†Electronic Supplementary Information (ESI)

2-(2-Pyridyl) benzimidazole based Co(II) complex as an efficient fluorescent probe for trace level determination of aspartic and glutamic acid in aqueous solution: A displacement approach

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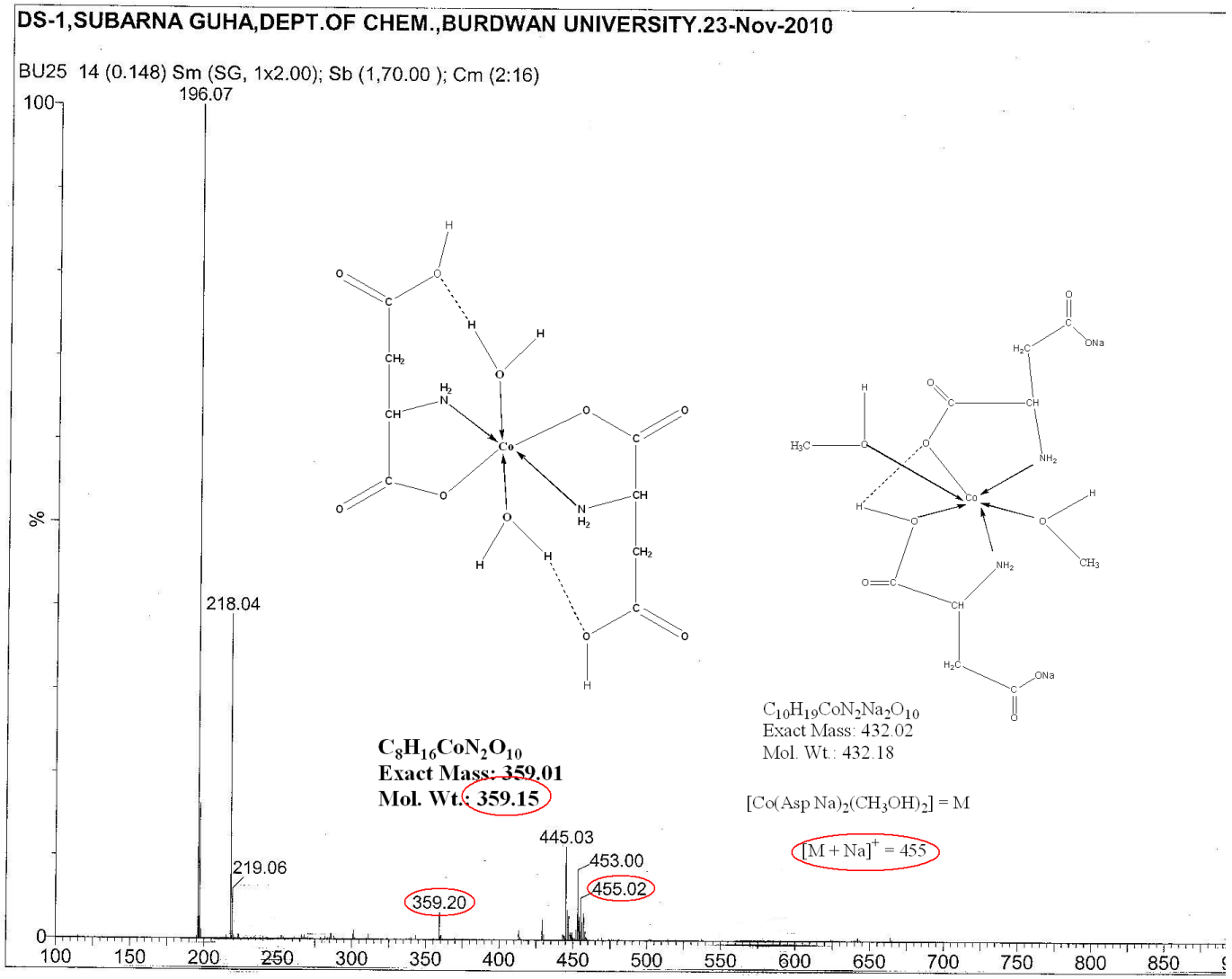


Figure S1. Mass spectra of the reaction product of Co(II)-PBI complex with aspartic acid.

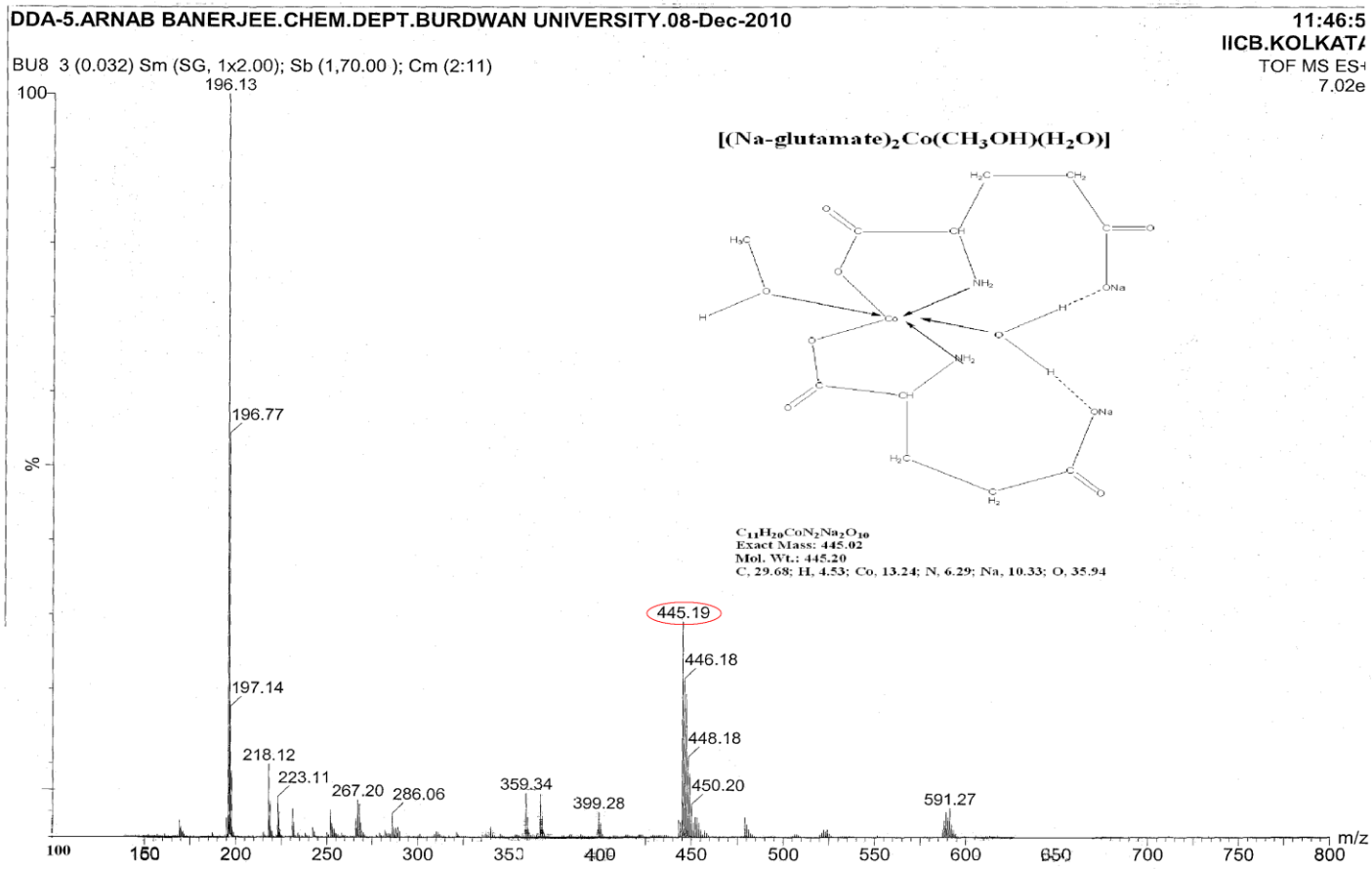


Figure S2. Mass spectra of the reaction product of Co(II)-PBI complex with glutamic acid.

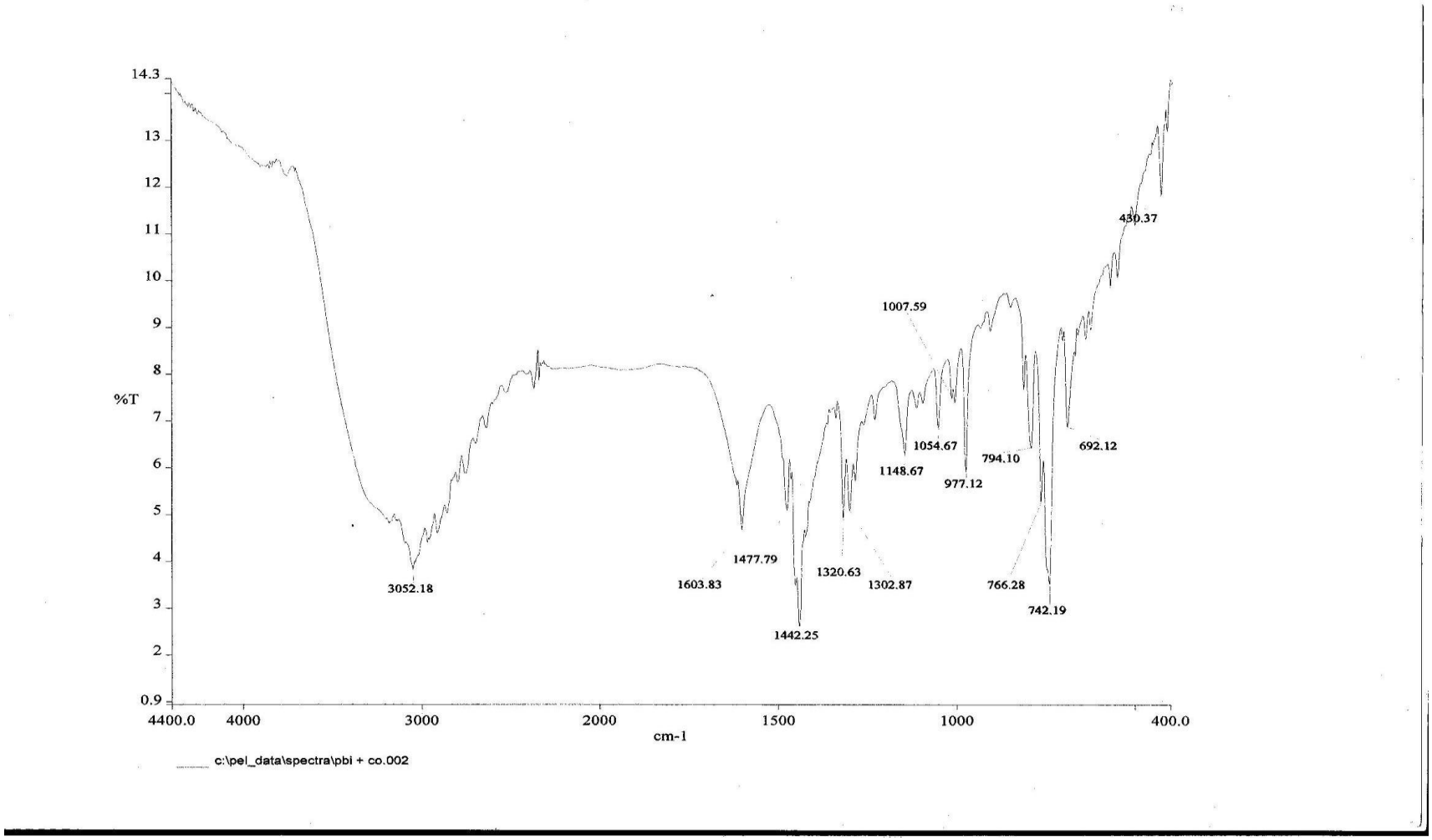
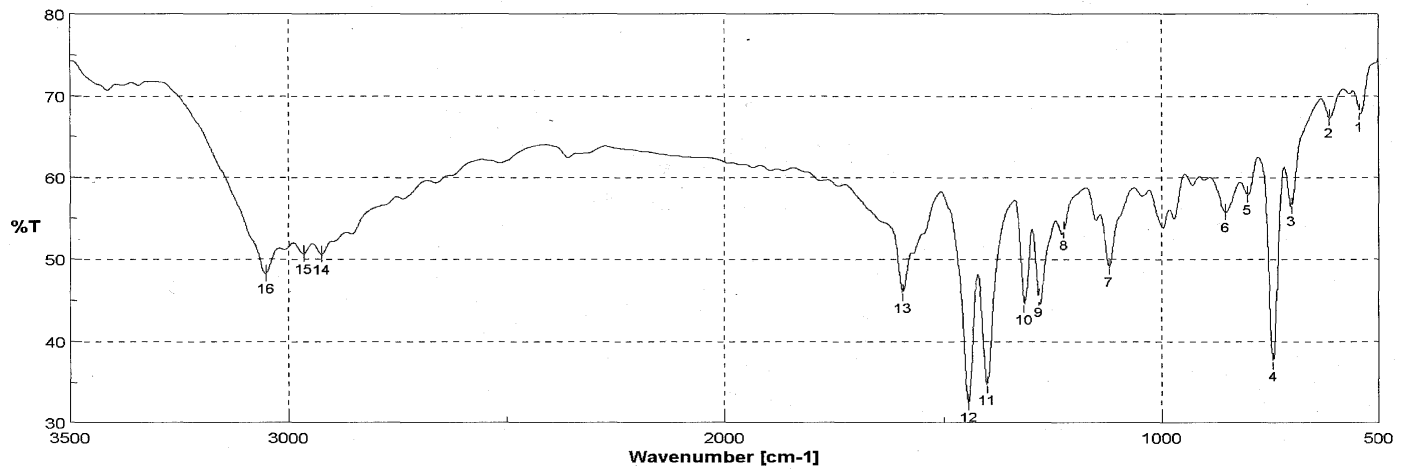


Figure S3. FTIR of the Co(II)-PBI complex



Date/Time 11/20/2010 3:37PM
Operator
File Name Memory#3
Sample Name PBI+Co+Asp
Comment

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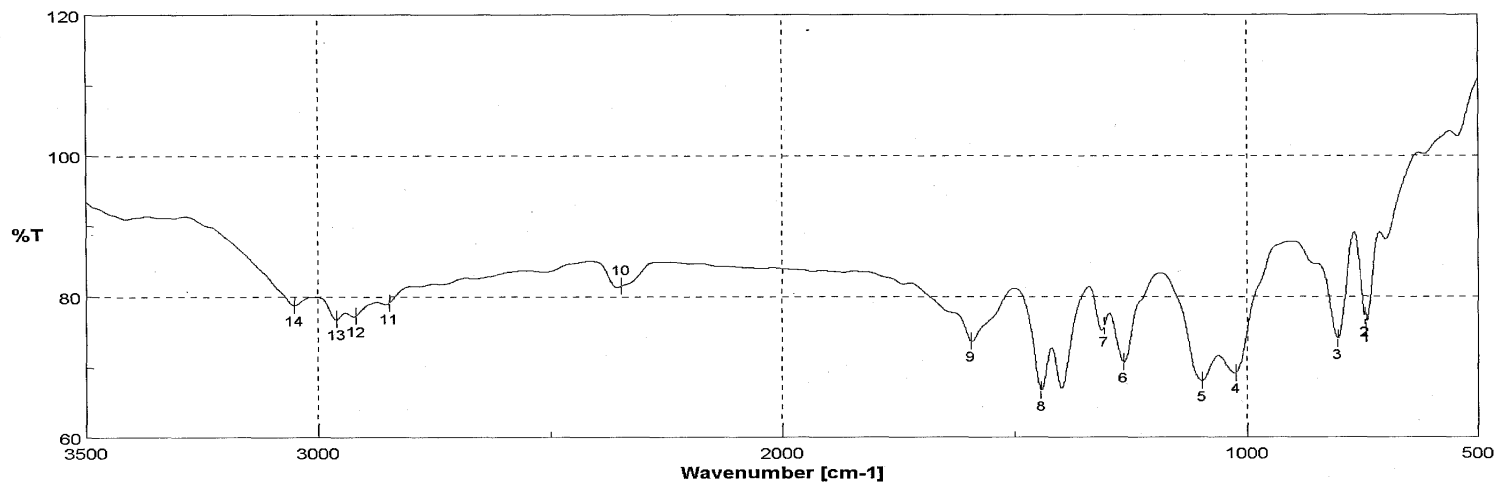
1	545.756	67.969	2	616.145	67.2971	3	701.962	56.4687	4	744.388	37.6082	5	803.206	57.8624
6	853.346	55.6987	7	1121.4	49.0998	8	1223.61	53.5567	9	1282.43	45.3834	10	1314.25	44.5006
11	1401.03	34.7042	12	1443.46	32.5221	13	1593.88	45.9425	14	2924.52	50.5767	15	2965.02	50.654
16	3053.73	48.2699												

Figure S4. FTIR of Co(II) –AspA system



Date/Time	11/20/2010 3:49PM
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File Name	Memory#2
Sample Name	PBI+Co+GLU
Comment	

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1	742.459	76.4632	2	746.316	77.1885	3	804.17	74.0966	4	1024.98	69.2192	5	1097.3	68.1213
6	1266.04	70.7453	7	1307.5	75.8857	8	1443.46	66.7604	9	1594.84	73.7361	10	2348.87	81.5035
11	2848.34	79.1215	12	2919.7	77.3341	13	2960.2	76.8656	14	3051.8	78.8321			

Figure S5. FTIR of Co(II) –GluA system

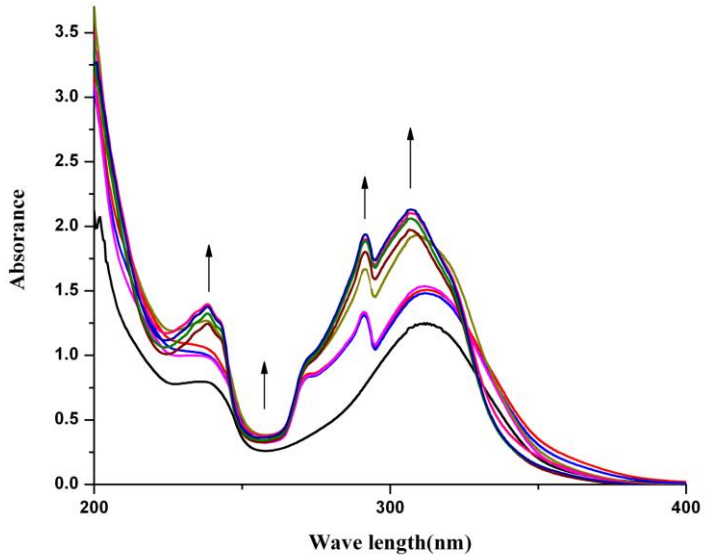

Figure S 6. UV-vis. spectral changes of Co(II)- PBI complex (10 µM) with gradual addition of aspartic acid (10, 40, 80, 100, 200, 300, 400, 700, 1000, 2000, 3000 µM from bottom to top).

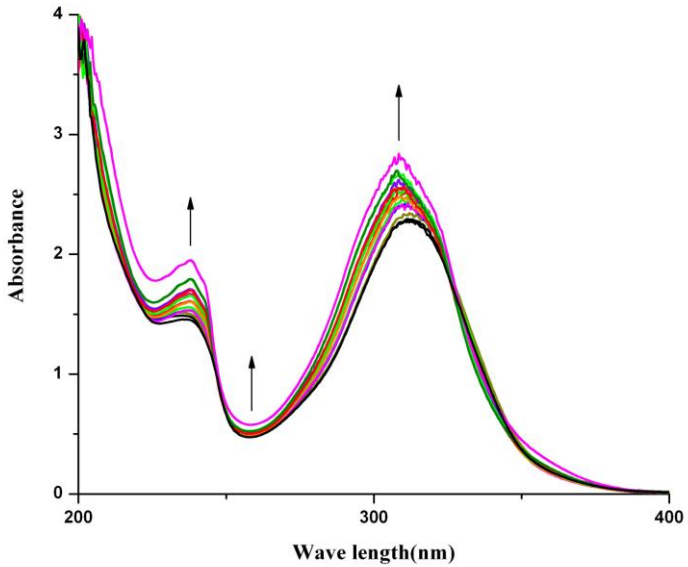

Figure S7. UV-vis. spectral changes of Co(II)- PBI complex (10 µM) with gradual addition of glutamic acid (10, 40, 60, 80, 90, 100, 200, 300, 400, 500, 700, 1000, 1500, 2000, 3000 µM from bottom to top).

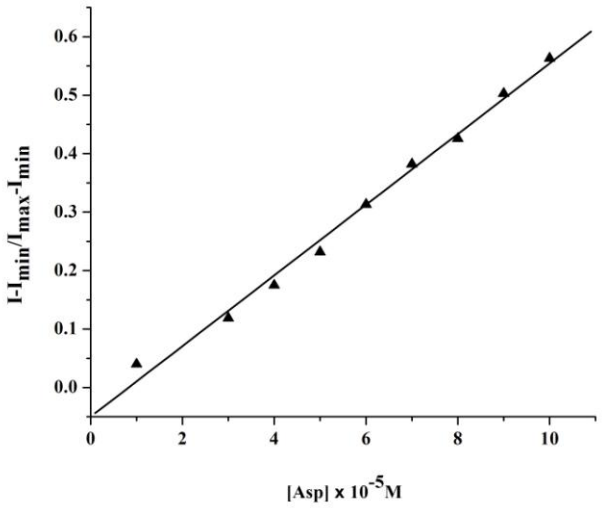

Figure S8. Stern-Volmer type plot for the interaction of Co(II)-PBI complex with aspartic acid (I_{min} is the emission intensity of Co(II)-PBI complex only, I is the emission intensity of Co(II) – AspA system and I_{max} is the emission intensity of Co(II)– AspA system at saturation point.

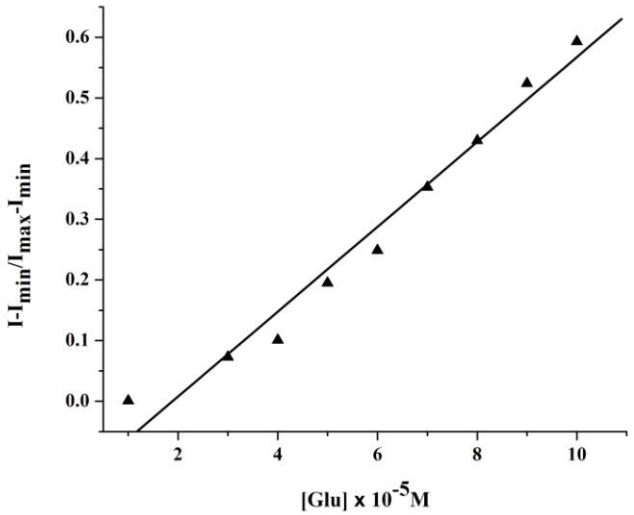

Figure S9. Stern-Volmer type plot for the interaction of Co(II)-PBI complex with glutamic acid (I_{min} is the emission intensity of Co(II)-PBI complex only, I is the emission intensity of Co(II)-GluA system and I_{max} is the emission intensity of Co(II)- GluA system at saturation point.

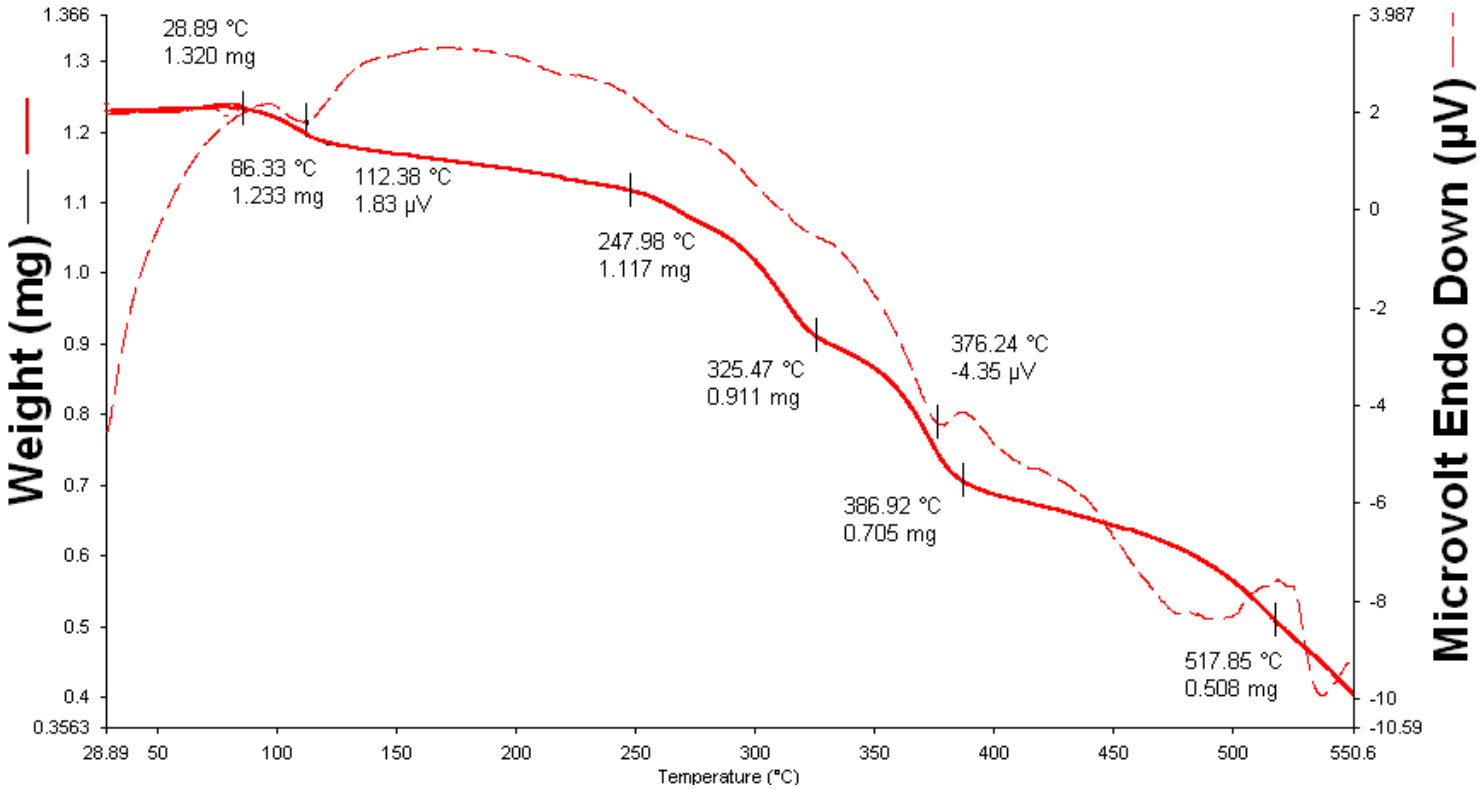

Figure S10. TGA of Co(II)-PBI complex

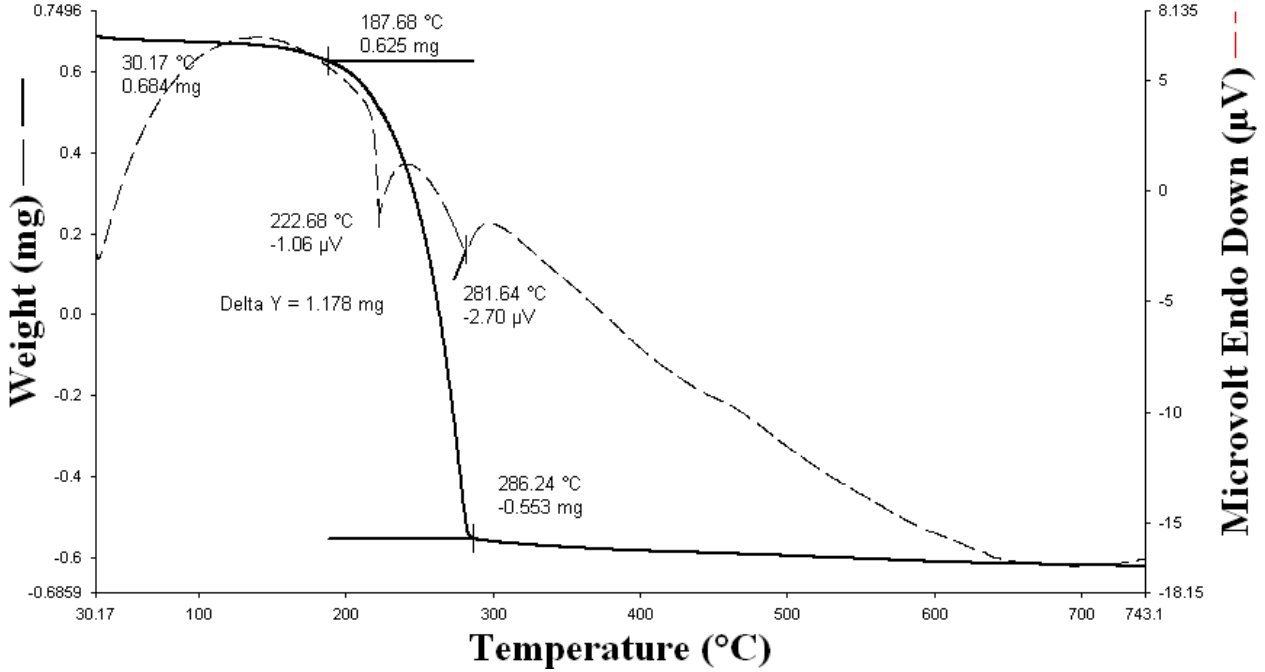

Figure S11. TGA of the reaction product of Co(II)-PBI complex with aspartic acid.

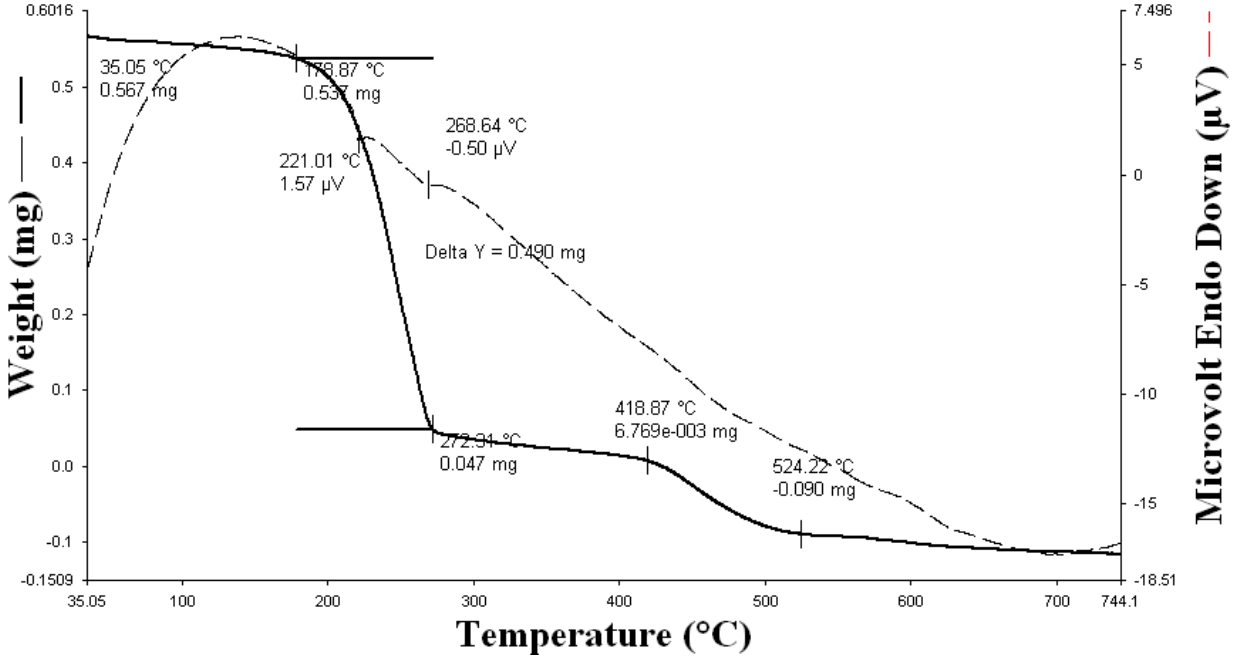

Figure S12. TGA of the reaction product of Co(II)-PBI complex with glutamic acid.

1. General method of UV-vis. and fluorescence titration

Path length of the cells used for absorption and emission studies was 1 cm. For UV-vis and fluorescence titrations, stock solution of **L** was prepared (C = 10 µM) in water. Working solutions were prepared from their respective stock solutions. Fluorescence measurements were performed using 5 nm x 5 nm slit width.

2. Calculation of Quantum Yield

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

$$\phi_{\text{sample}} = \frac{\text{OD}_{\text{standard}} \times A_{\text{sample}}}{\text{OD}_{\text{sample}} \times A_{\text{standard}}} \times \phi_{\text{standard}}$$

where A was the area under the fluorescence spectral curve and OD was optical density of the compound at the excitation wavelength.

Reference

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

2 W. H ,Melhuish; *J. Phys. Chem.*, **1961**, *65*, 229.