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Water dispersible multifunctional polyaniline- laponite-keggin iron nanocomposite through template approach

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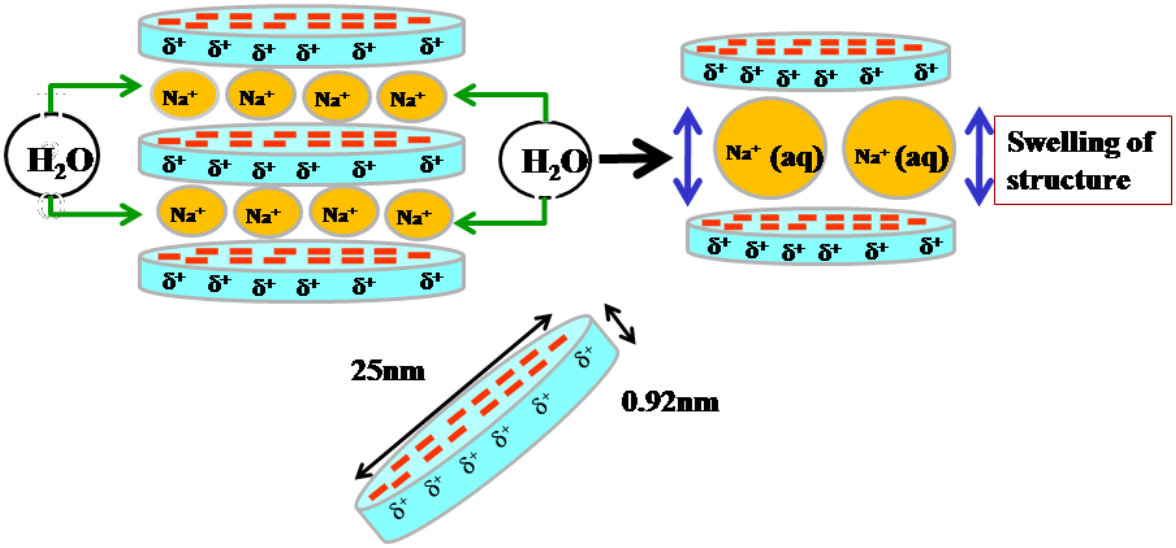

Fig 1S. Structure of laponite

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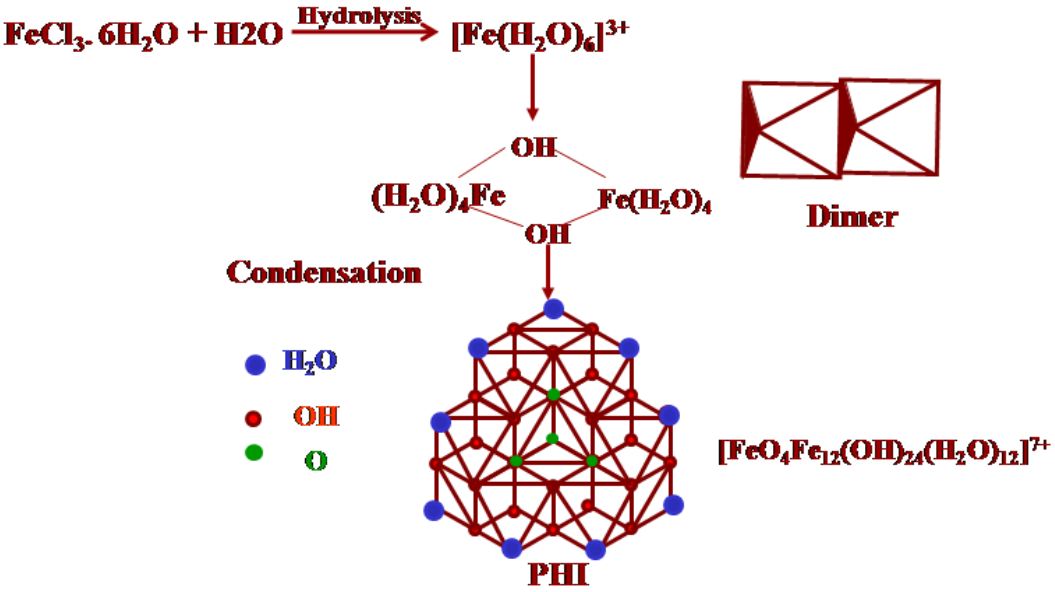

Scheme1S. The formation of PHI through the hydrolysis of ferric chloride

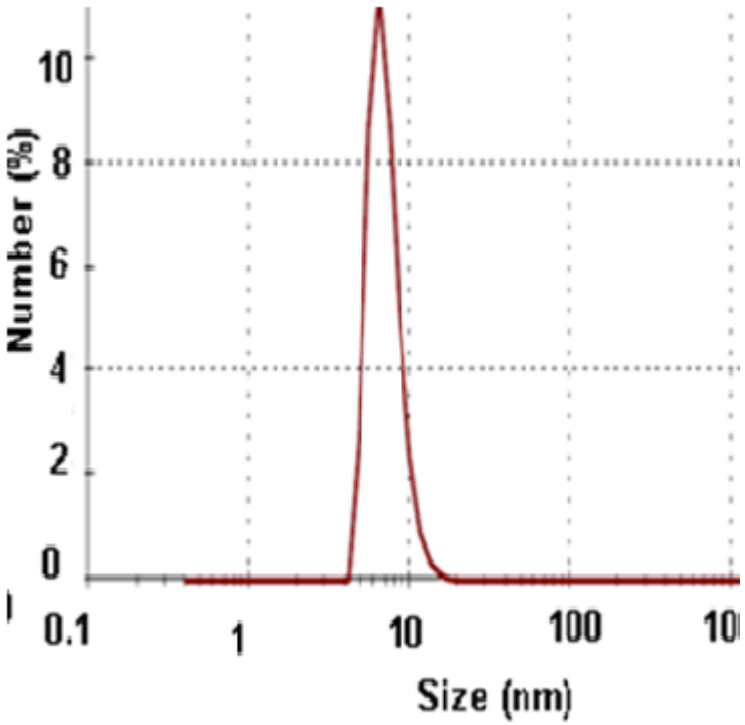

Fig 2S. DLS diagram showing the particle size measurement of PHI

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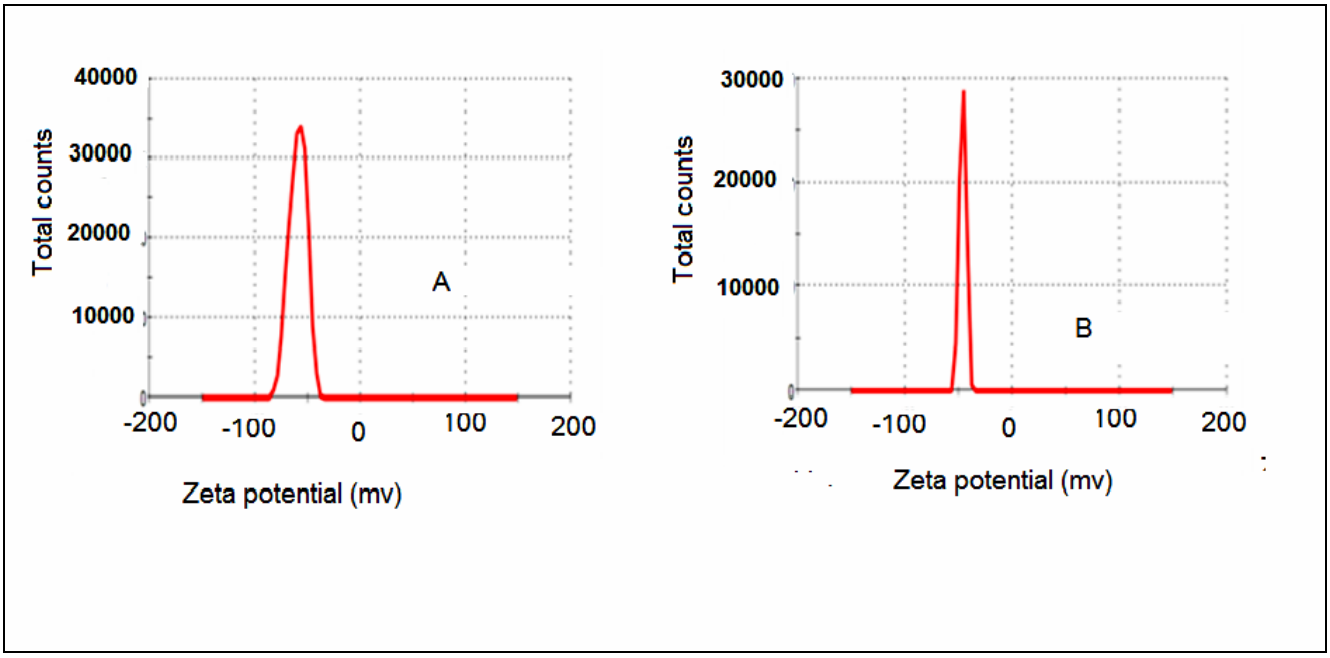

Fig .3S. Diagram showing the zeta potential of laponite and PIL.

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Table 1S. Experimental details

Sample	Anilinium hydrochloride, ($x10^{-2}$ mol)	Wt of laponite $x10^{-1}$ (g)	Vol of PHI PHI / laponite = 90 mmol/meq (ml)	Ammonium persulphate ($x10^{-2}$ mol)
PPIL1	1	1	14.2	1.1
PPIL2	2	1	14.2	2.2
PPIL3	3	1	14.2	3.3
PPIL4	4	1	14.2	4.4
PPL	1	1	0	1.1
PPI	1	0	14.2	1.1
PP	1	0	0	1.1

Table 2S.Experimental details and particle size of PPILs.

Sample	Particle size fron DLS (nm)	PDI
PPIL1	60	0.77

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PPIL2	65	0.77
PPIL3	75	0.85
PPIL4	200	0.82

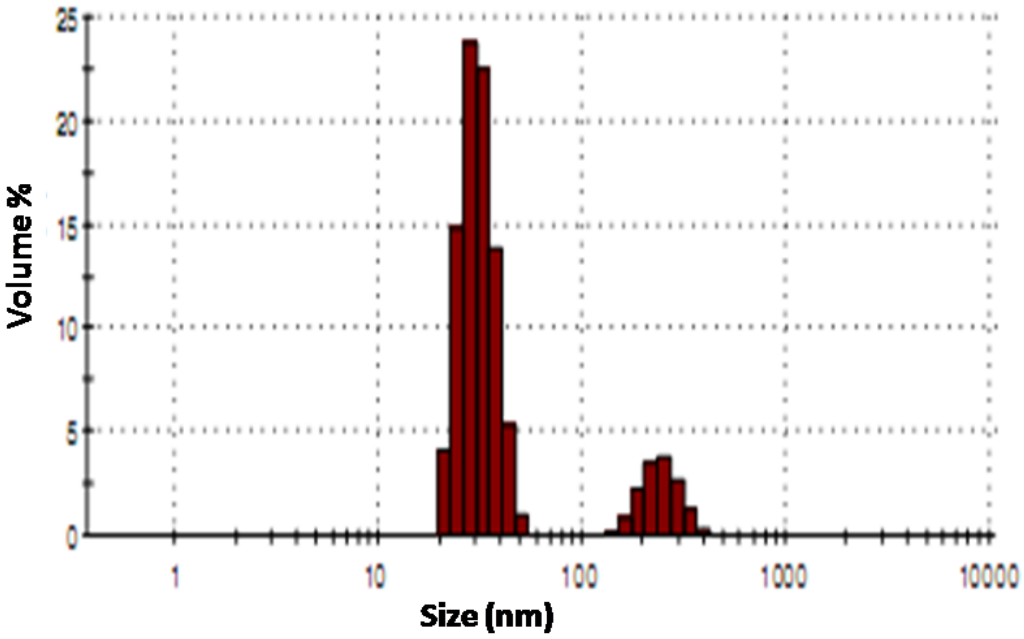

Fig. 4S Representative DLS histogram showing particle size of PPIL

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Table 3 S. Details of elemental analysis

Sample	Calculated (%)				Observed (%)			
	C	H	N	Fe	C	H	N	Fe
PPIL1	56.6	4.7	11.1	11.7	57.08	4.9	11.4	7.1
PPIL2	65.73	5.4	12.7	6.6	66.9	5.5	12.9	5.2
PPIL3	69.4	5.76	13.4	4.0	70.8	5.86	13.7	3.1
PPIL4	70.6	5.87	13.7	3.5	71.3	6.01	14.0	2.4
PP	78.2	6.5	15.2	0	75.1	5.34	14.3	0
PPL	73	5.8	13.6	0	70.9	5.2	12.4	0

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Table 4S Details of XRD results

Sample	Diffraction Angle 2θ (degrees)	d- spacing Å
Laponite	6.51,19.84, 28.18, 35.27, 53.49, 60.83	13.21, 4.35, 3.08, 2.47, 1.66, 1.48.
PIL	5.9, 19.84,27.81, 31.78, 35.27, 53.49.9,60.83	15.2, 3.01, 2.54, 2.09, 1.6, 1.69,1.49
Fe_3O_4	30.1, 35.42, 43.20, 53.48, 57.94	2.97, 2.5, 2.09, 2.53, 2.97.
PPIL2	19.84,25.1,27.3,31.78,34.89,43.67,49.19,51.21, 60.58 , 72.2	4.35,3.45, 3.18, 2.74, 2.5, 2.02,1.78, 1.73, 1.48

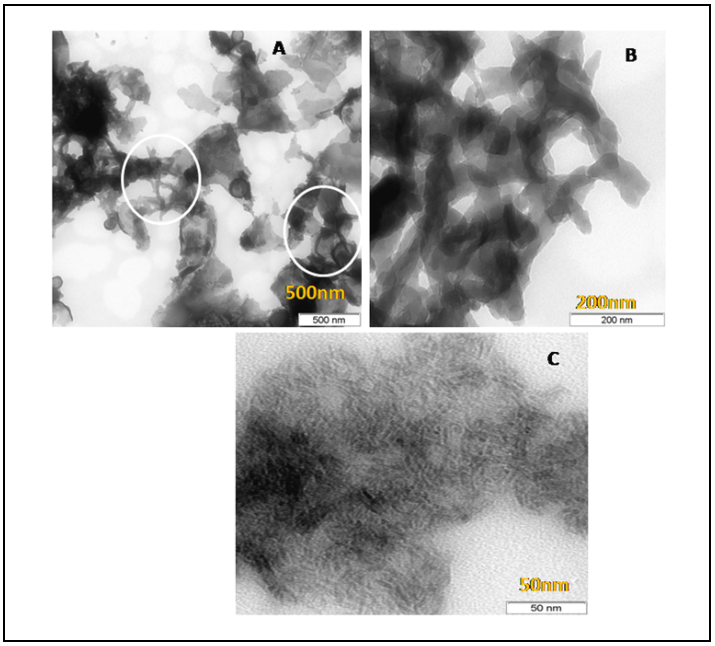

Figure 5S : TEM images of A- PPIL2 B- PPIL4 and (C) PIL .

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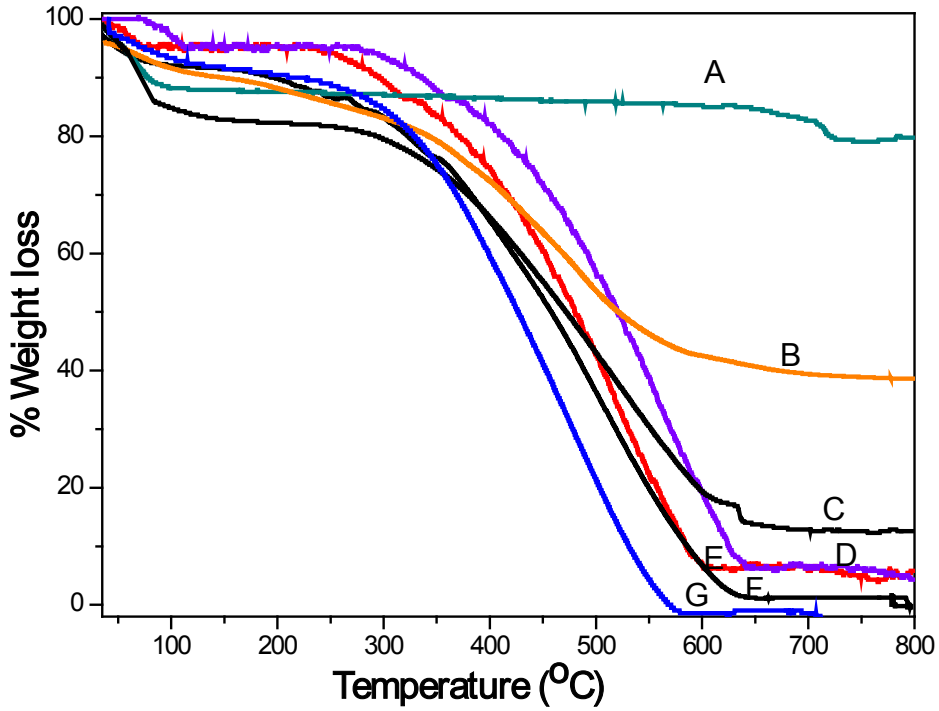

Fig. 6S. TGA curves for A- laponite, B- PPL, C-PPIL1, D-PPIL2, E-PPIL3, F PPIL4, G. PP

Table 5S. Details of weight loss during thermal decomposition

Sample	Organic content(calc) %	Char content (calc) %	Char content from TGA(wt %)	Organic content from TGA(wt %)
PPILI	72.46	27.45	14.7	76.3
PPIL2	84.03	14.2	8.35	87.15
PPIL3	88.75	11.24	4.75	90.25
PPIL4	91.32	8.65	2.25	95.75

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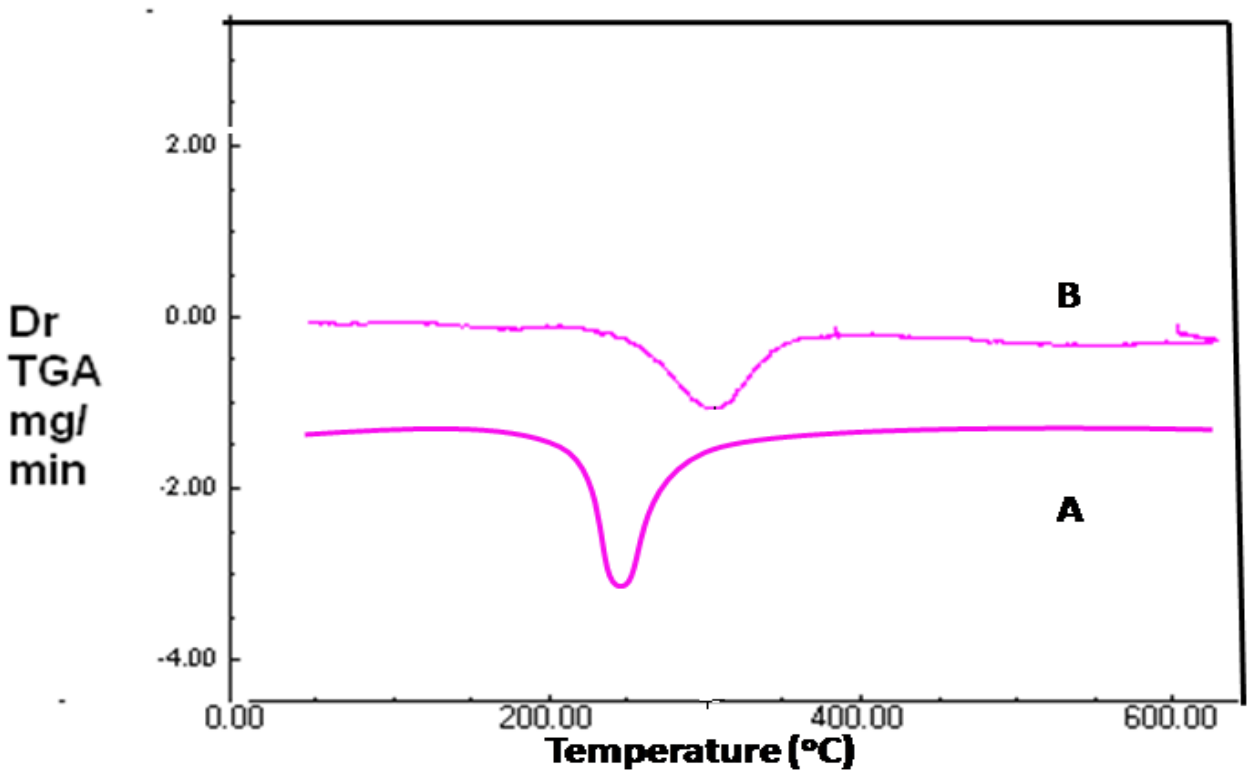

Fig. 7S DTG curves for A- PP and B- PPIL3

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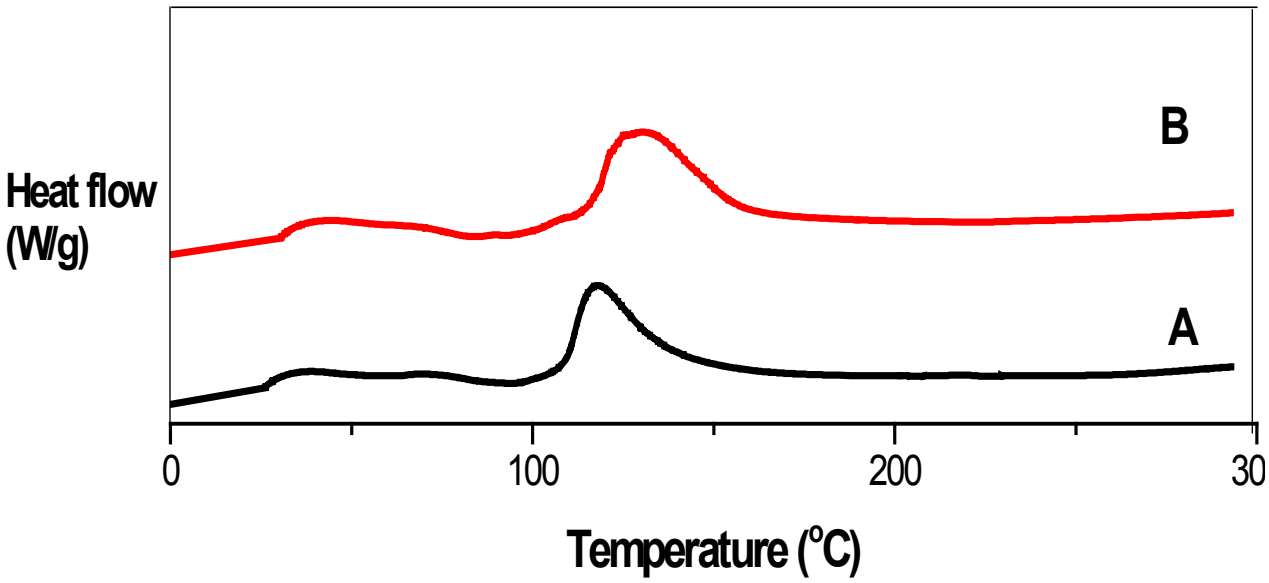
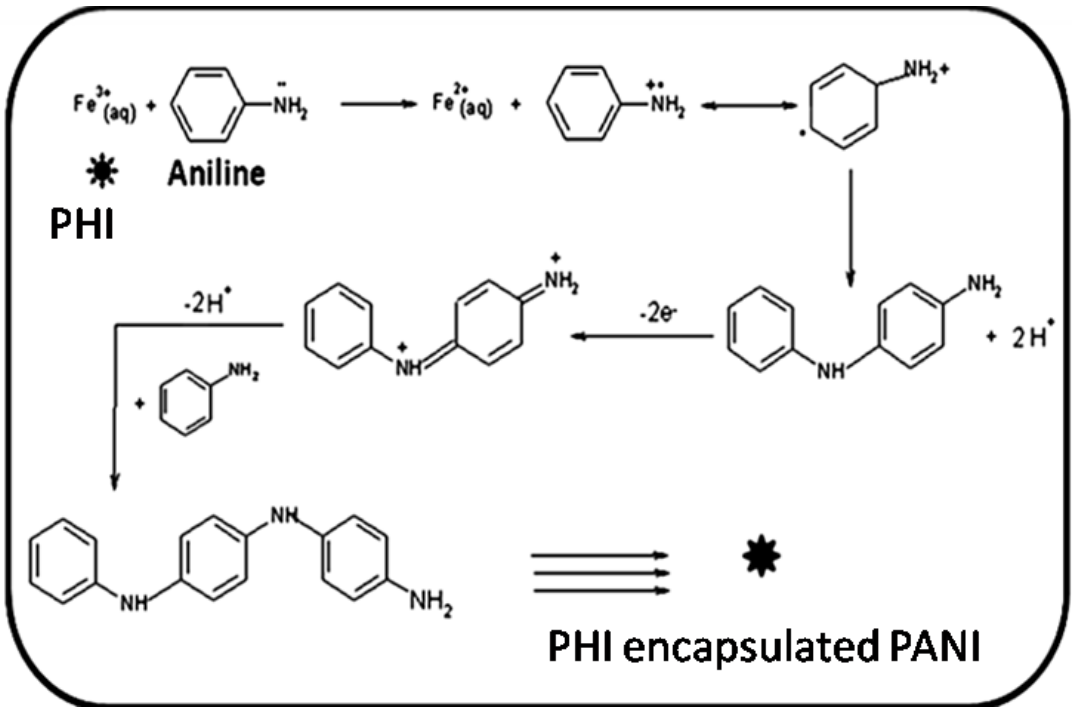


Fig. 8S DSC of A- PP, B- PPIL3



Scheme 2S. Mechanisam showing the template role of PIL in the formation of PANI