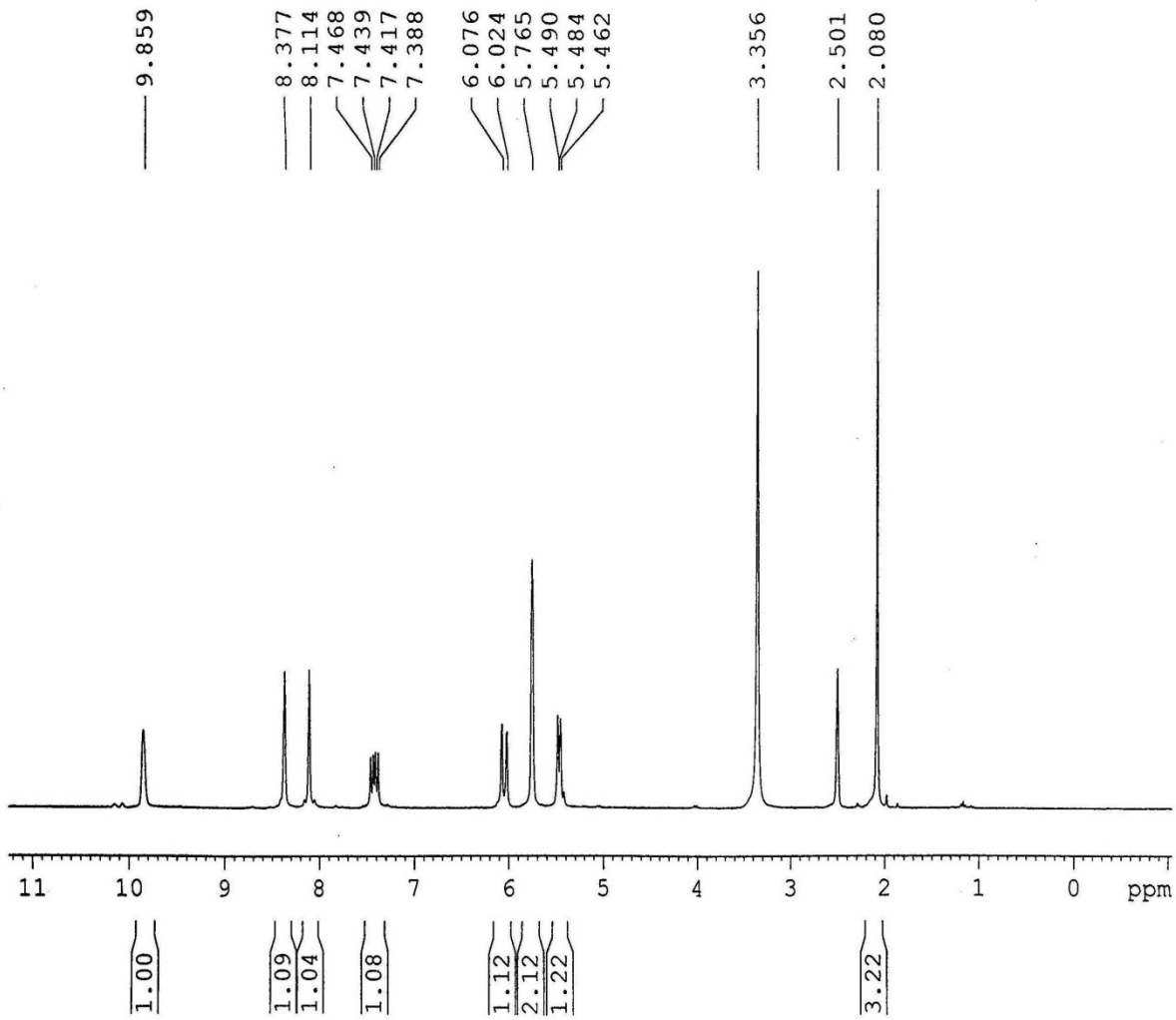

Fig. S14 ^{1}H NMR spectrum of 3-Cyanomethyl-1-vinylimidazolium chloride in DMSO-d_6.