Supplementary Material

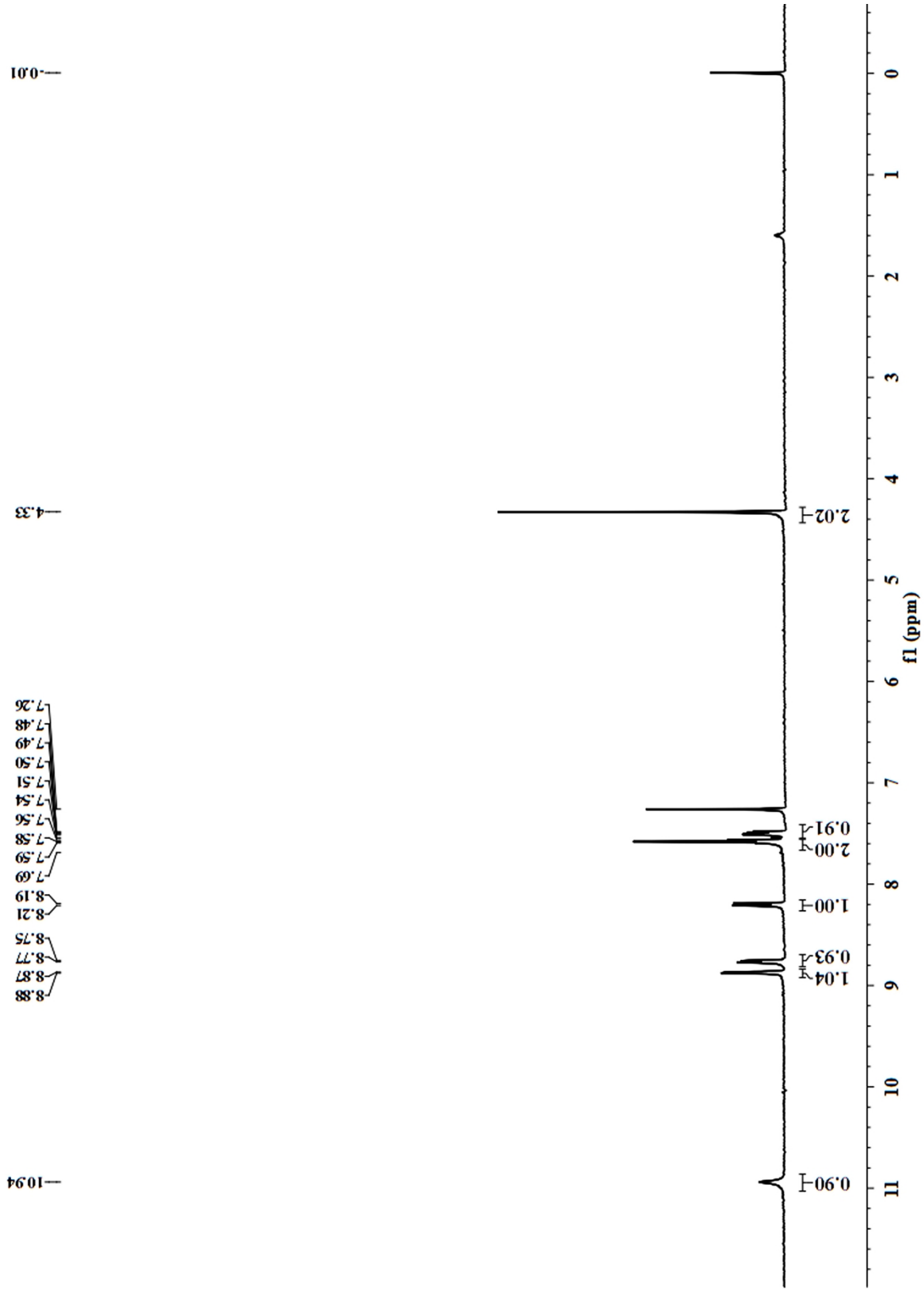

Fig. S1 ^{1}H NMR ($CDCl_3$, 400 MHz) spectrum of AQ-Cl.

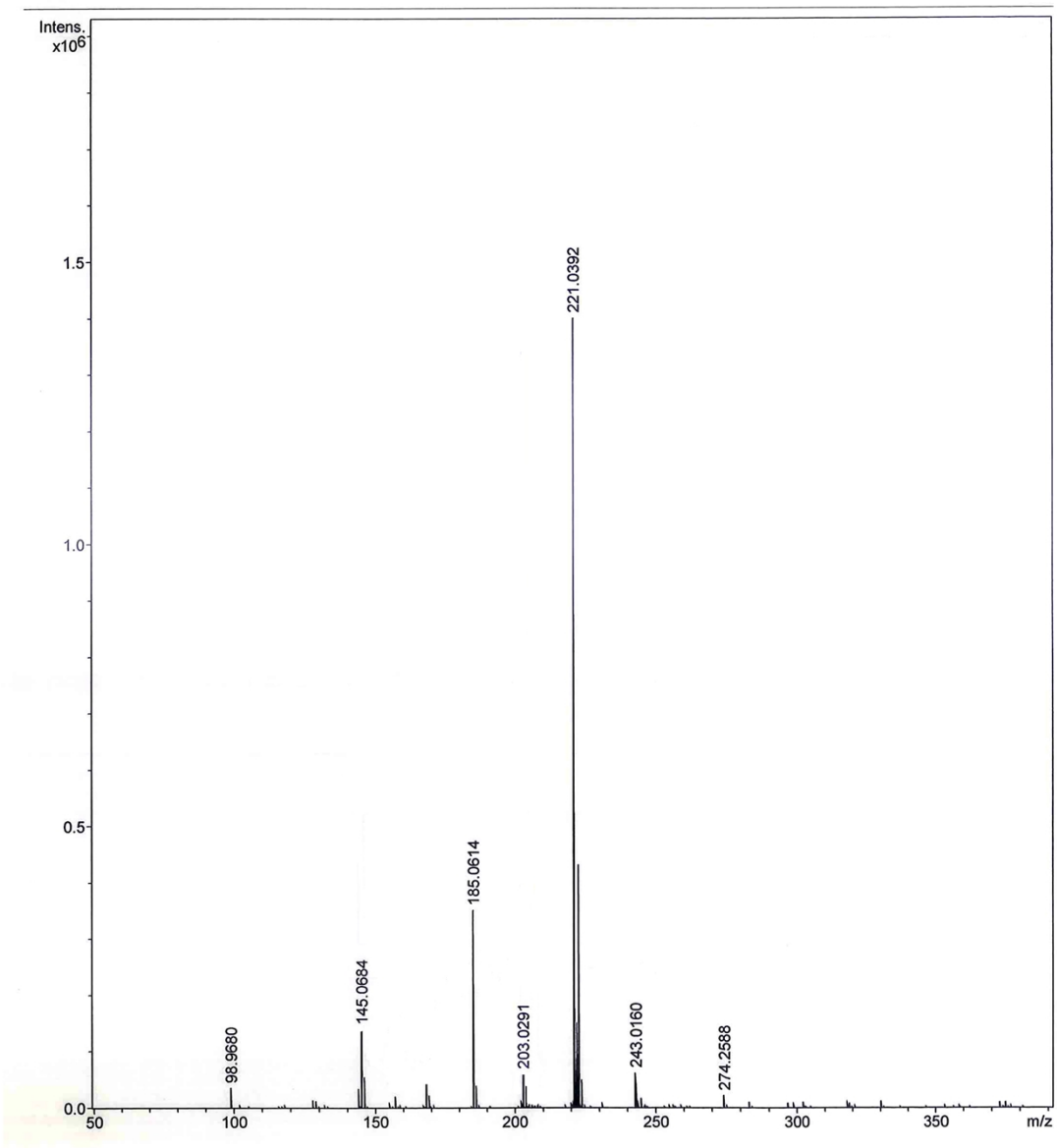

Fig. S2 ESI-MS spectrum of AQ-Cl.

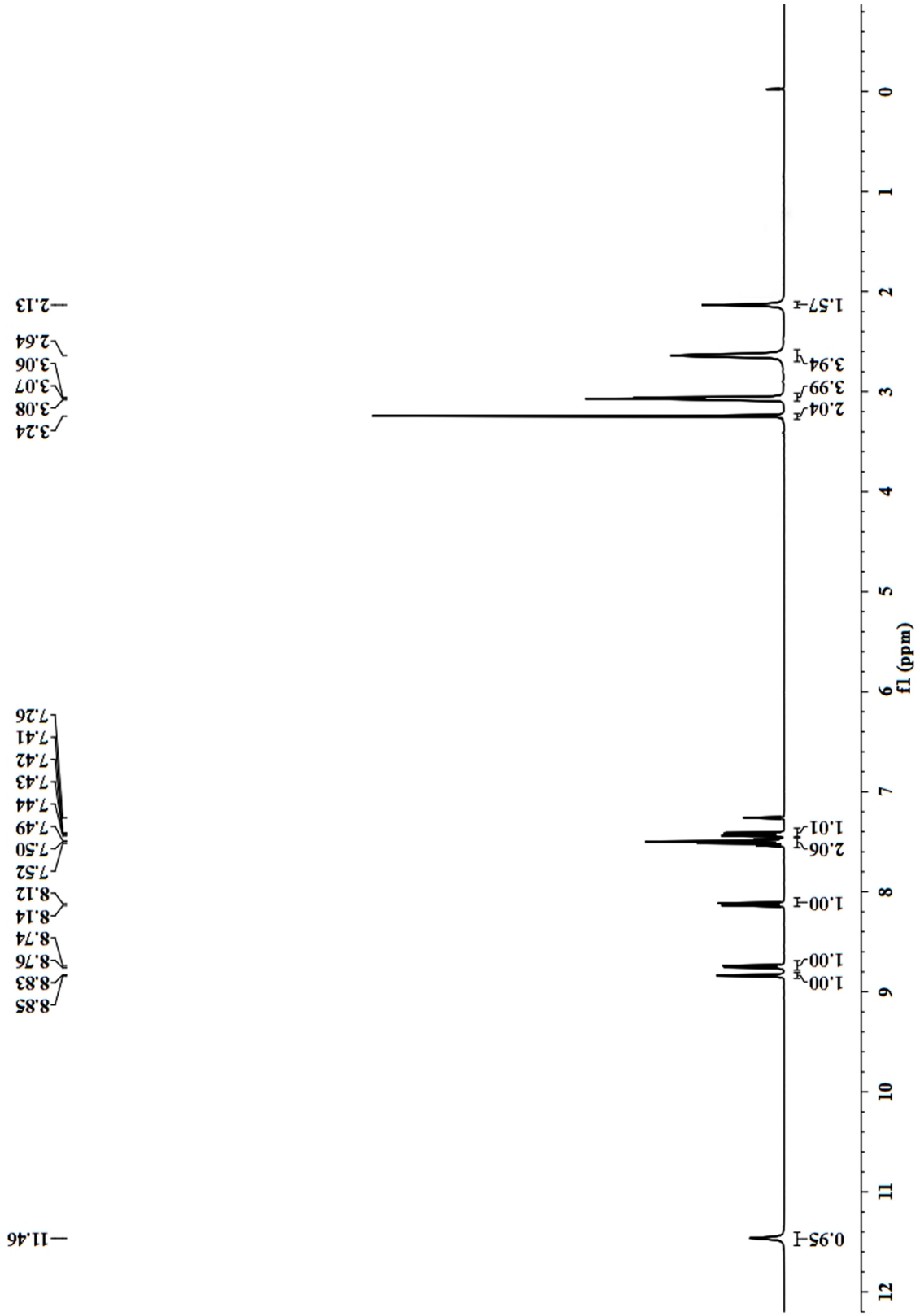

Fig. S3 ^{1}H NMR ($CDCl_3$, 400 MHz) spectrum of AQ-N.

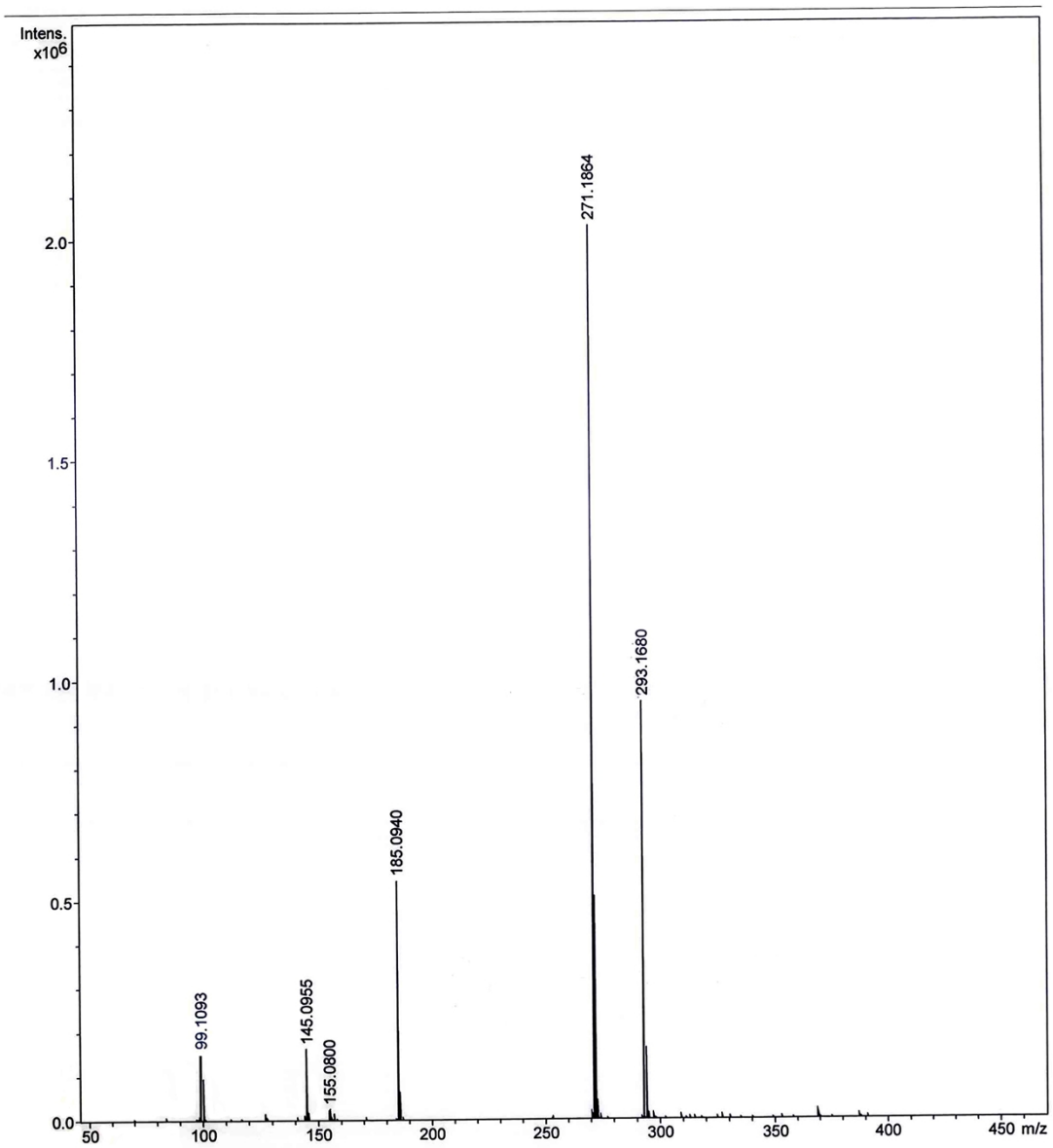

Fig. S4 ESI-MS spectrum of **AQ-N**.

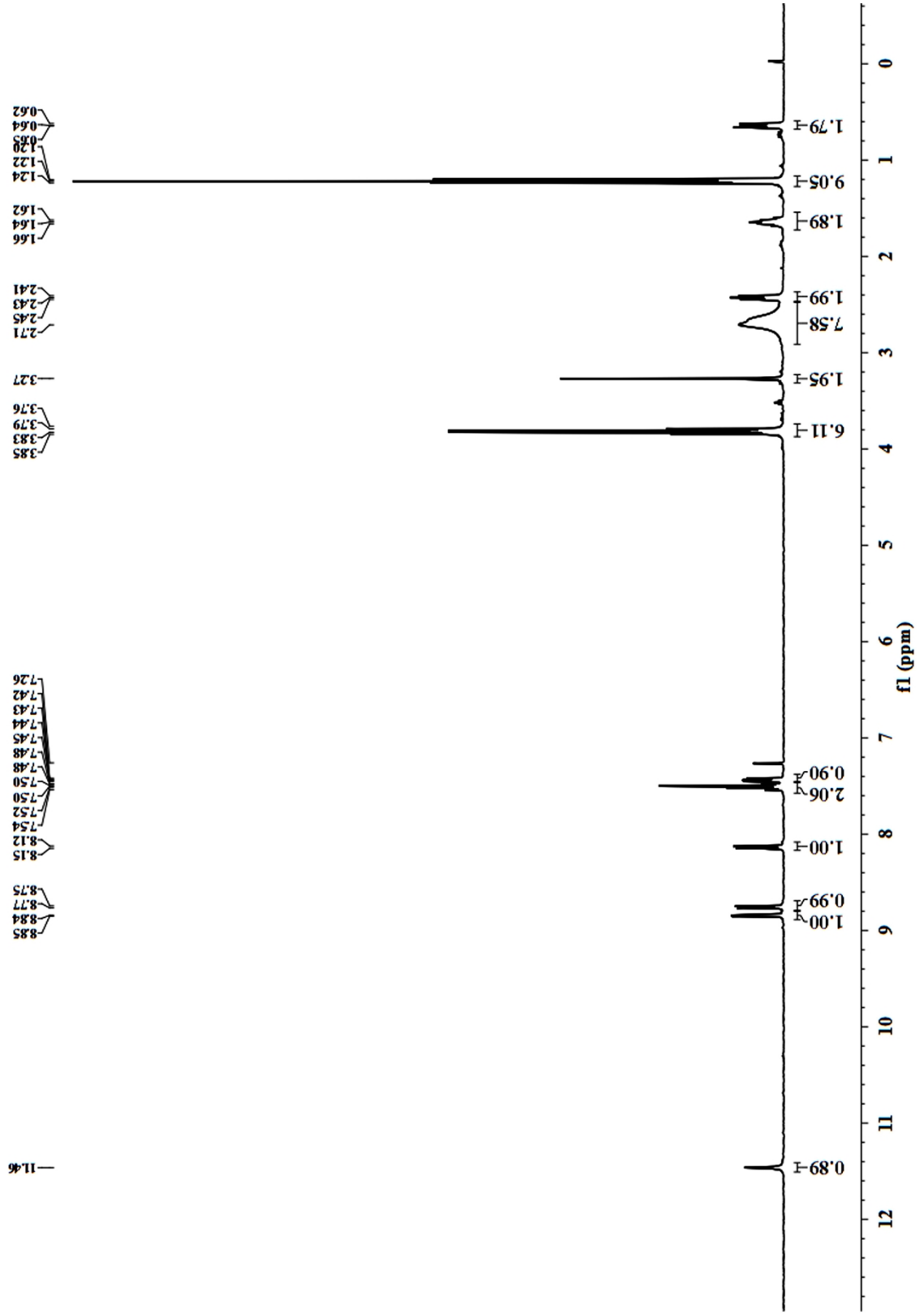

Fig. S5 ^{1}H NMR ($CDCl_3$, 400 MHz) spectrum of AQ-Si.

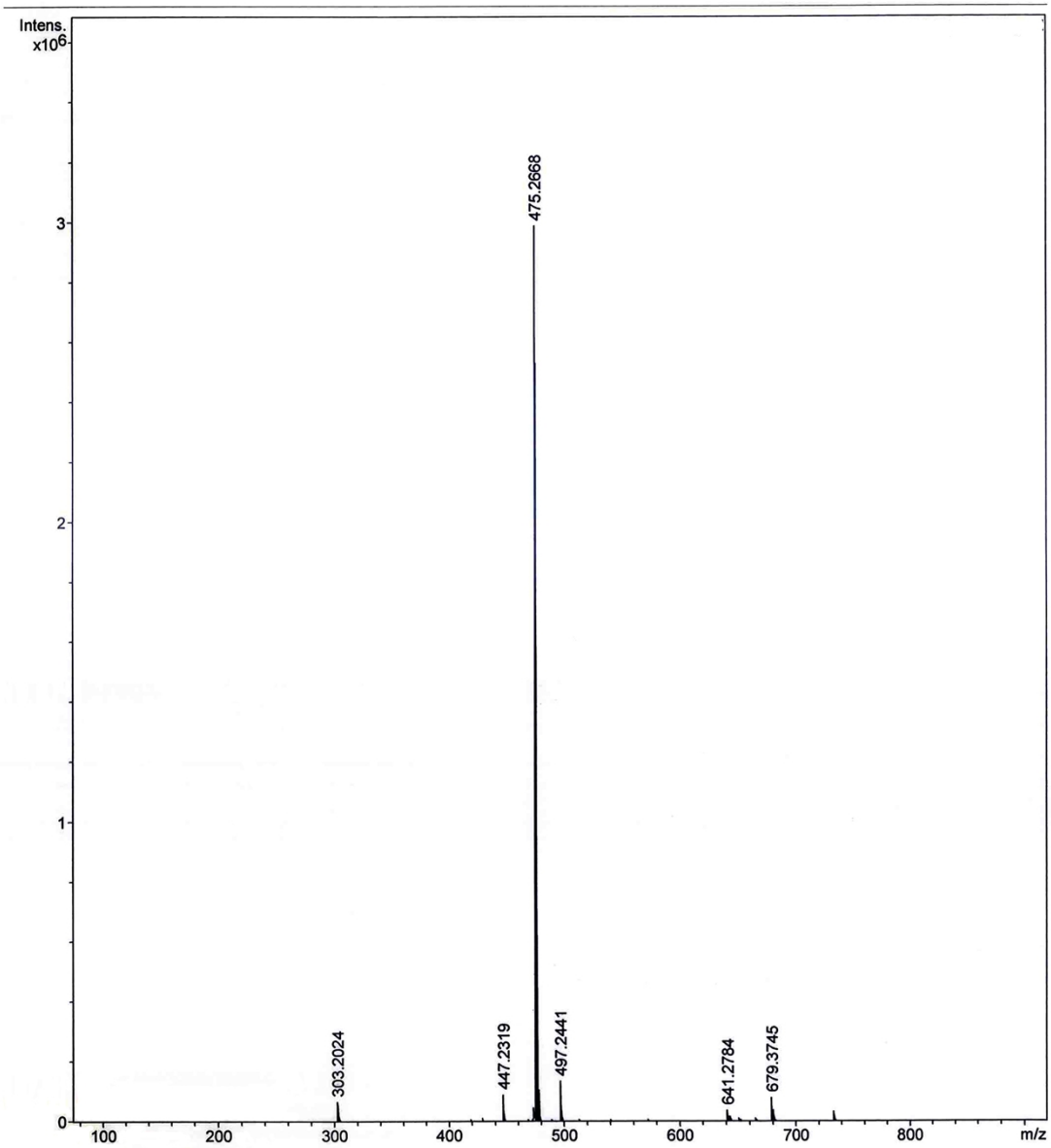

Fig. S6 ESI-MS spectrum of **AQ-Si**.

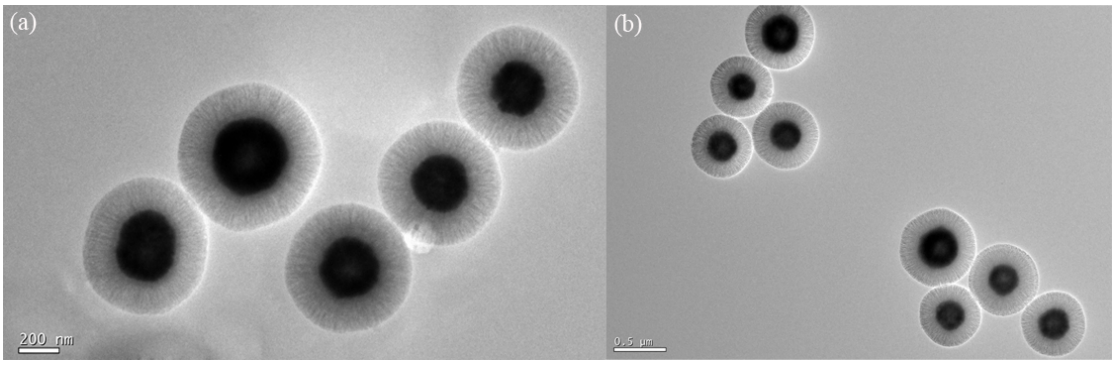

Fig. S7. Transmission electron microscopy images of **AQ-Fe_3O_4@SiO_2@KCC-1** (a) and (b).

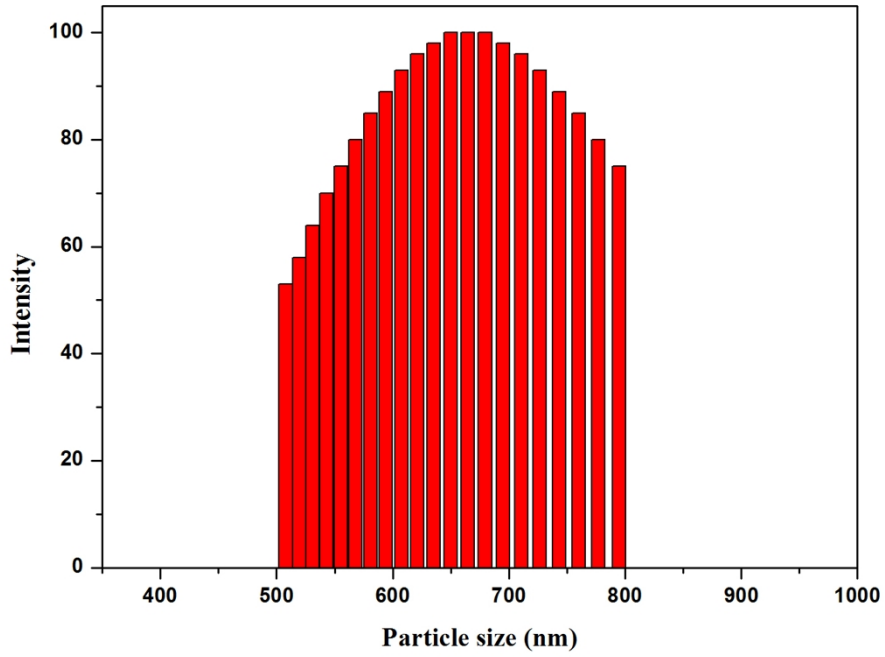

Fig. S8 The particle size histogram from DLS of **AQ-Fe_3O_4@SiO_2@KCC-1**.

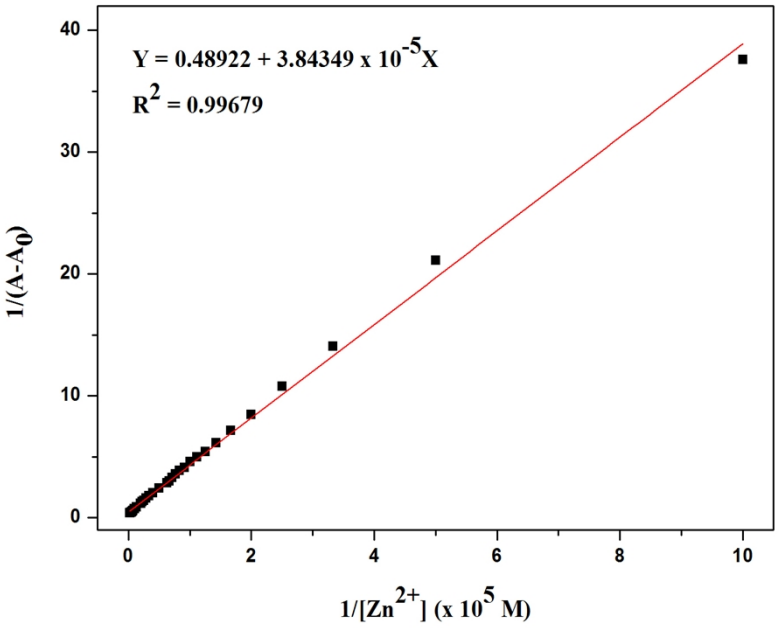

Fig.S9 Benesi-Hildebrand plot (absorbance at 217 nm) of **AQ-Fe_3O_4@SiO_2@KCC-1** assuming 1:1 stoichiometry between **AQ-Fe_3O_4@SiO_2@KCC-1** and Zn^{2+}.

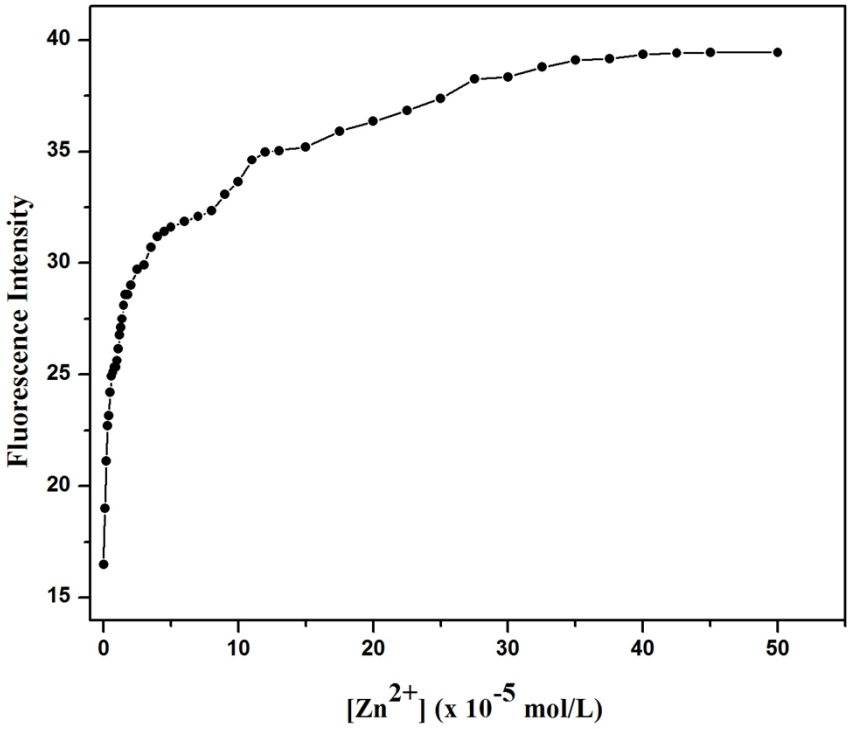

Fig. S10 Fluorescence intensity at 509 nm of **AQ-Fe_3O_4@SiO_2@KCC-1** (0.1 mg/mL) in Tris-HCl solution (10 mM, pH = 7.20) as a function of Zn^{2+} concentration (0-5.0 x 10^{-4} M). Excitation at 360 nm.

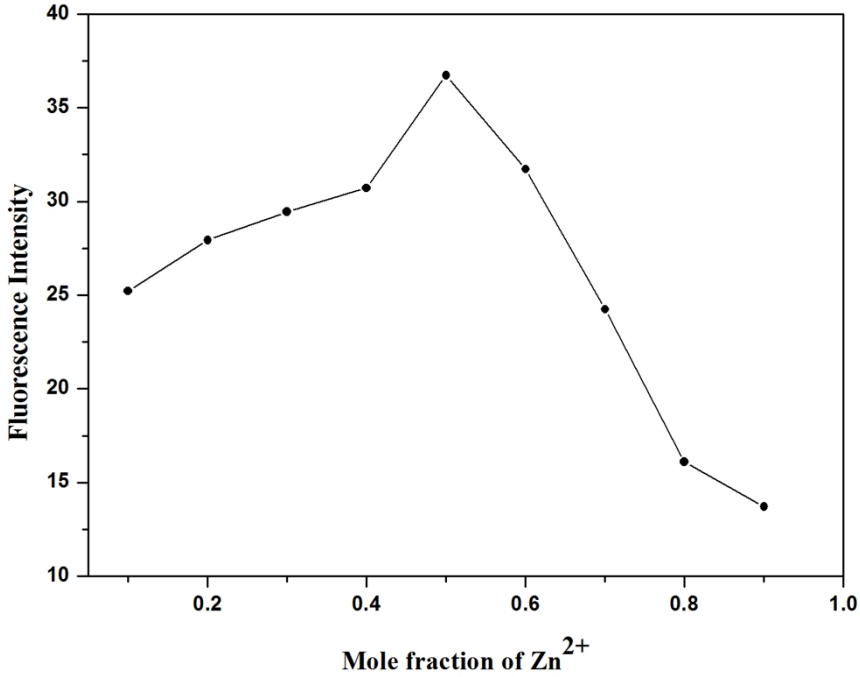

Fig. S11 Job's plot for determining the stoichiometry of **AQ-Fe_3O_4@SiO_2@KCC-1** and Zn^{2+} ions. (The total concentration of **AQ-Fe_3O_4@SiO_2@KCC-1** and Zn^{2+} ions was 4 x 10^{-5} M) λ_{ex} = 360 nm and λ_{em} = 509 nm.

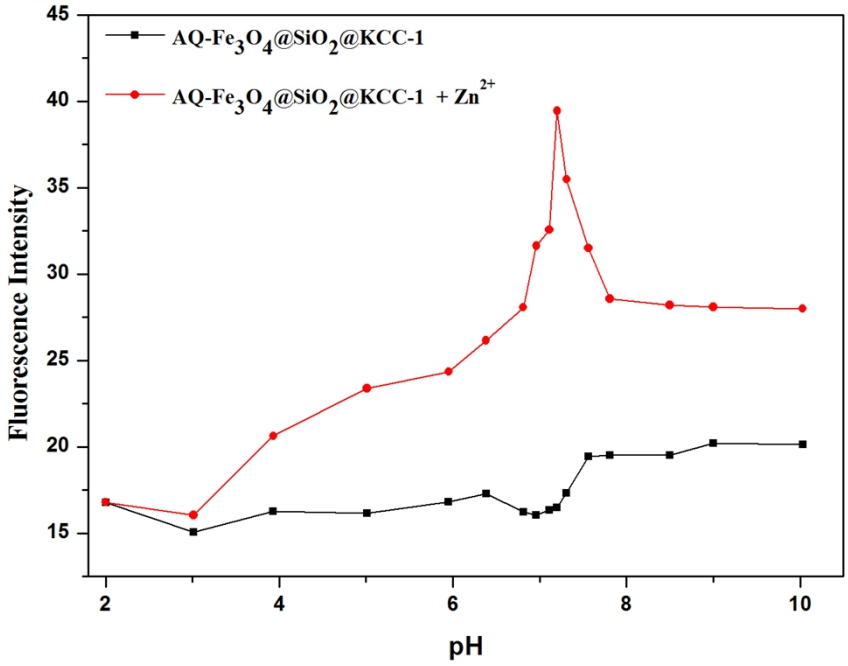

Fig. S12 Variation of fluorescence intensity at 509 nm of **AQ-Fe_3O_4@SiO_2@KCC-1** (0.1 mg/mL) in Tris-HCl solution (10 mM, pH = 7.20) with and without 3.1 x 10^{-5} M Zn^{2+} as a function of pH. Excitation at 360 nm.

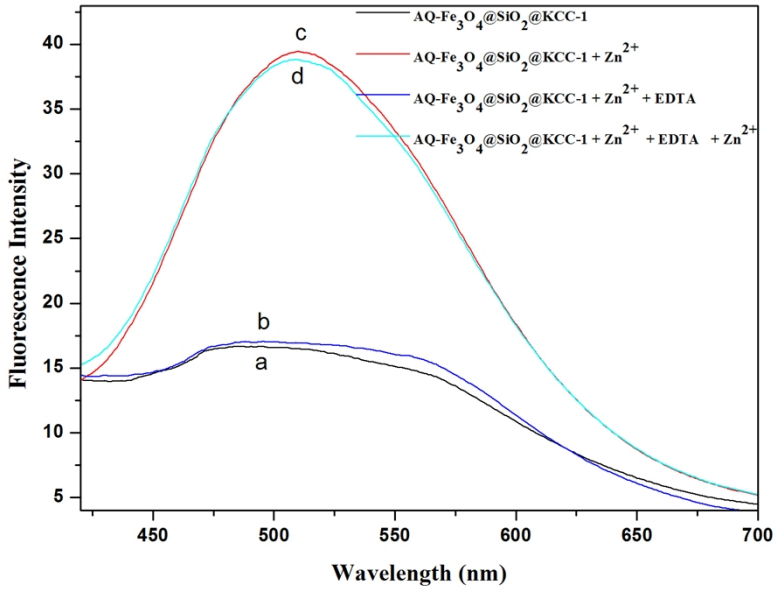

Fig. S13. Fluorescence spectra of **AQ-Fe_3O_4@SiO_2@KCC-1** (0.1 mg/mL) in Tris-HCl solution (10 mM, pH = 7.20) a) without, and b) with Zn^{2+} (5.0 x 10^{-4} M). c) treatment with EDTA (5.0 x 10^{-4} M), d) again treatment with Zn^{2+} (5.0 x 10^{-4} M) in Tris-HCl solution (10 mM, pH = 7.20). Excitation at 360 nm.

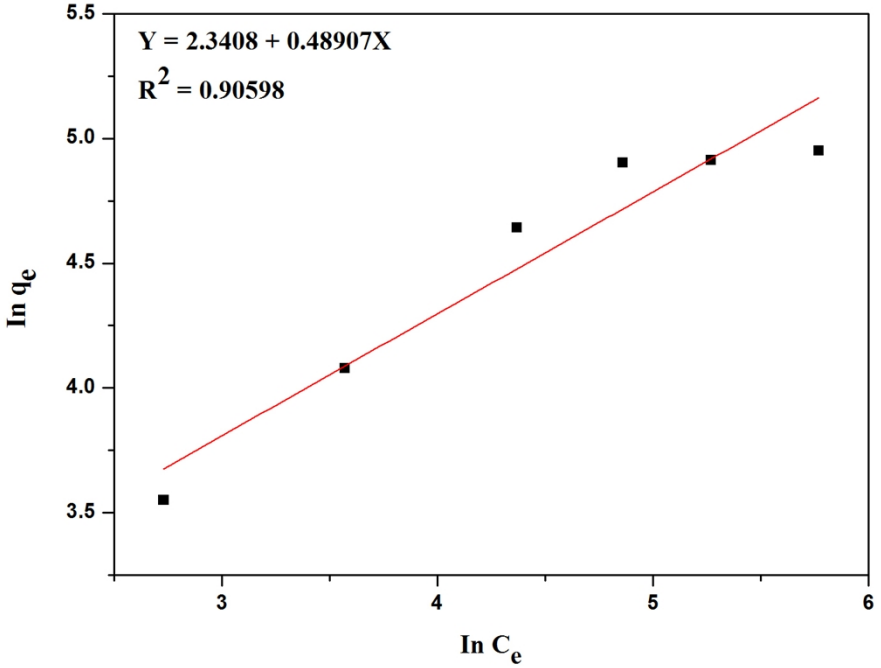

Fig. S14 Freundlich adsorption isotherm plots for Zn^{2+} adsorption onto **AQ-Fe_3O_4@SiO_2@KCC-1**.

Table S1. Structural properties of Fe_3O_4@SiO_2@KCC-1 and **AQ-Fe_3O_4@SiO_2@KCC-1**

Samples	S_{BET} (m^2/g)[a]	D_{BJH} (nm)[b]	V_t (cm^3/g)[c]
Fe_3O_4@SiO_2@KCC-1	213.07	7.94	0.41
AQ-Fe_3O_4@SiO_2@KCC-1	78.76	7.20	0.15

[a]S_{BET} : BET surface area calculated from data at P/P_0 = 0.06-0.29. [b]D_{BJH} : the maximum of the Barret-Joyner-Hellenda (BJH) pore size distribution calculated from the desorption branch of the nitrogen isotherm. [c]V_t : total pore volume calculated at P/P_0 at 0.99.

Table S2. Elementary analysis of **AQ-Fe_3O_4@SiO_2@KCC-1**

N (%)	C (%)	H (%)
1.73	8.77	1.032

Table S3. The parameters of Langmuir and Freundlich isotherms for Zn^{2+} adsorption onto **AQ-Fe_3O_4@SiO_2@KCC-1**.

Adsorption isotherm	parameter	**AQ-Fe_3O_4@SiO_2@KCC-1** Value of parameter	R^2
Langmuir	K_L (L mg^{-1})	0.02896	0.96566
	q_m (mg g^{-1})	157.2327	
Freundlich	K_F (L g^{-1})	10.39	0.90598
	n	2.04	