Electronic Supplementary Information (ESI)

1. Calculation of Quantum Yield

Fluorescence quantum yields (Φ) were estimated by integrating the area under the fluorescence curves using the equation[1],

$$\phi_{sample} = \phi_{ref} \times \frac{OD_{ref} \times A_{sample} \times \eta^2_{sample}}{OD_{sample} \times A_{ref} \times \eta^2_{ref}}$$

where A was the area under the fluorescence spectral curve and OD was optical density of the compound at the excitation wavelength. Complex tris(2,2'-bipyridyl)ruthenium(II) (Φ = 0.042 in water)[2] has been used as quantum yield standardfor measuring the quantum yields of **APC** and its arsenate assembly .

2. Calculation of detection limit

To determine the detection limit, fluorescence titration of **APC** with arsenate is carried out by adding aliquots of micro-molar concentration of arsenate. From the concentration at which there was a sharp change in the fluorescence intensity multiplied with the concentration of **APC** gave the detection limit.[3]

3. Equations used for calculating detection limit (DL)

$DL = C_L \times C_T$

C_L = Conc. of **APC**; C_T = Conc. of arsenate at which fluorescence enhanced.

Thus;

$DL = 1\ \mu M \times 0.001\ \mu M = 0.001\ \mu M = 1 \times 10^{-9}\ M$

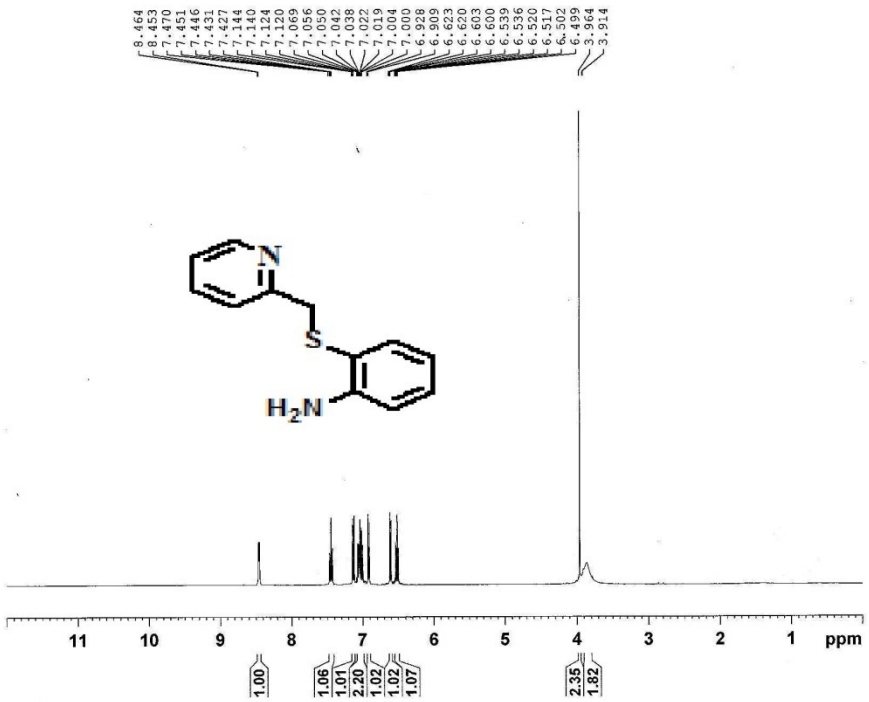

Figure S1. ^{1}H NMR spectrum of **AP** in $CDCl_3$

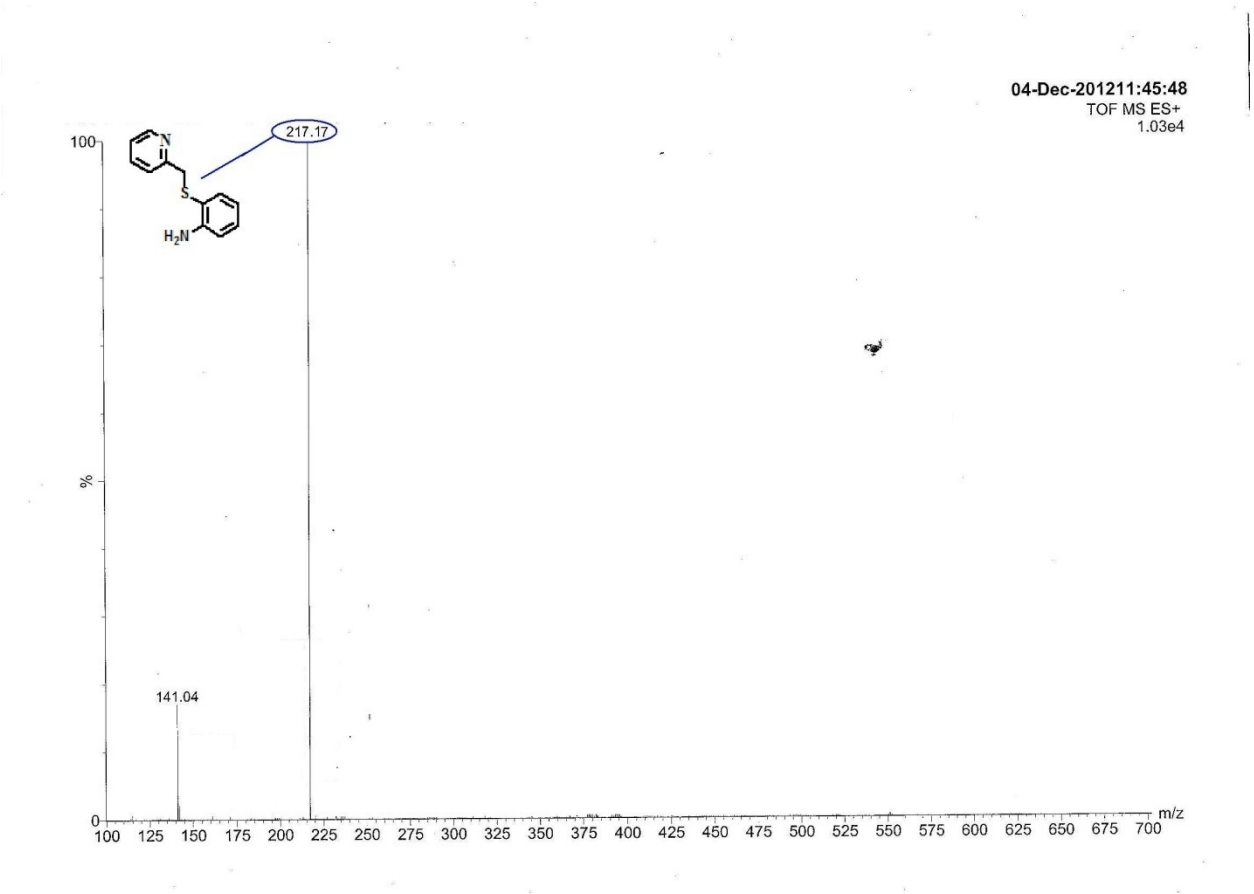

Figure S2. QTOF –MS ES^+ spectrum of **AP**

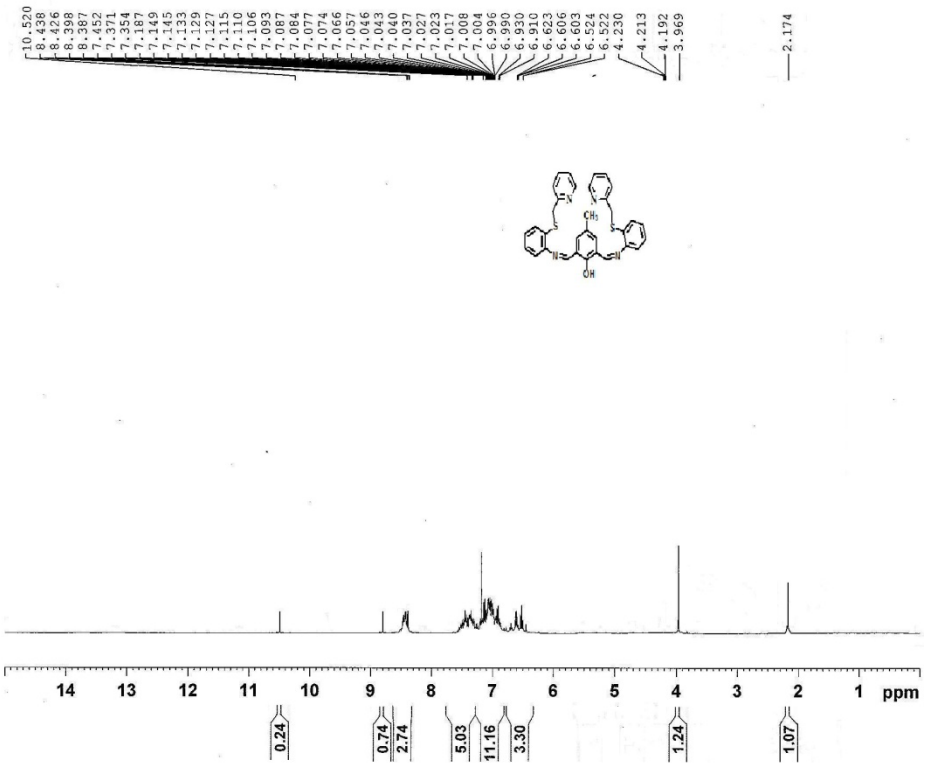

Figure S3. ^{1}H NMR spectrum of **APC** in $CDCl_3$

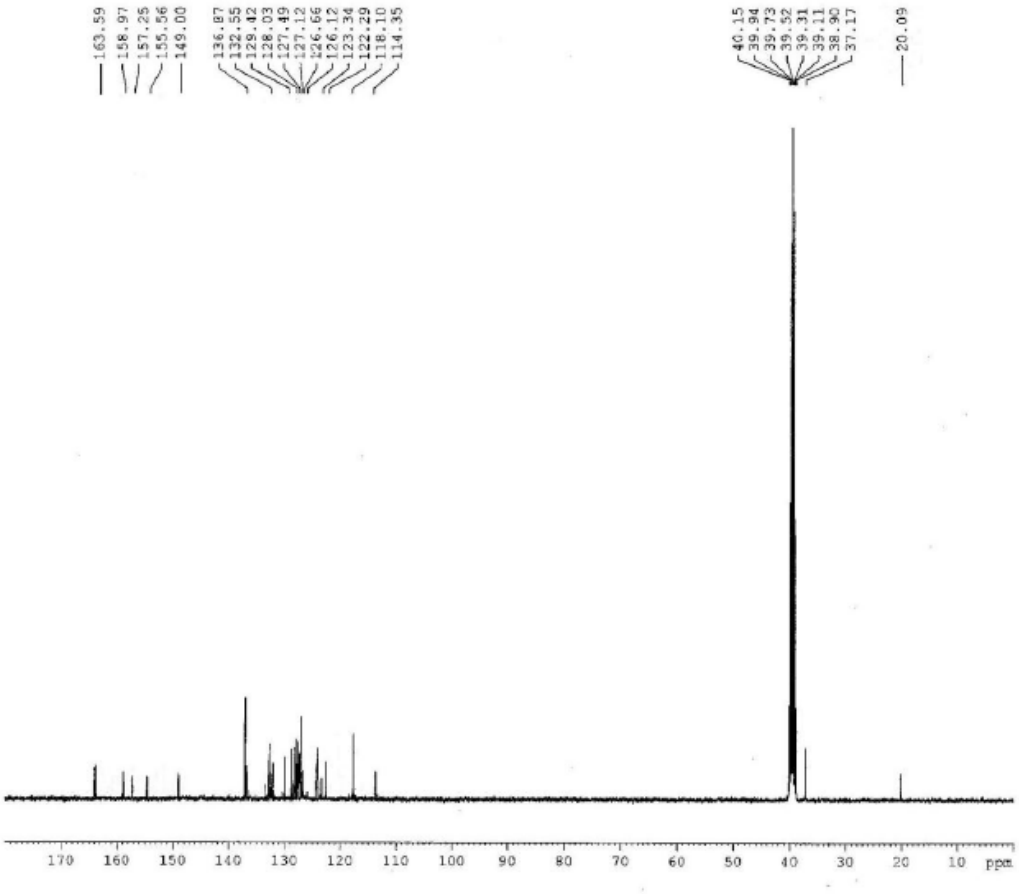

Figure S4. ^{13}C NMR spectrum of **APC** in DMSO-d_6

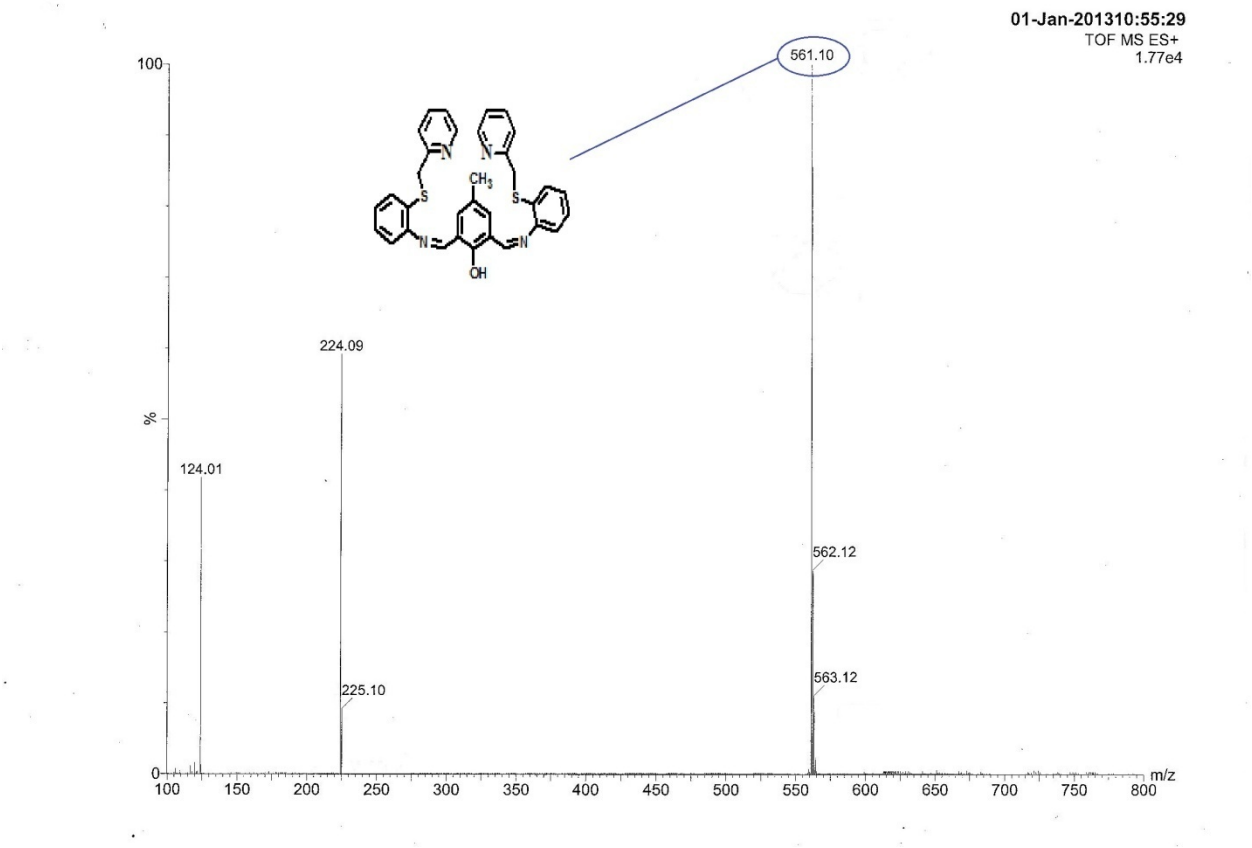

Figure S5. QTOF –MS ES^+ spectrum of **APC**

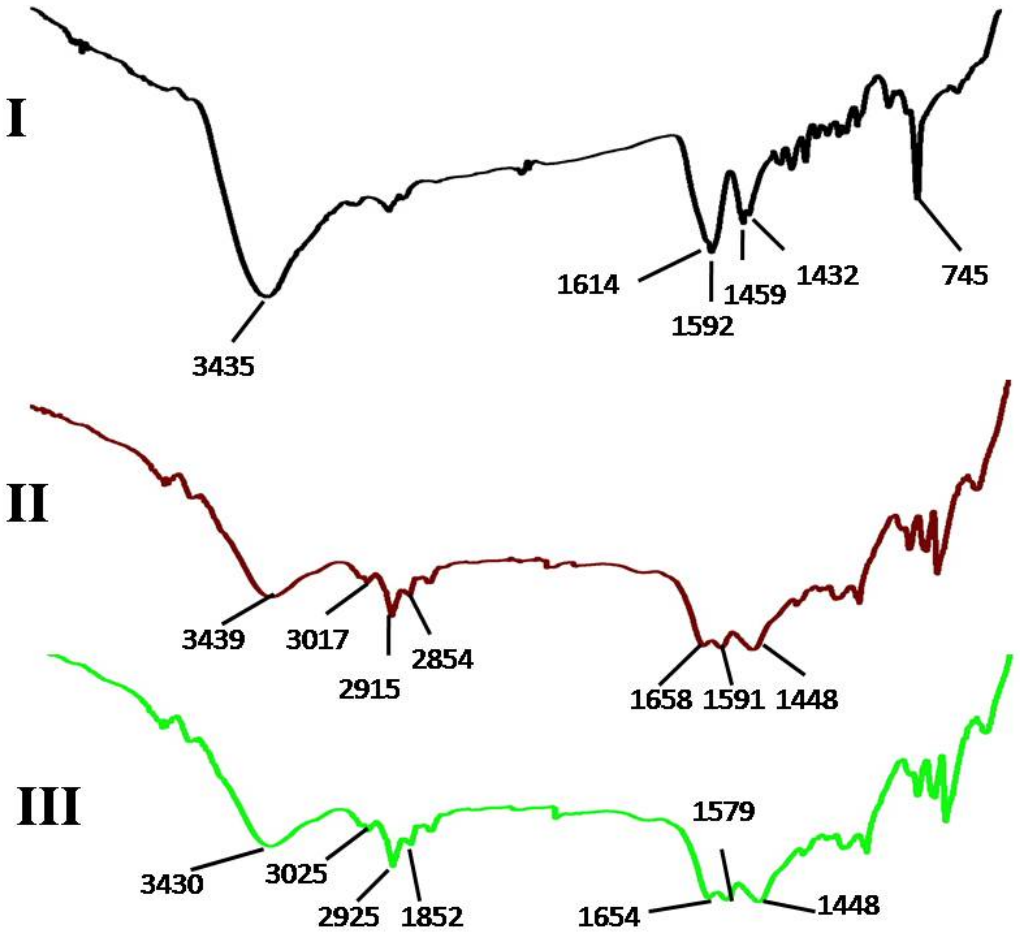

Figure S6. FTIR spectra of (I) **APC**, (II) **APC- Merrifield polymer** and (III) **APC-Merifield polymer** + $H_2AsO_4^-$.

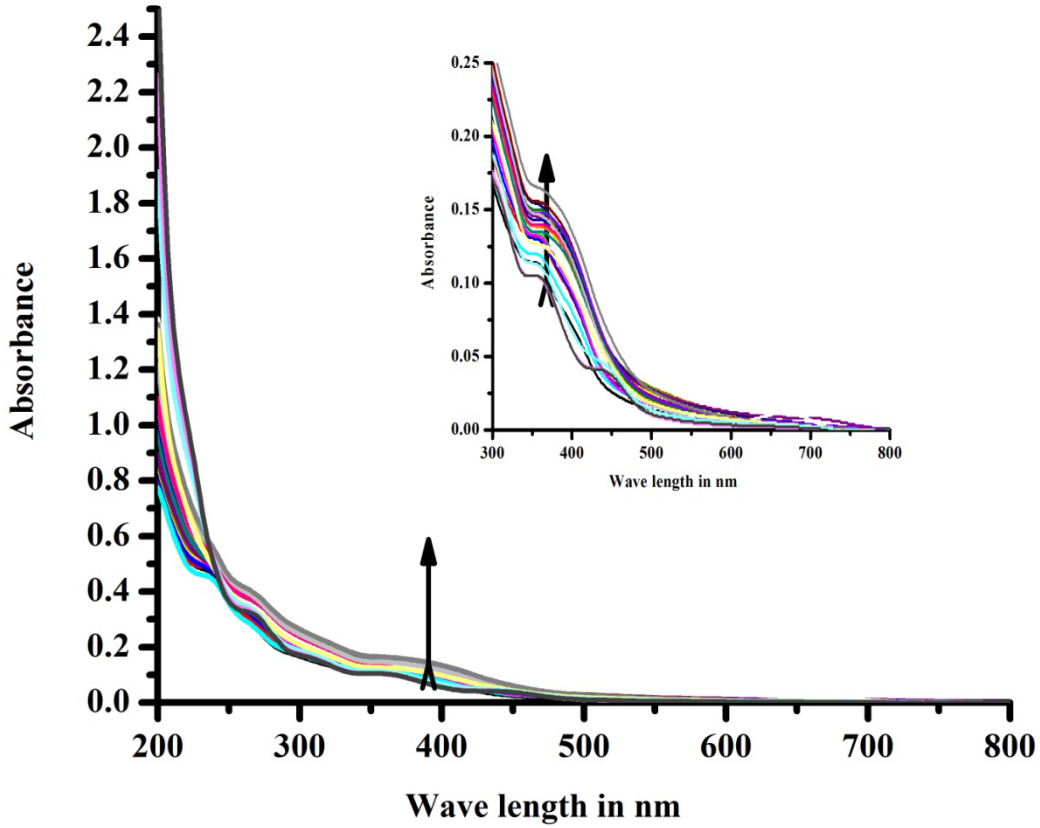

Figure S7. Changes in the absorbance of **APC** (10 μM) in HEPES buffered (0.1 M; EtOH–H_2O, 1:99 v/v; pH 7.4) solution upon gradual addition of $H_2AsO_4^-$ (0.010, 0.025, 0.050, 0.075, 0.100, 0.250, 0.500, 0.750 1.000, 5.000, 10.000, 20.000, 30.000, 40.000, 50.000, 60.000, 70.000, 80.000, 90.000, 100.000, 300.000, 500.000 μM).

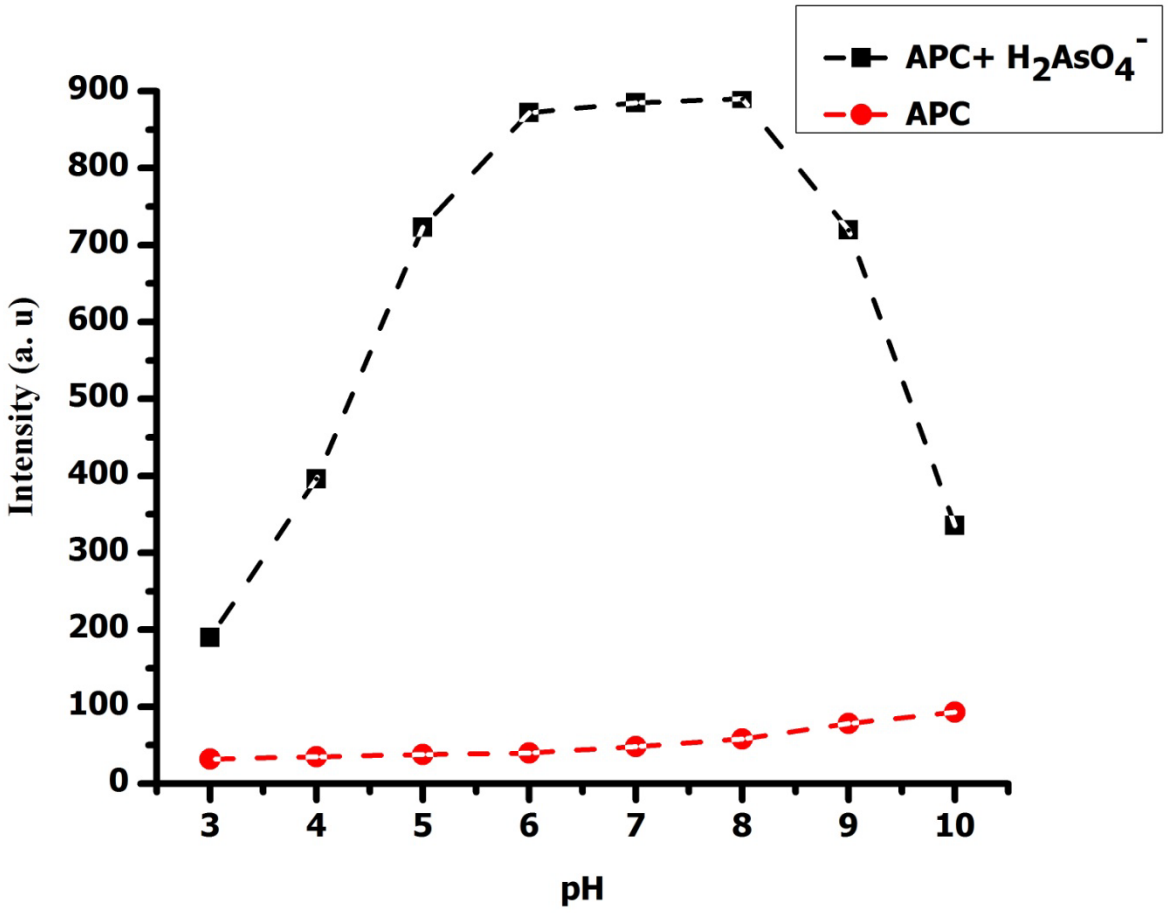

Figure S8. Influence of pH on the emission intensities of free **APC** (1μM) and its $H_2AsO_4^-$ (5μM) adduct

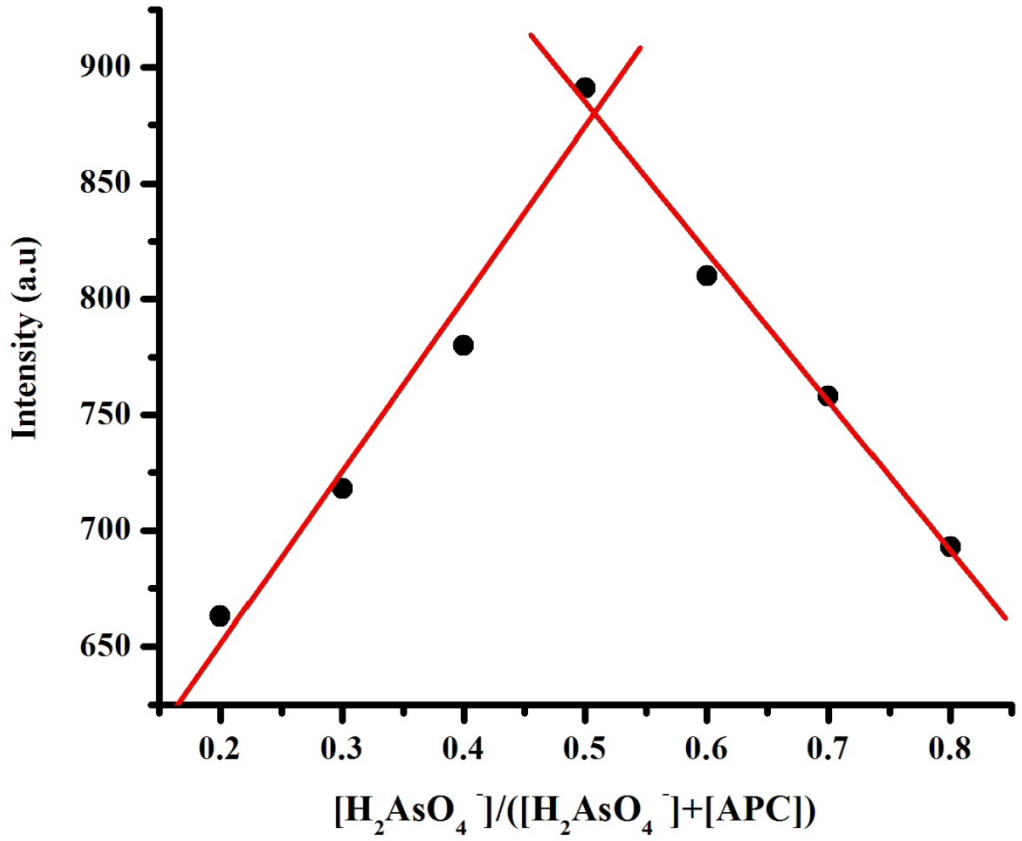

Figure S9. Job's plot for stoichiometry determination of **APC**- $H_2AsO_4^-$ adduct, λ_{ex} = 440nm.

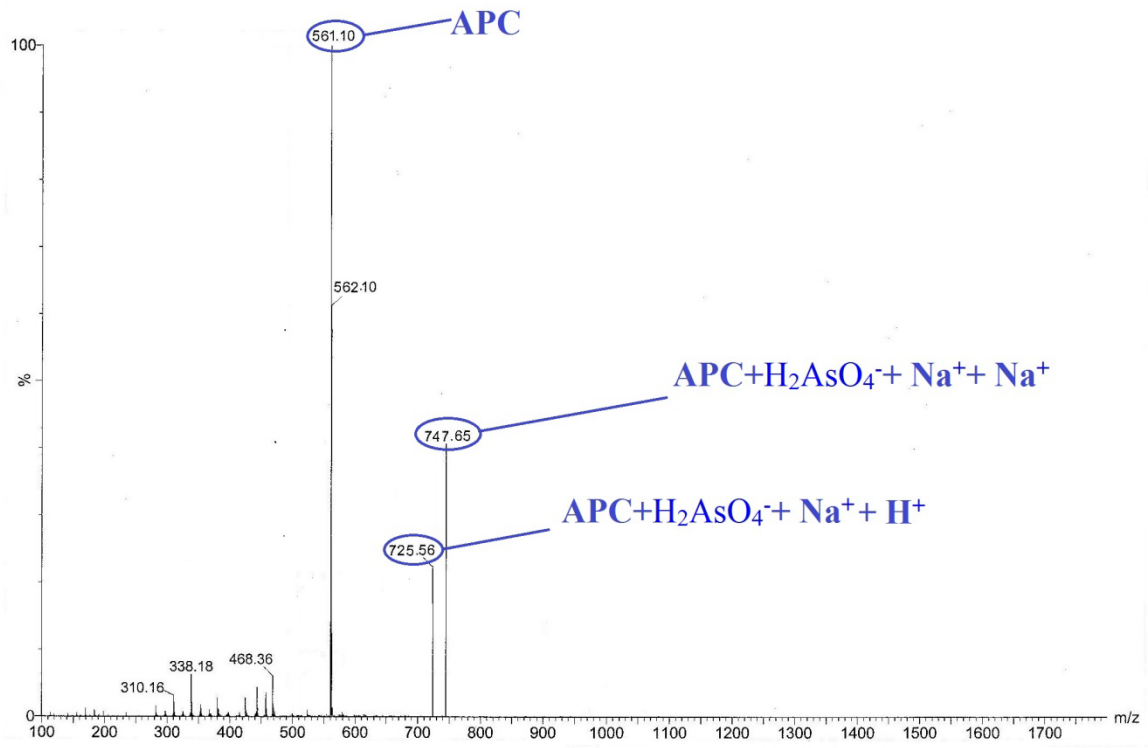

Figure S10.QTOF –MS ES^+ spectrum of **APC-** $H_2AsO_4^-$ adduct

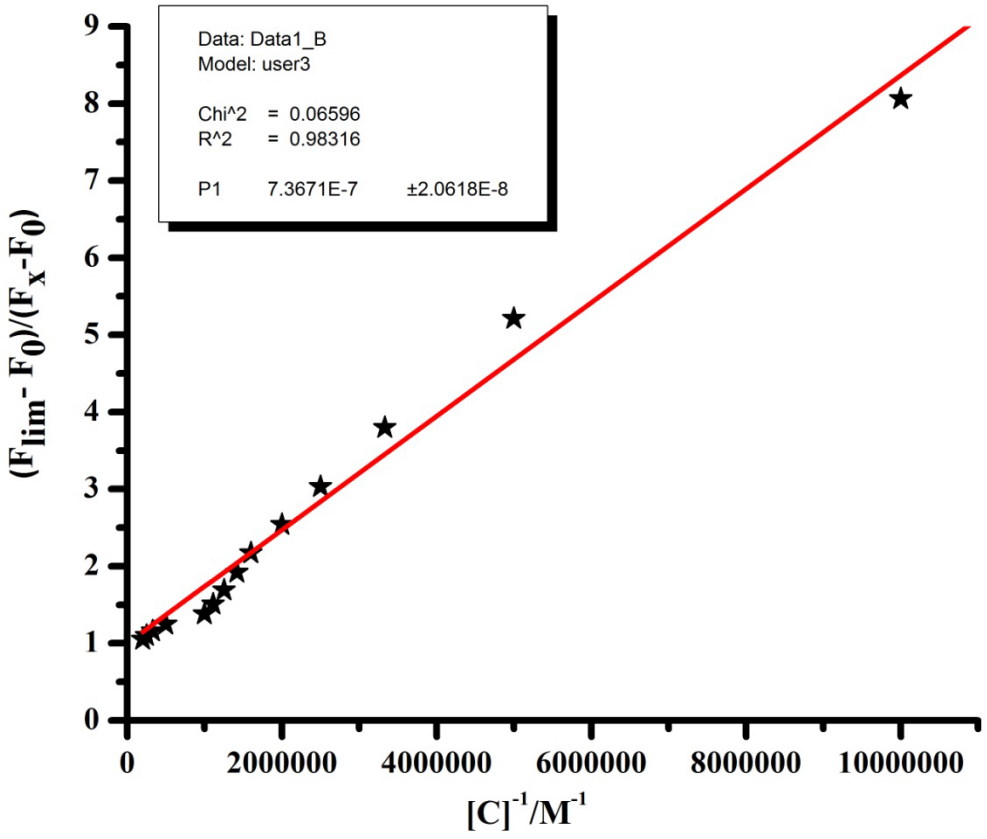

Figure S11. Estimation of binding constant of **APC** with $H_2AsO_4^-$ by fluorescence method

References

1. E. Austin, M. Gouterman, *Bioinorg. Chem.*, 1978, **9**, 281.

2. J. V. Houten, R. J.Watts, *J. Am. Chem. Soc.*, 1976, **98**, 4853.

3. G. L. Long, J. D. Winefordner, *Anal. Chem.*, 1983, **55**, 712A.