Electronic Supplementary Material (ESI) for Environmental Science: Nano.

S1 1. Characterization of FATCNS and Fe_3O_4 NPs

Results

The structure of FATCNS is characterized using FTIR and ^{13}C MAS NMR, and the respective spectra obtained are shown in Supplementary Information (SI) 1- Figures 1 A and 1 B, respectively. As shown in SI-1 Figure 1A, the C-H stretching bands are observed in the FTIR spectrum at 2857 and 2926 cm^{-1}. The ^{13}C MAS NMR spectrum in SI-1 Figure 1B shows the linking and intercalation signals with chemical shifts of 53, 127, 145 and 35 ppm attributed to the methylidyne bridge carbon (a), aromatic carbons (c, d) and methylene carbon (b), respectively. These FTIR and NMR characterization results confirm that the novel hybrid method of one-step cross-linking-intercalation-solvent evaporation can be used to synthesize FATCNS.

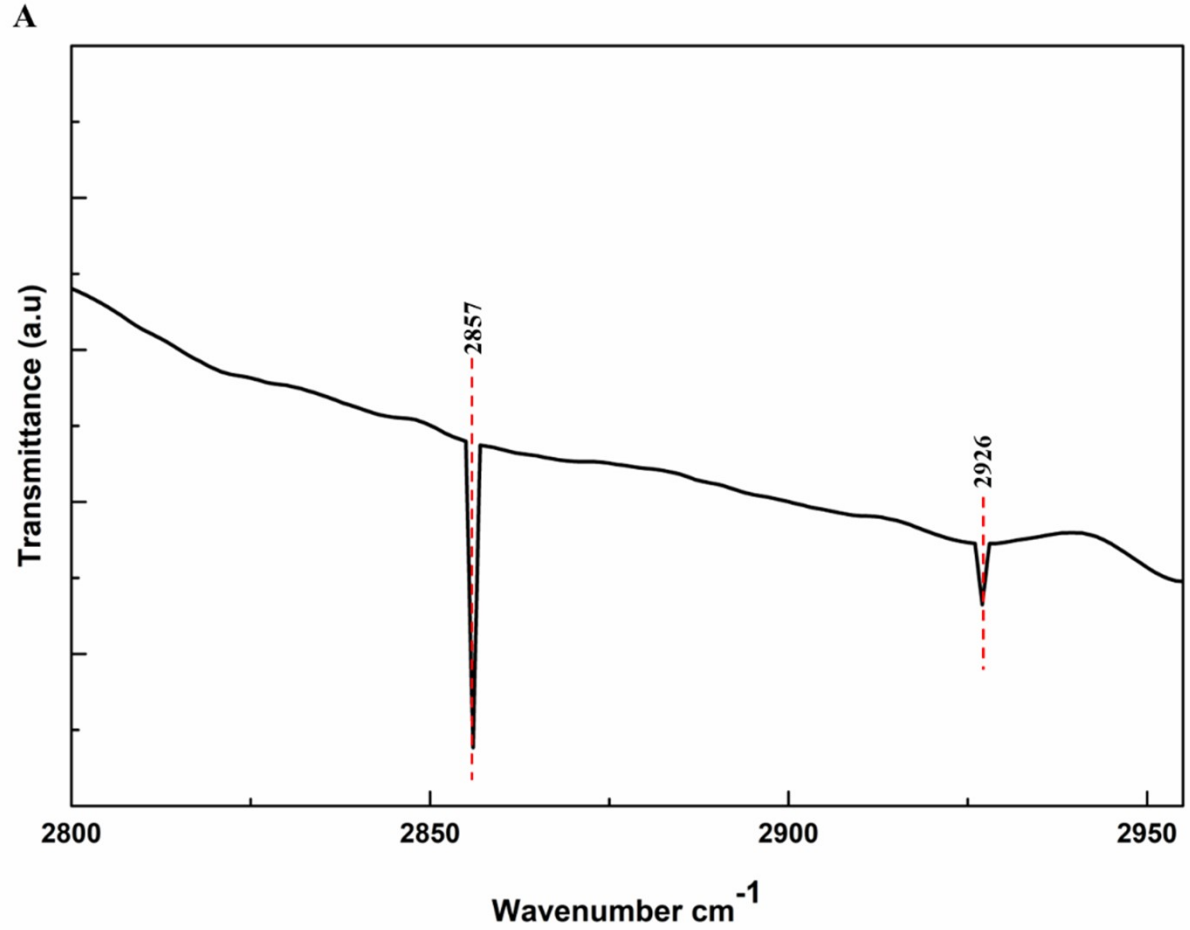

Figure. S 1.1. (A) Stretched carbon bands of FATCNS in the FTIR spectrum.

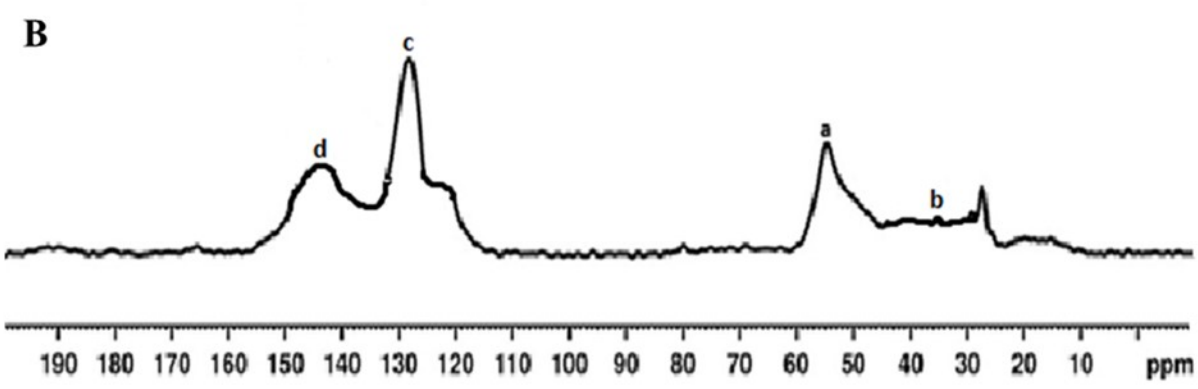

Figure. S 1. 1. (B) Polarization (CP) ^{13}C MAS NMR spectrum of FATCNS.

The HRTEM and FESEM images of the Fe_3O_4 NPs presented in SI-1 Figures 2 A and B, respectively, show that the size of the NPs ranges from 50 to 150 nm.

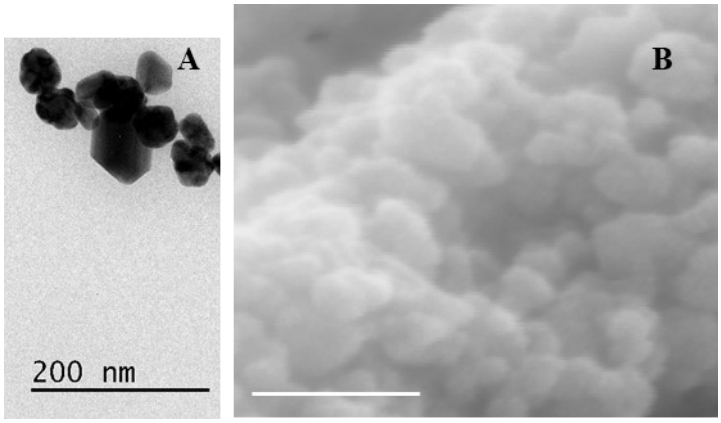

Figure. S 1. 2. (A) HRTEM and (B) FESEM images of the synthesized Fe_3O_4 NPs. Scale bar is 200 nm.

The angular distribution of the intensity measured using powder XRD (SI-1 Figure 3 A) displays broad peaks and confirms the amorphous structure of freshly prepared FATCNS. On the other hand, the peaks in the XRD spectrum in SI-1 Figure 4 B confirm the formation of Fe_3O_4 NPs and their crystalline structure as the intensity peaks (2θ) at 30.12°, 35.52°, 43.2°, 53.4° and 56.9° correspond to Fe_3O_4, JCPD standards: Fe_3O_4, 89-3854, 2θ = 30.088°, 35.439°, 43.07°, 53.432°, 56.958° and indicate that the NPs are magnetic.

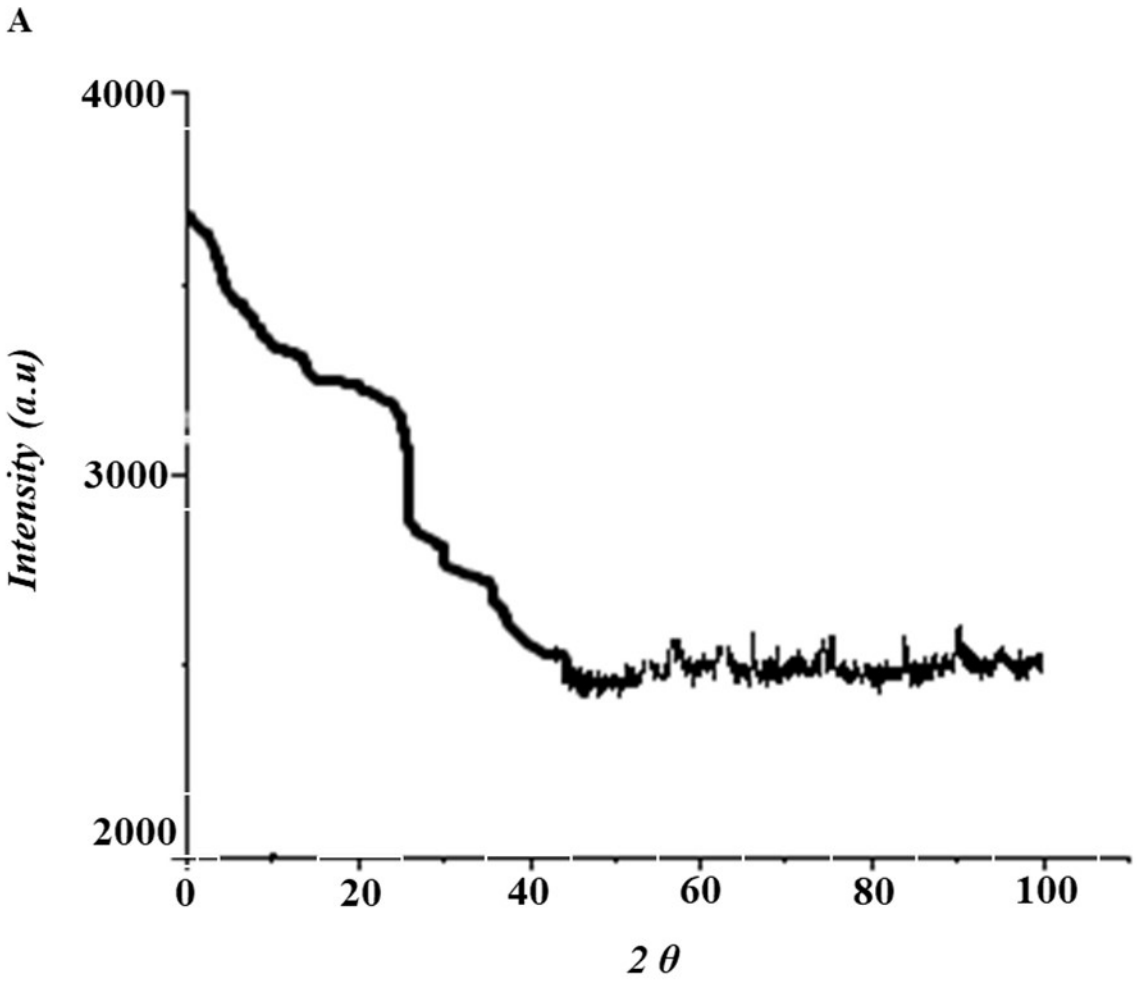

Figure. S1. 3. XRD spectra of (A) the amorphous FATCNS

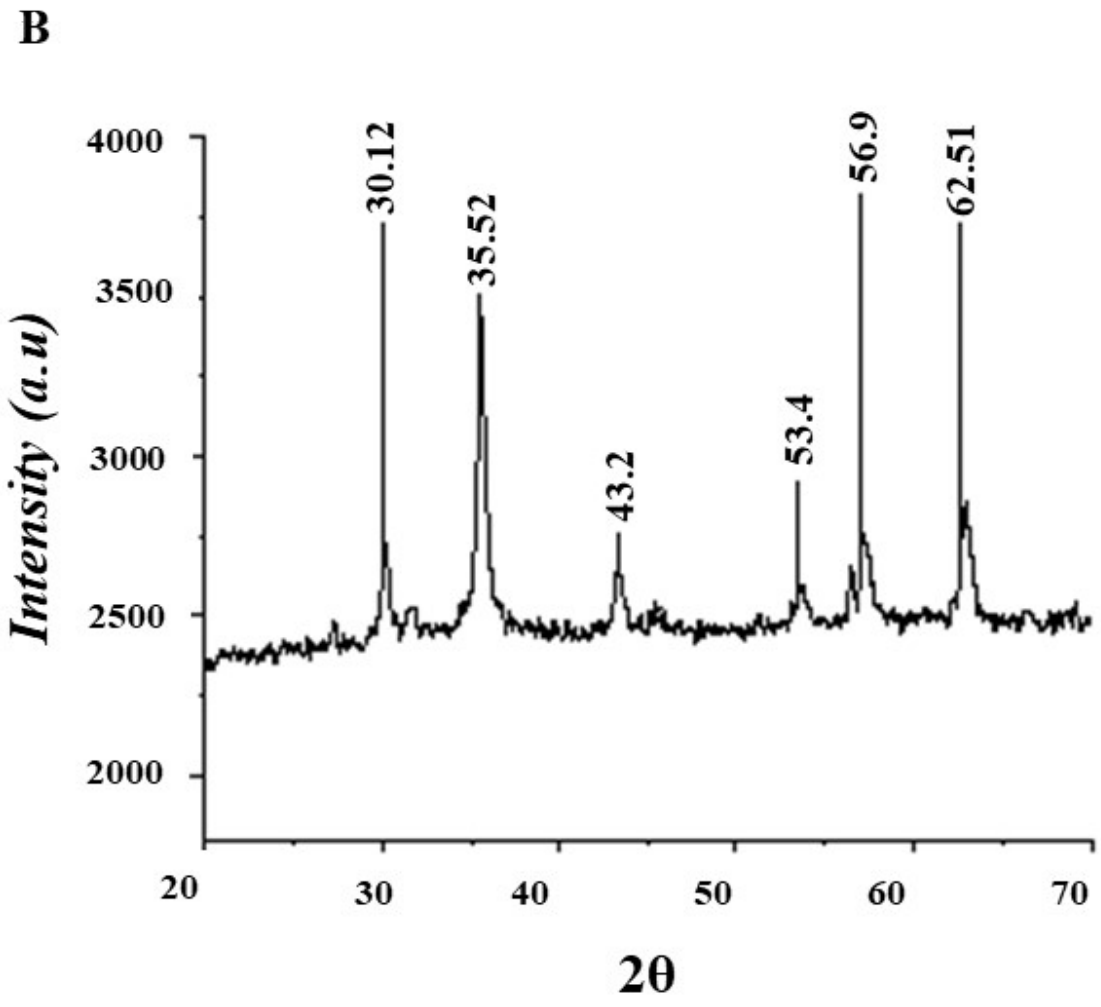

Figure. S 1. 3. XRD spectra of (B) Fe_3O_4 NPs.

The DLS histogram for FATCNS shown in SI-1 Figure 4 A confirms that the size of the NSs is in the range of 30 to 100 nm with maximum with the mode of the distribution at 55 nm. The zeta potential and the charge carried by the NAs are presented in Table SI 1. 1. Thus, from the table it can be said that there is no substantial effect of pH on the charge carried by the NSs.

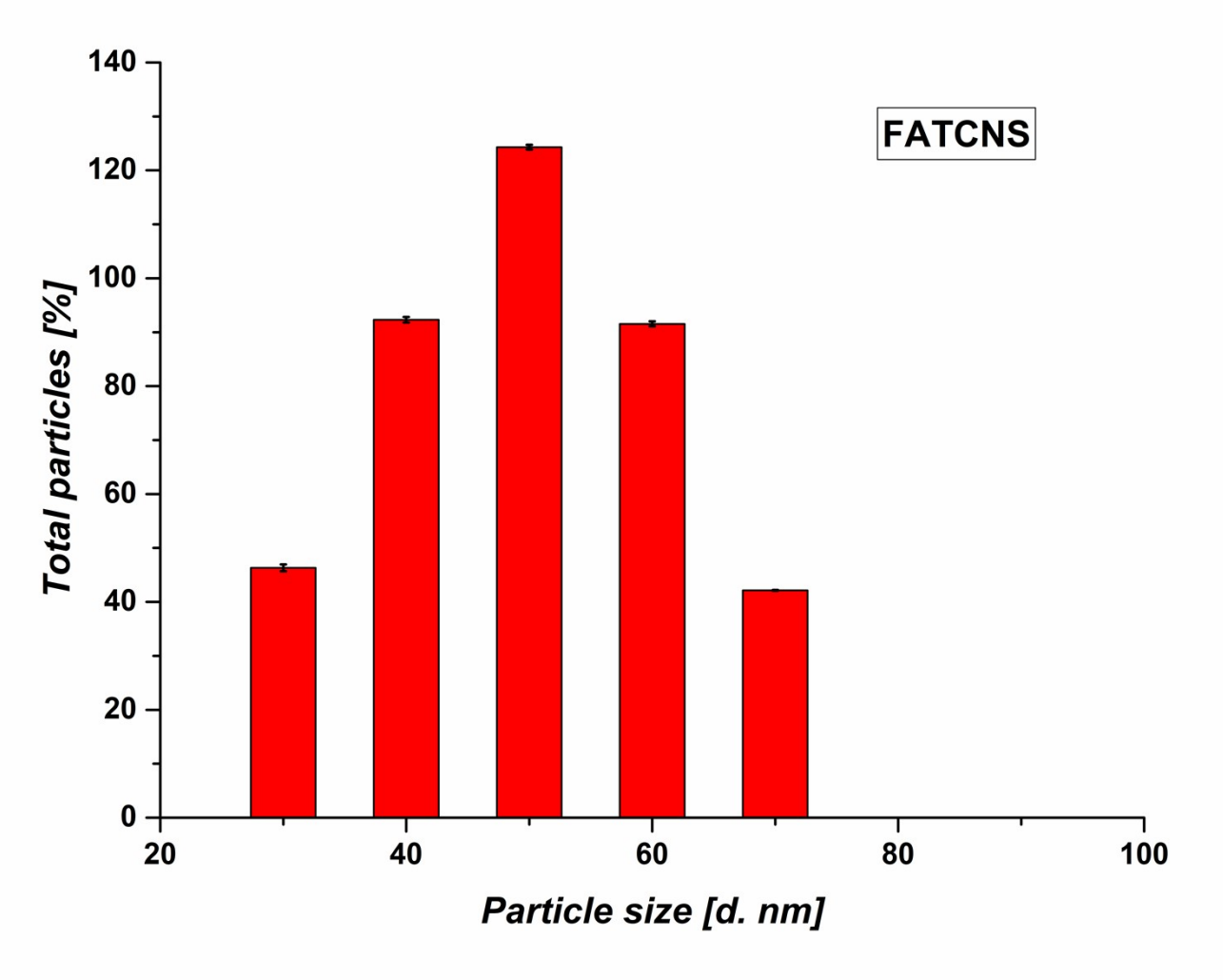

Figure. S 1. 4. DLS size distribution of (A) cuboid FATCNS

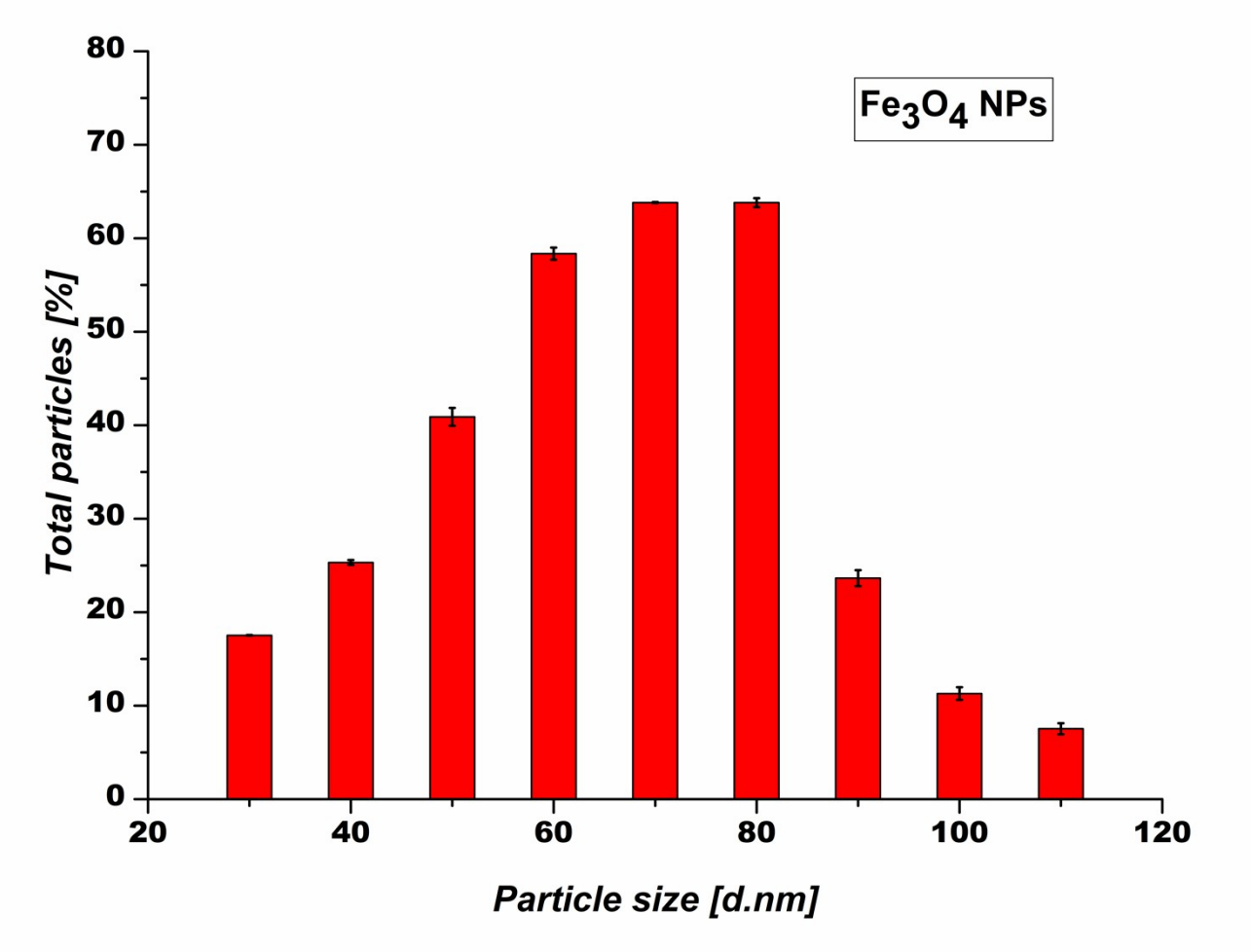

Figure. S 1. 4. DLS size distribution of (B) Fe_3O_4 NPs,

Table S1.1. Zeta potential of nanoadsorbents for different pH

ζ-potential (mV) ***vs pH***	**pH 2**	**pH 4**	**pH 7.4**	**pH 9**	**pH 12**
FATCNS	8.674	10.6	21.62	10.8	6.9
Fe_3O_4 NPs	3.13	4.65	11.54	-5.2	-11.52