

Magnetic alginate-Fe₃O₄ hydrogel fiber showing capability for adsorption/separation of Ciprofloxacin hydrochloride in aqueous solution

Achyut Konwar,^a Ansumi Gogoi,^a and Devasish Chowdhury^{a*}

Electronic Supplementary Information

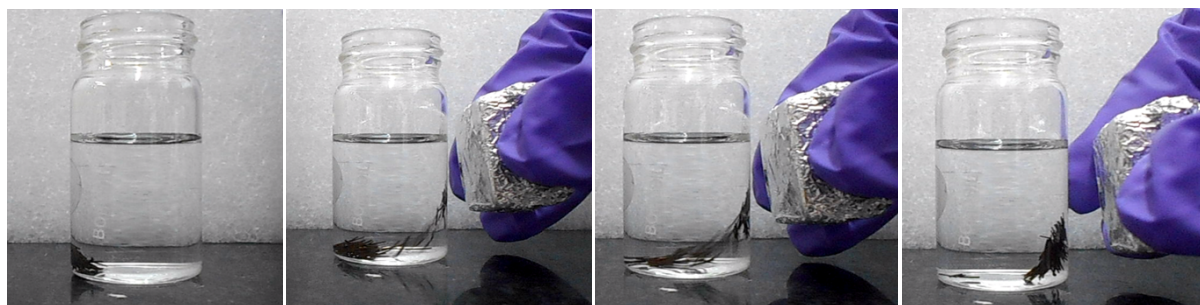


Figure 1S: Photographic images showing magnetic alginate- Fe₃O₄ hydrogel fiber at different stages while attracted towards a magnet.

Table 1 S : *d*- spacing and 2θ values of MNPs and magnetic alginate- Fe₃O₄ hydrogel fibers.

MNPs		AMHF1		AMHF2		AMHF3		AMHFE	
<i>d</i> -spacing	2θ	<i>d</i> -spacing	2θ	<i>d</i> -spacing	2θ	<i>d</i> -spacing	2θ	<i>d</i> -spacing	2θ
2.923	30.5	2.966	30.1	2.966	30.1	2.966	30.1	-	-
2.508	35.7	2.531	35.4	2.527	35.4	2.535	35.4	2.531	35.43
2.082	43.4	2.095	43.1	2.097	43.1	2.097	43.1	-	-
1.690	54.1	-	-	1.710	53.5	-	-	-	-
1.606	57.3	1.613	57.0	1.615	59.9	1.613	57.0	1.613	57.0
1.475	62.9	1.484	62.5	1.484	62.5	1.483	62.6	-	-

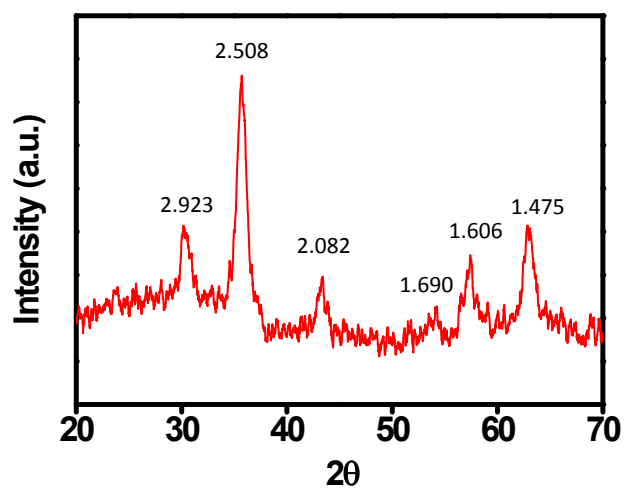


Figure 2S: XRD spectra of iron oxide nanoparticles.

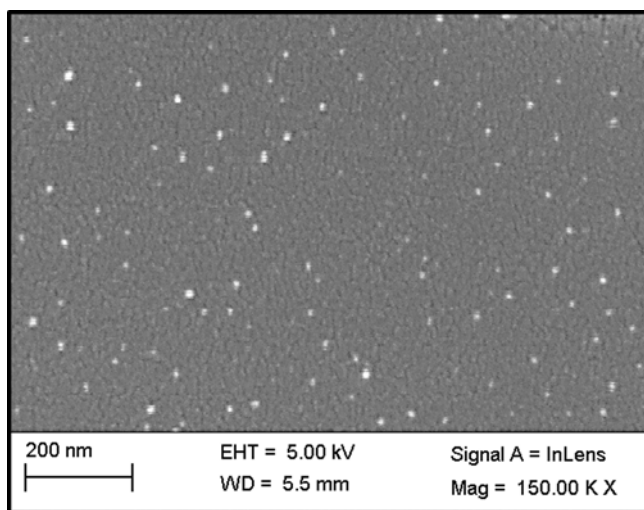


Figure 3S : SEM image of magnetic nanoparticles.

Table 2S : Comparison of adsorption efficiency depending upon the amount of adsorbent used at pH ~7, CH concentration 10mgL^{-1} , (for 24 hrs)

Amount of absorbent used gm/10ml	Adsorption capability ($\mu\text{g/gm}$)		Percent adsorption (%)	
	AMHF3	AMHFE	AMHF3	AMHFE
0.2	218	325	37	55
0.1	423	555	36	48
0.05	596	980	25.5	42

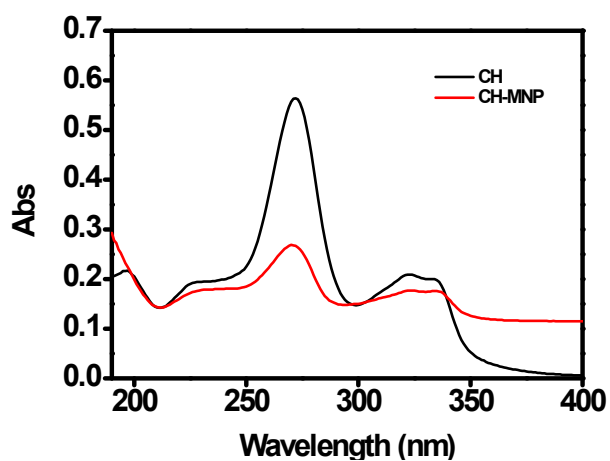


Figure 4S : Adsorption of Ciprofloxacin hydrochloride by MNPs.

Table 3S: Adsorption capacities of control (i.e. MNPs) and different alginate hydrogel fiber samples for CH concentration 10mgL^{-1} at pH~7.

Sample Name	Adsorption capacity ($\mu\text{g/g}$)
MNPs	12258
AHF	Negligible
AMHF1	153
AMHF2	176
AMHF3	423
AMHFE	555

Table 4S: Reusability of magnetic alginate- Fe_3O_4 fibers at pH~7, CH solution 10mgL^{-1} (for 24 hrs).

Sample name	Percent adsorption		
	1 st time use	2 nd time use	3 rd time use
AMHF3	36	54	53
AMHFE	48	55	50