Electronic Supplementary Material (ESI) for CrystEngComm

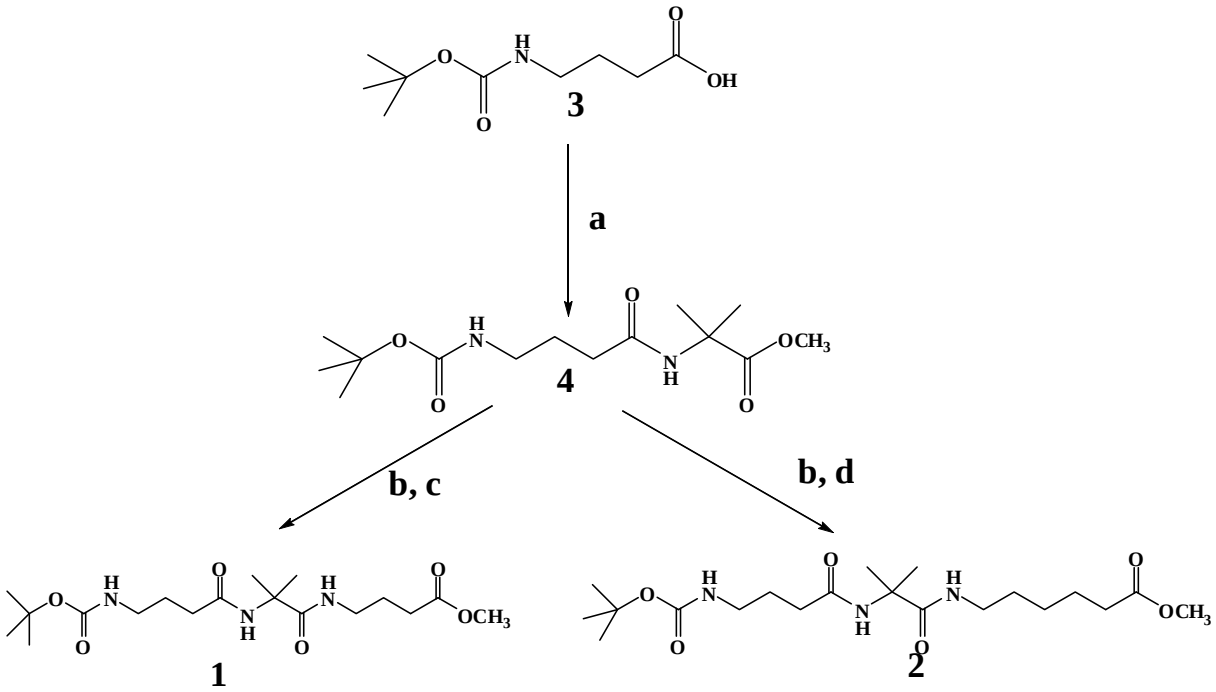
Supporting information

Luminescent nanoparticles from tripeptide-CdS conjugate

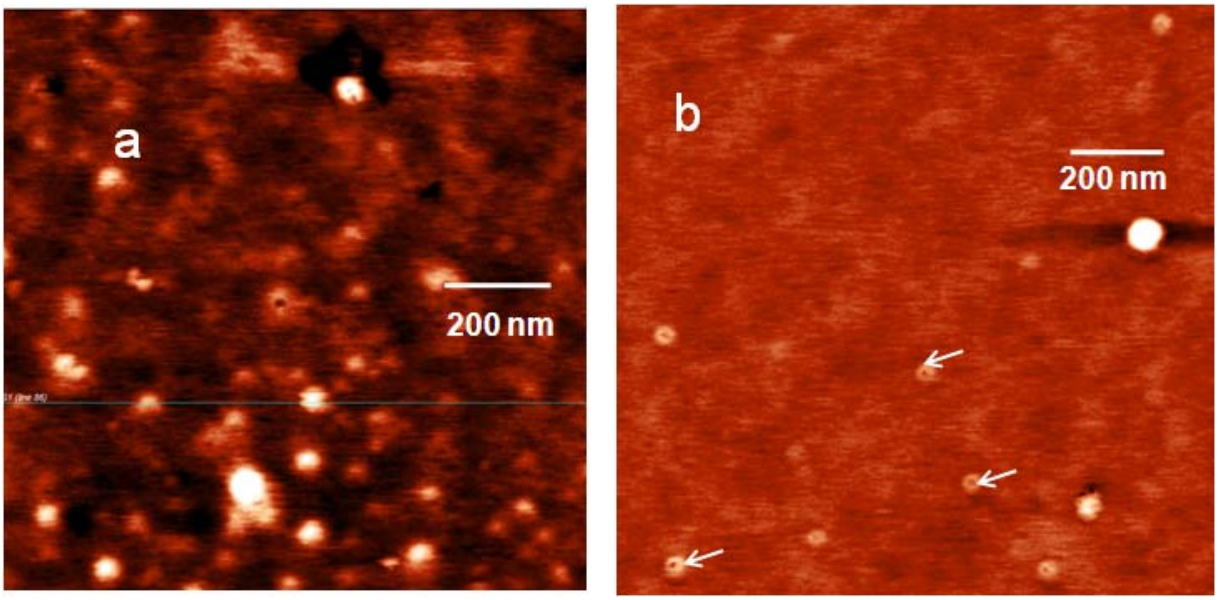
Suman Kumar Maity, Sibaprasad Maity, Poulami Jana and Debasish Haldar*

Department of Chemical Sciences, Indian Institute of Science Education and Research –Kolkata, Mohanpur, West Bengal- 741252, India.

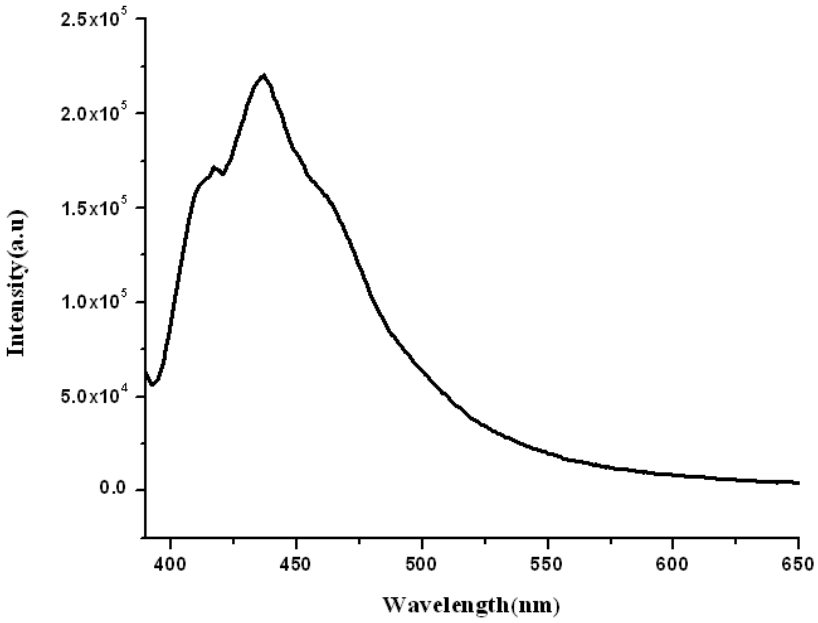
E-mail: deba_h76@yahoo.com



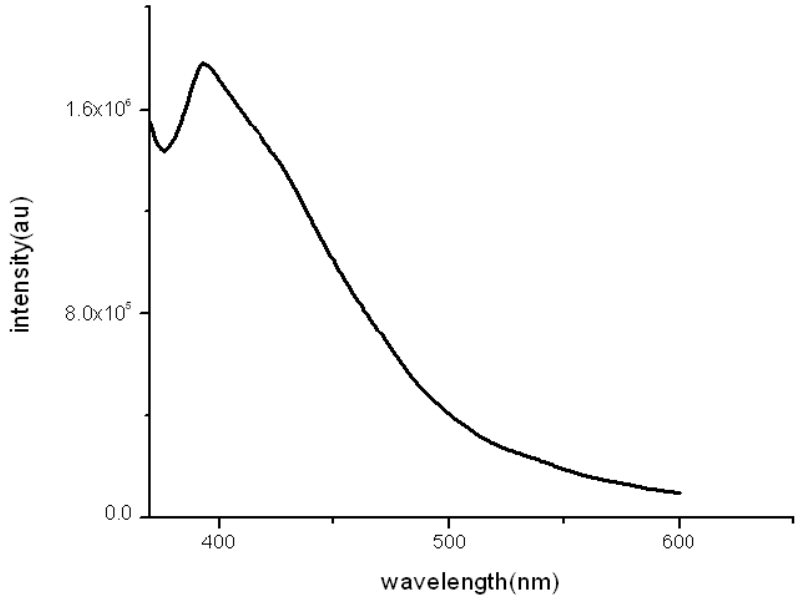
ESI Figure S1: Schematic presentation of synthesis of tripeptide **1**, **2**. Reactions and conditions: a) dry DCM, H-Aib-OMe, DCC, HOBt, 0ºC 70%, b) NaOH, MeOH, HCl, c) dry DCM, H-γ-Abu-OMe, DCC, HOBt, 0ºC, 74%, d) dry DCM, H-Acp-OMe, DCC, HOBt, 0ºC, 85%.



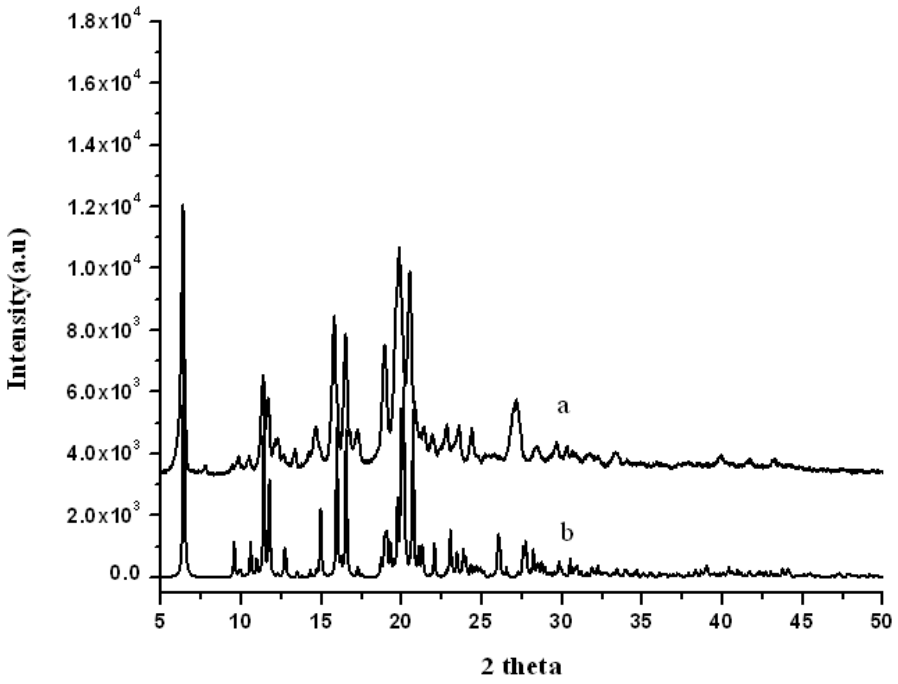
ESI Figure 2: AFM images of (a) peptide 1 polydisperse spheres with diameter ca 25-30 nm and (b) peptide **1**-CdS conjugate polydisperse spheres with diameter ca 25-30 nm.



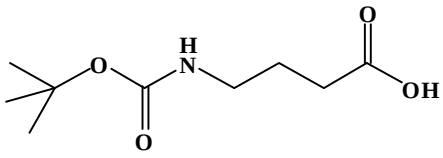
ESI Figure 3: Fluorescence spectrum of peptide **2**-CdS conjugate.



ESI Figure 4: Fluorescence spectrum of peptide **1**-CdS conjugate.



ESI Figure 5: (a) Wide angle PXRD pattern of peptide **2** nanospheres from MeOH and (b) X-ray powder pattern from single crystal data of peptide **2**.



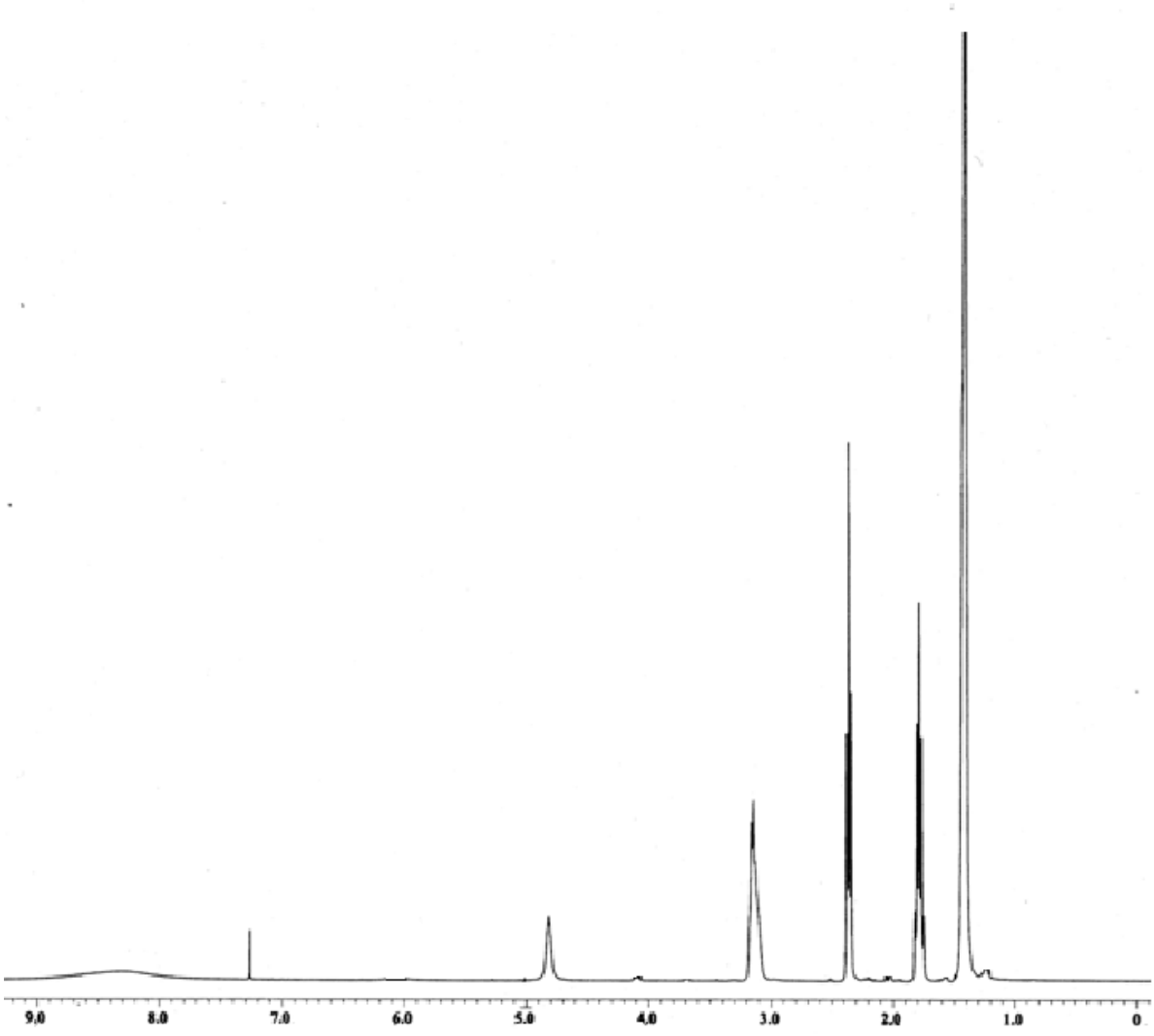


Figure S1: ^{1}H NMR ($CDCl_3$, 400 MHz, δ_{ppm}) spectra of Boc- γ-Abu-OH.

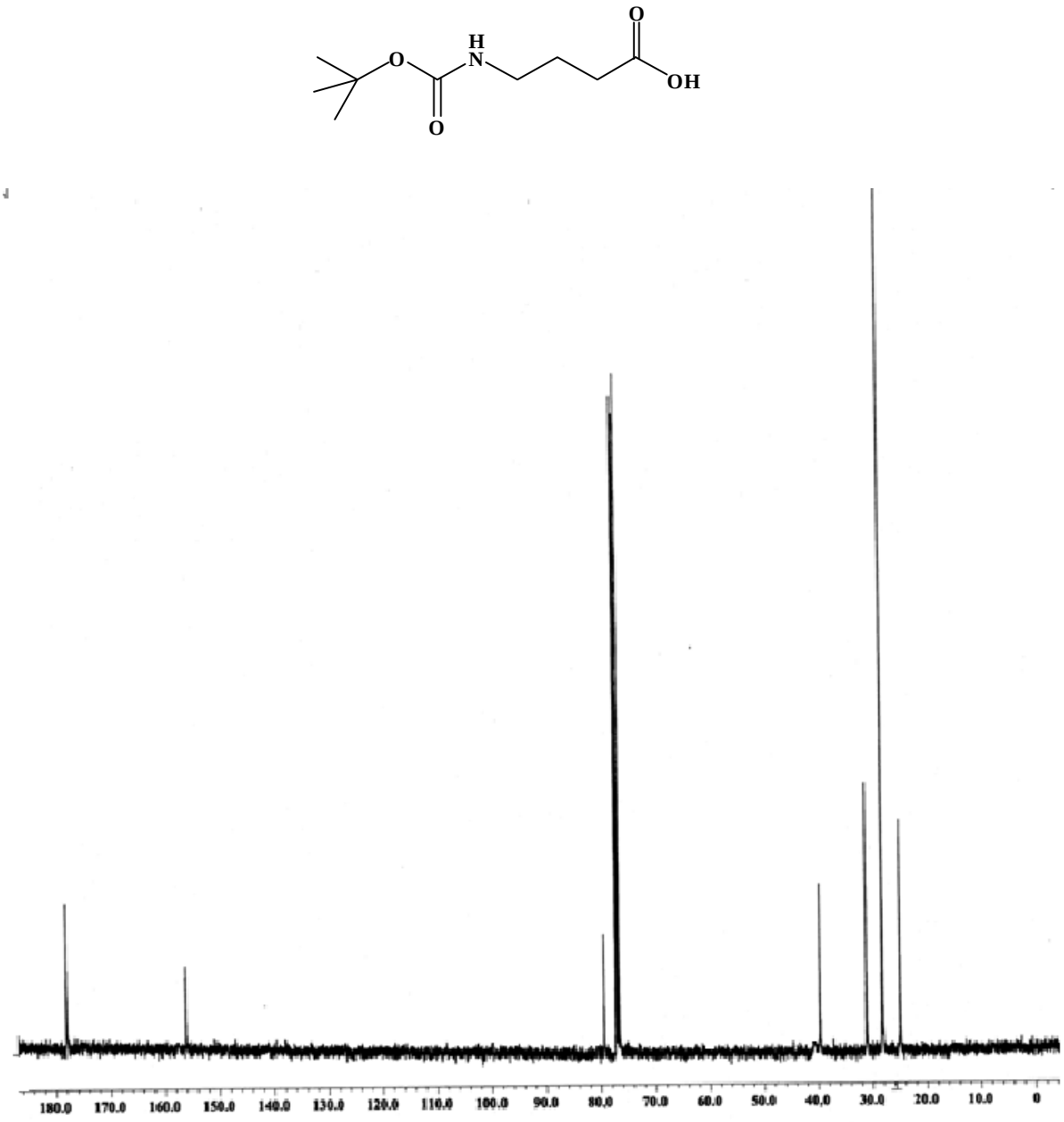
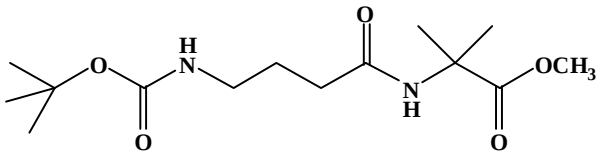


Figure S2: ^{13}C NMR ($CDCl_3$, 100 MHz, δ_{ppm}) spectra of Boc- γ-Abu -OH.



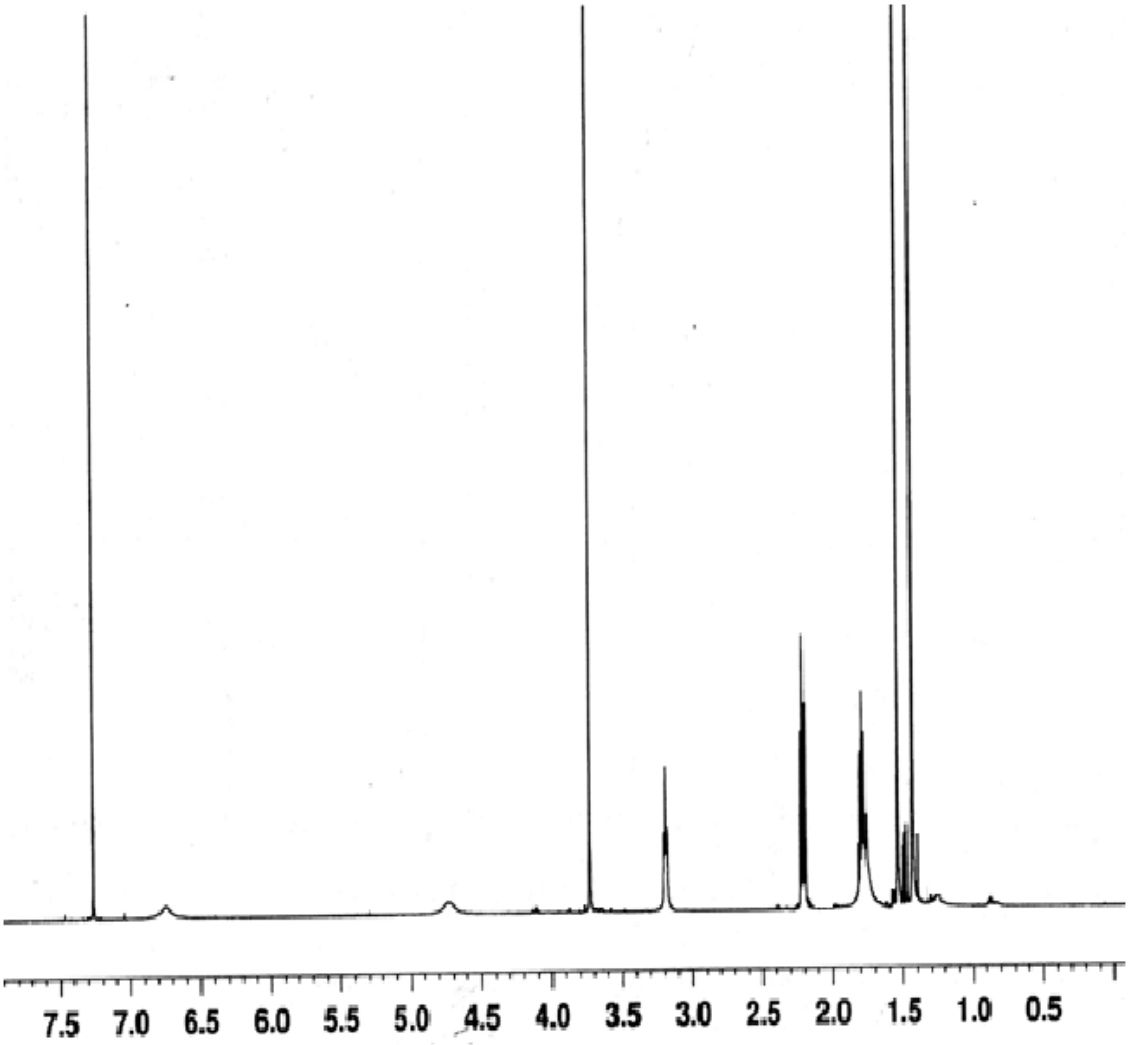


Figure S3: ^{1}H NMR ($CDCl_3$, 500 MHz, δ_{ppm}) spectra of Boc- γ-Abu -Aib-OMe.

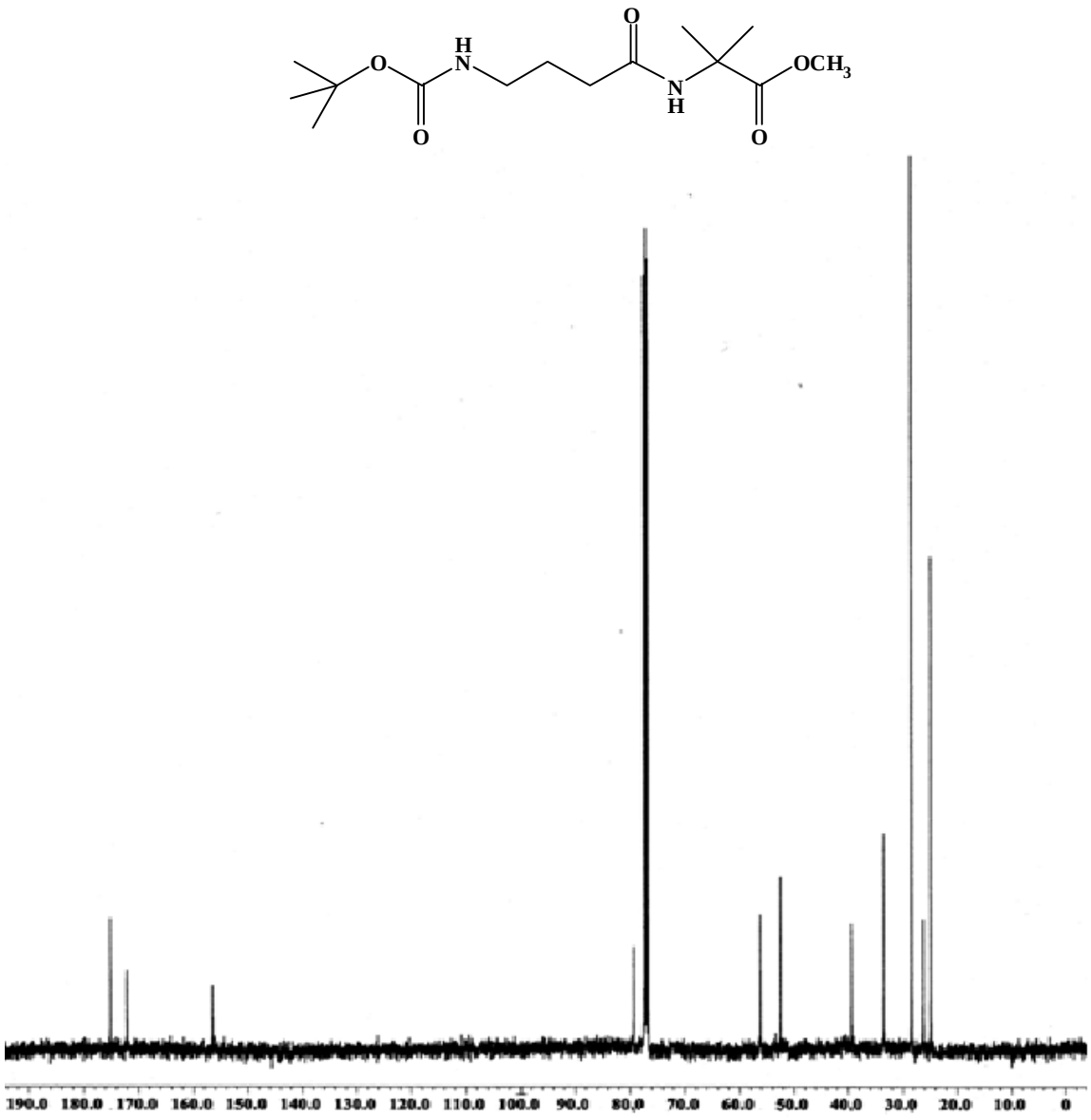


Figure S4: ^{13}C NMR ($CDCl_3$, 100 MHz, δ_{ppm}) spectra of Boc- γ-Abu -Aib-OMe.

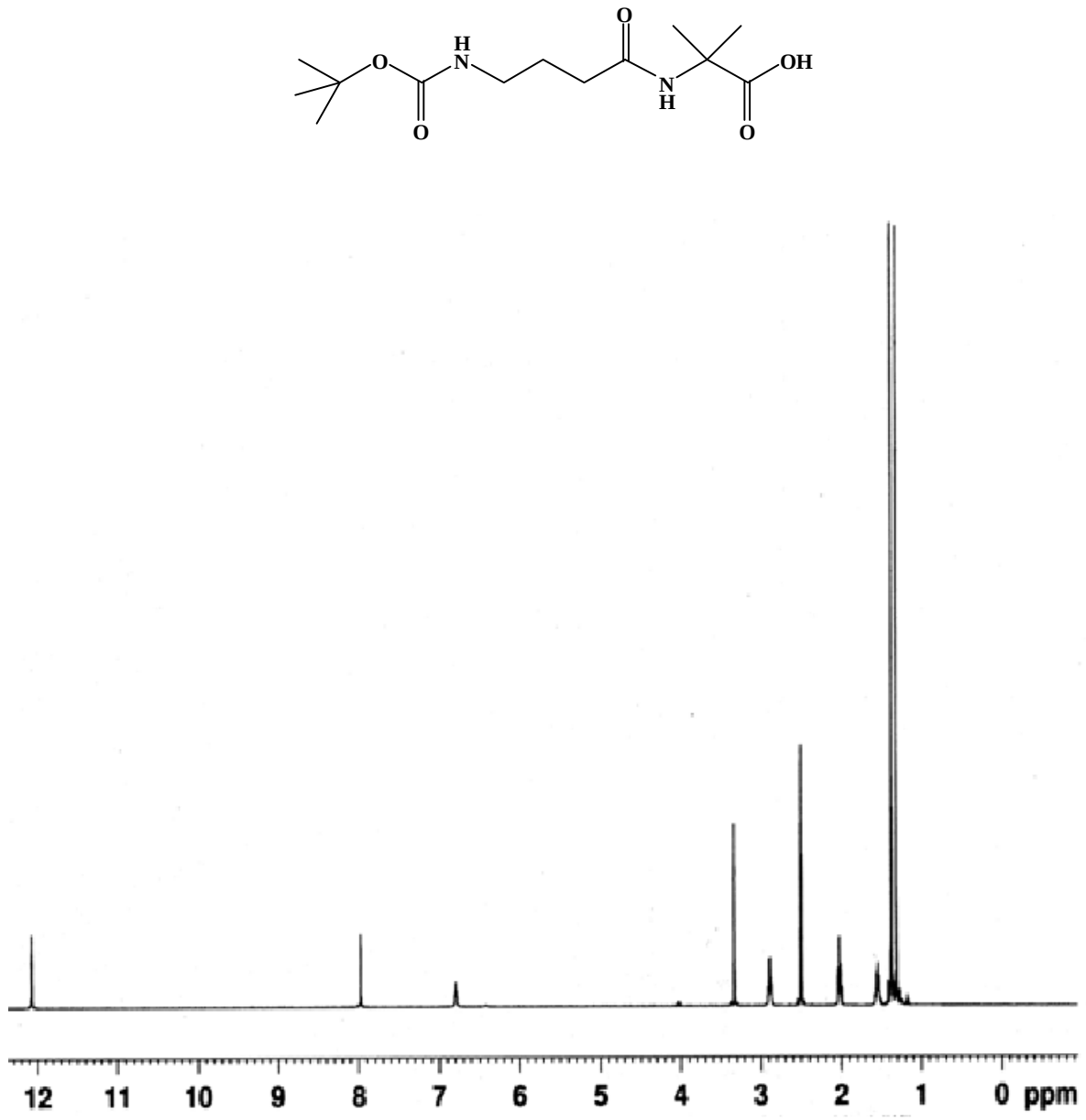
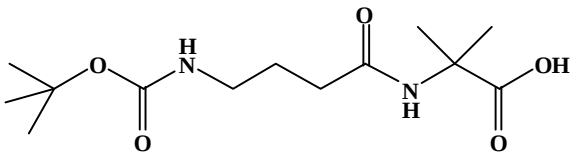


Figure S5: ^{1}H NMR (DMSO-d_6, 500 MHz, δ_{ppm}) spectra of Boc- γ-Abu -Aib-OH.



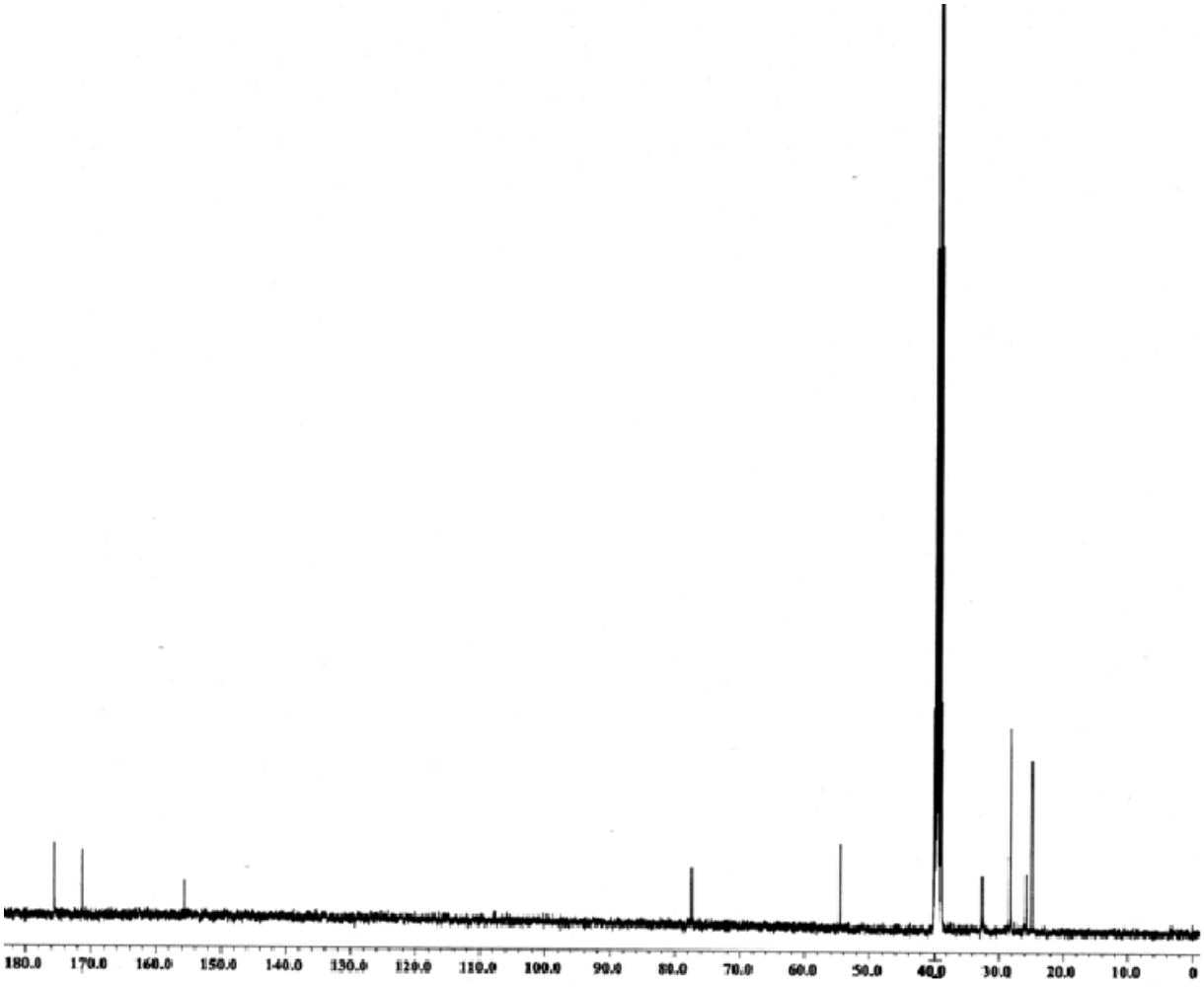
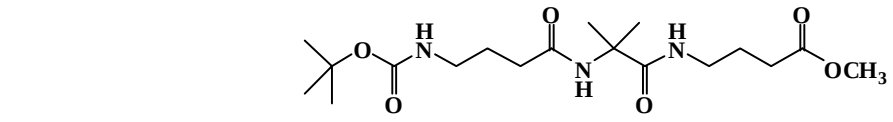


Figure S6: ^{13}C NMR (DMSO-d_6, 100 MHz, δ_{ppm}) spectra of Boc- γ-Abu -Aib-OH.



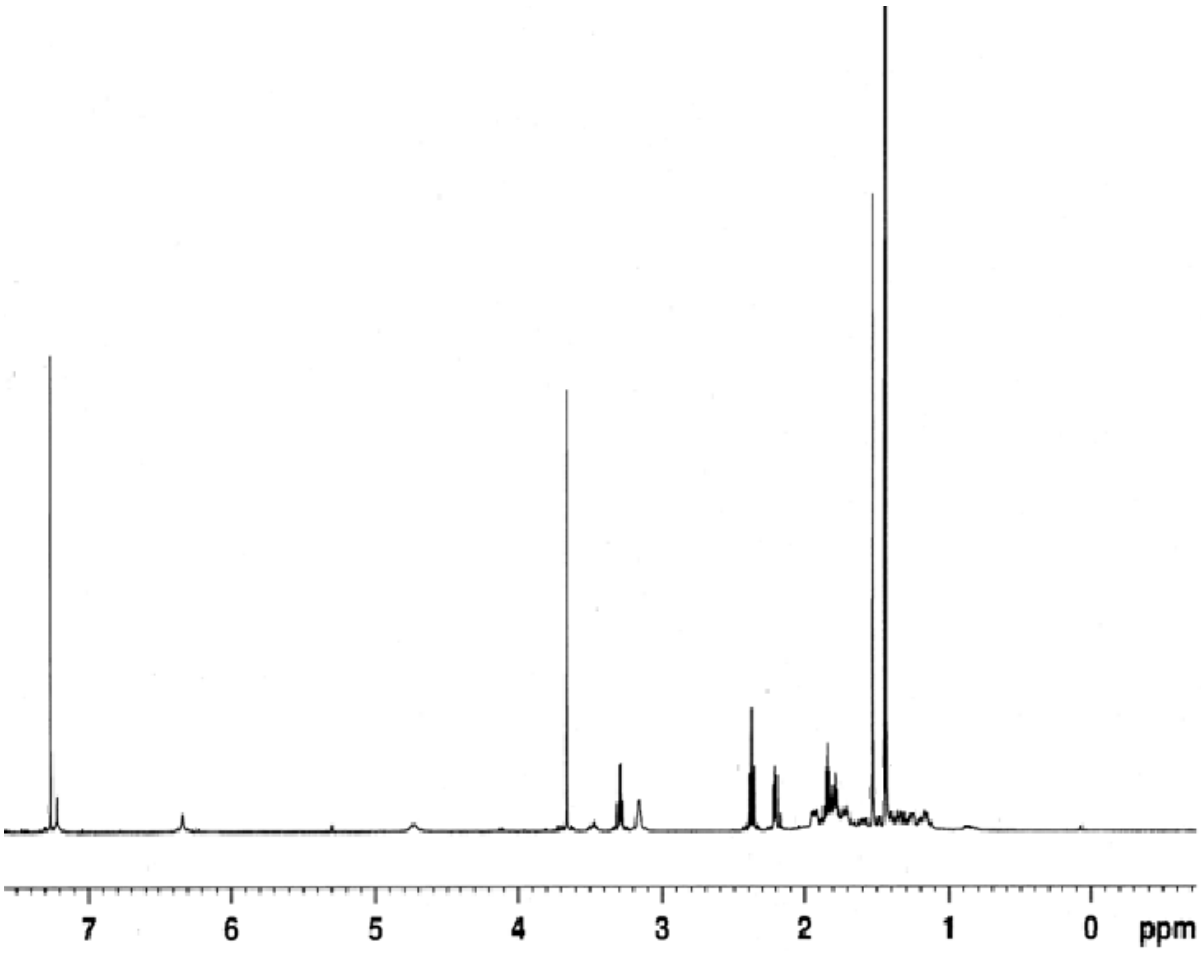
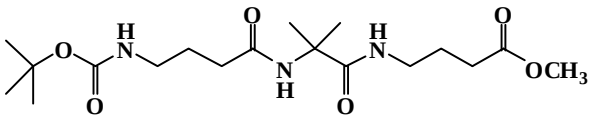


Figure S7: ^{1}H NMR ($CDCl_3$, 500 MHz, δ_{ppm}) spectra of Boc- γ-Abu -Aib-γ-Abu-OMe.



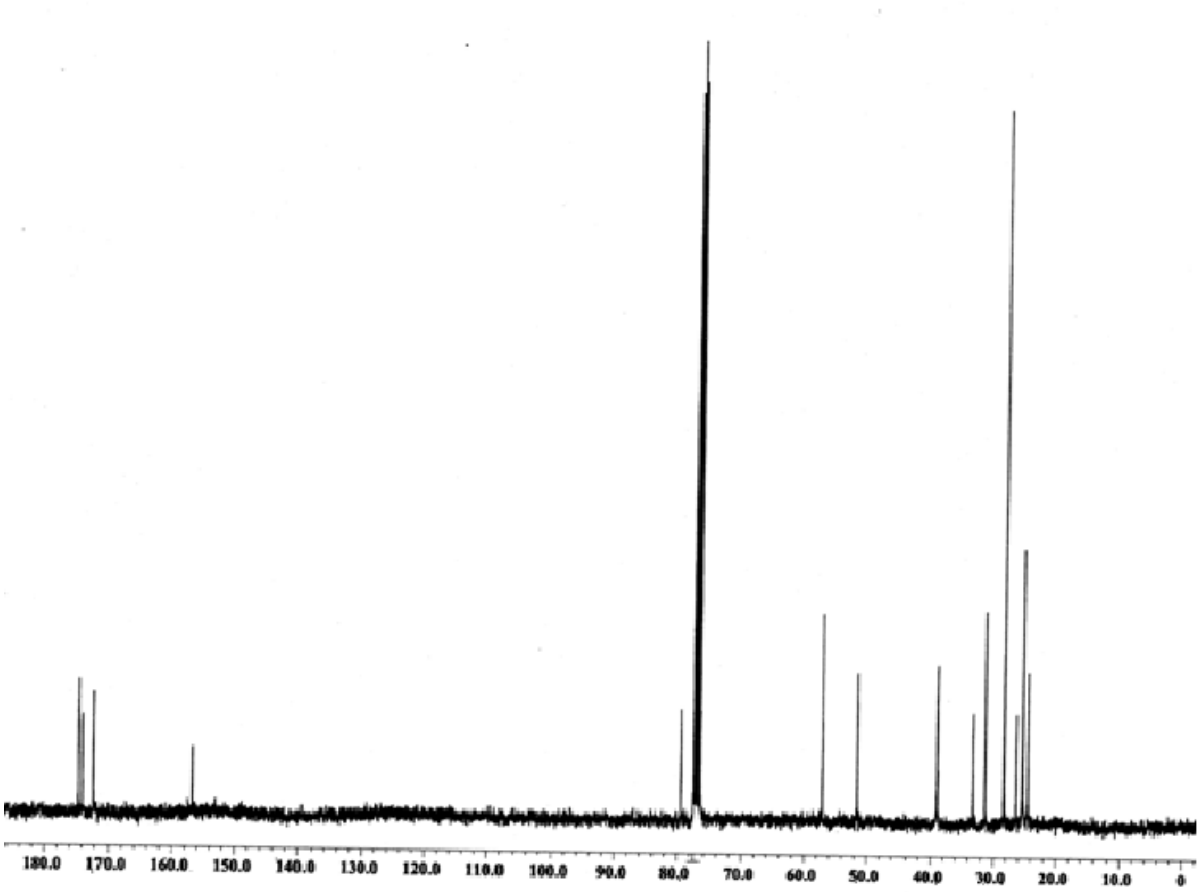
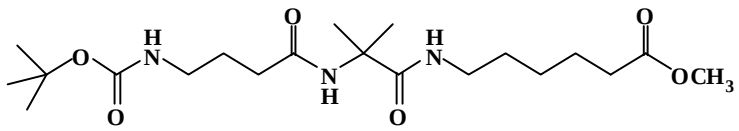


Figure S8: ^{13}C NMR ($CDCl_3$, 100 MHz, δ_{ppm}) spectra of Boc- γ-Abu -Aib-γ-Abu-OMe.



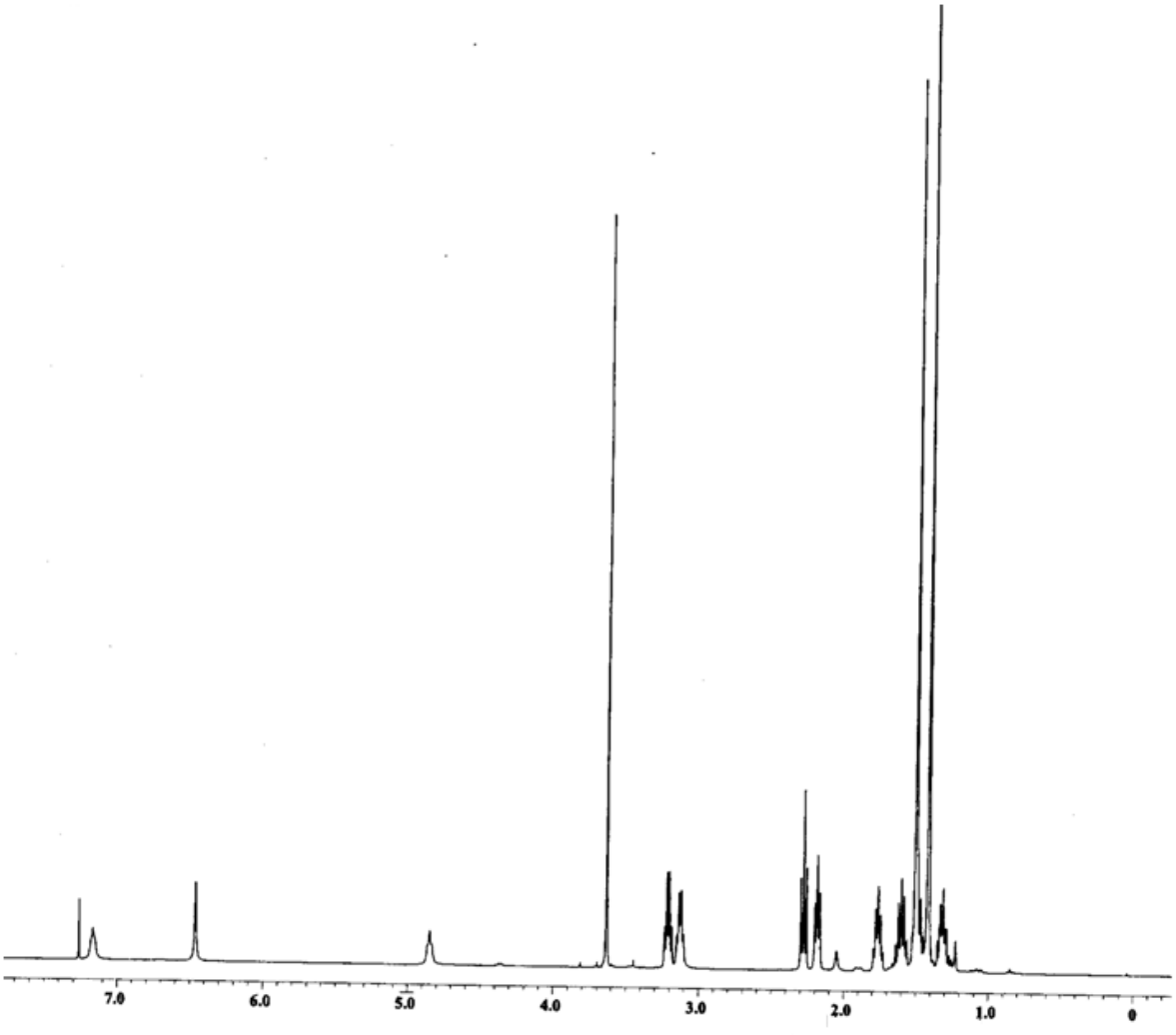


Figure S9: ^{1}H NMR ($CDCl_3$, 500 MHz, δ_{ppm}) spectra of Boc- γ-Abu -Aib-Acp-OMe.

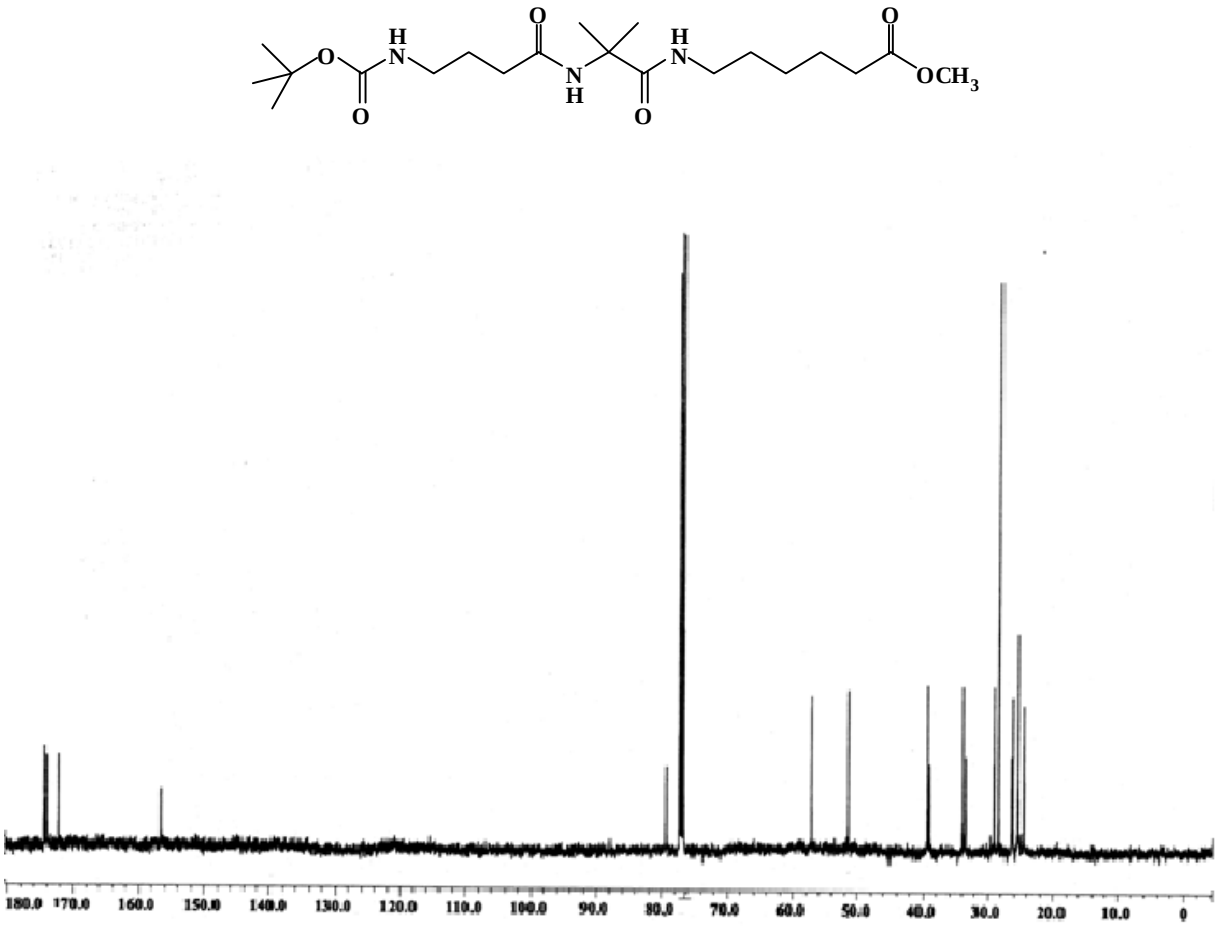
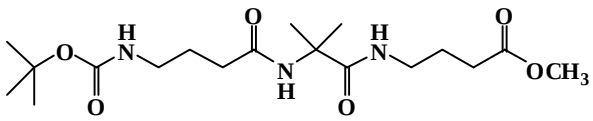


Figure S10: ^{1}H NMR ($CDCl_3$, 500 MHz, δ_{ppm}) spectra of Boc- γ-Abu -Aib-Acp-OMe.



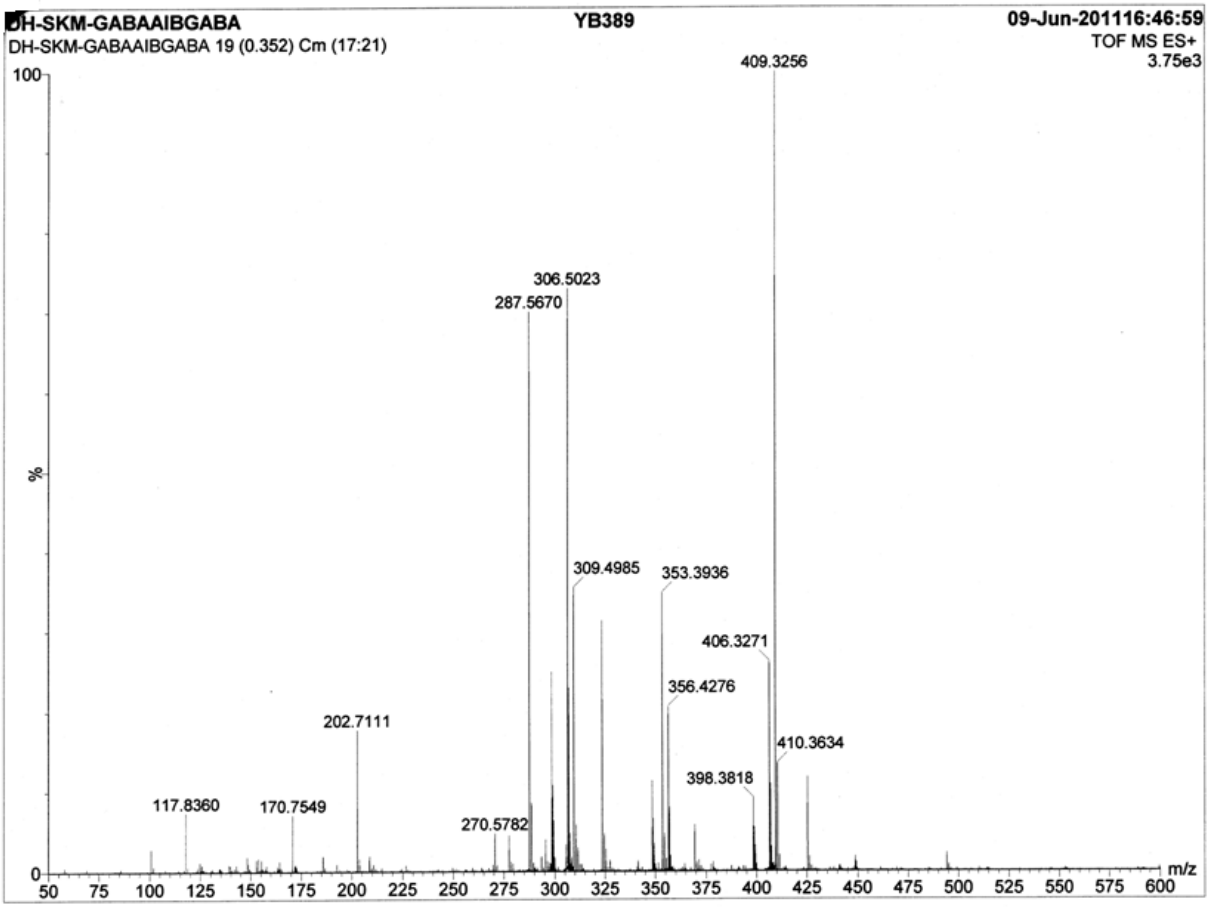
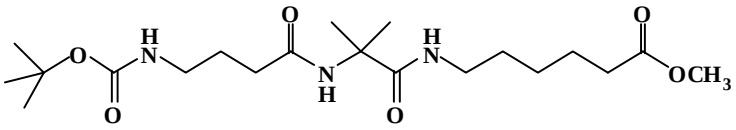


Figure S11: Mass spectra of tripeptide **1.**



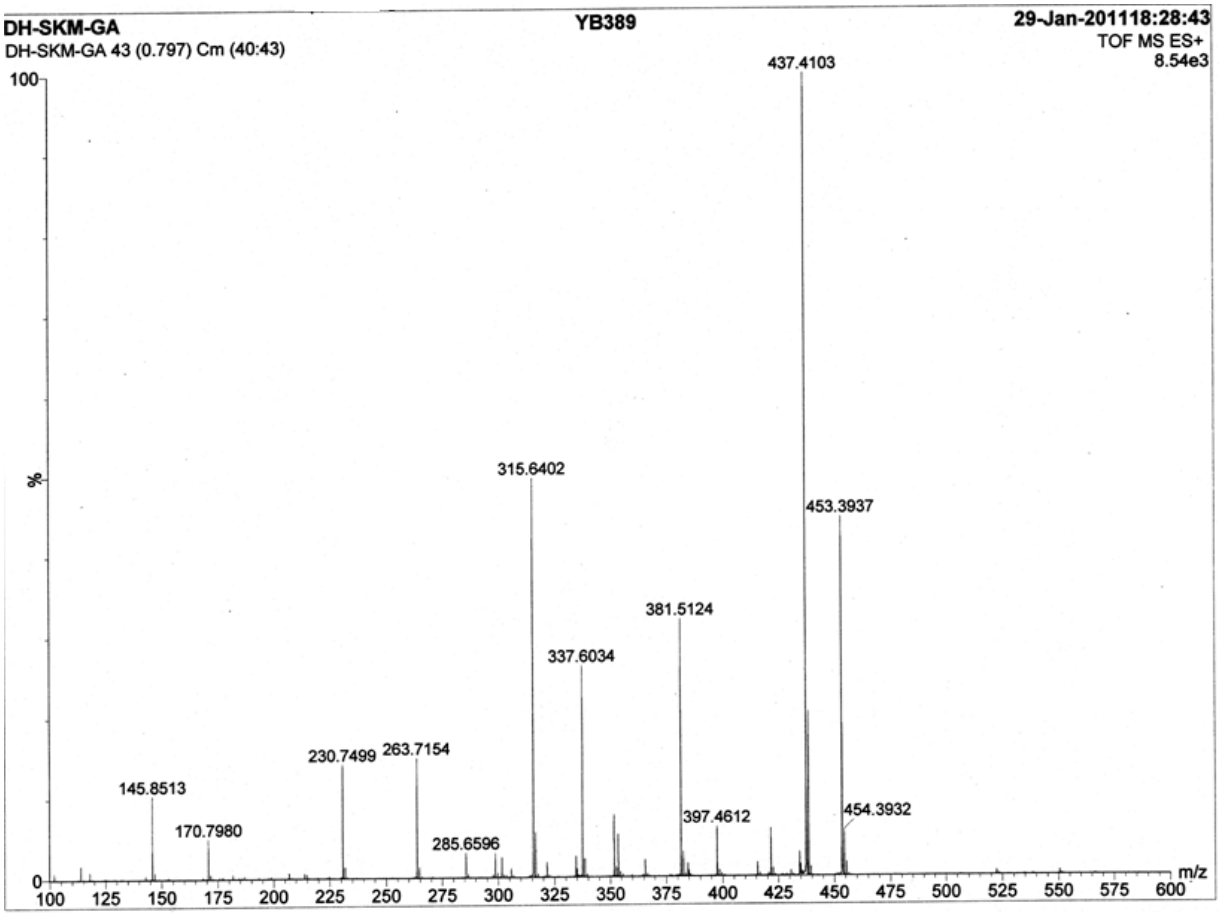
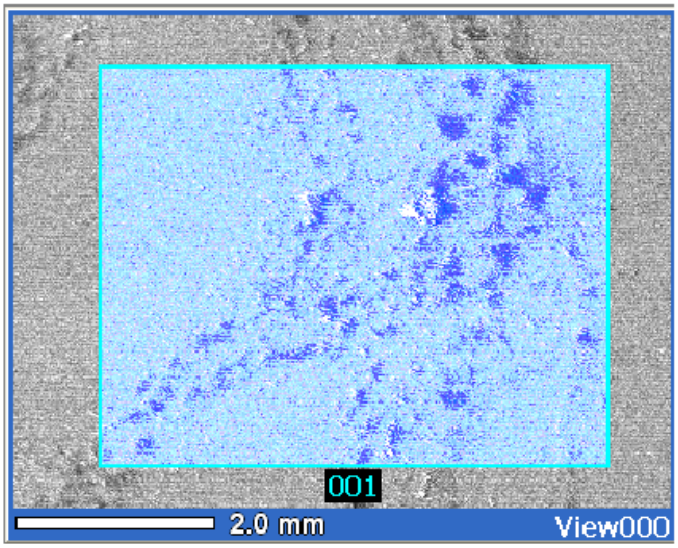
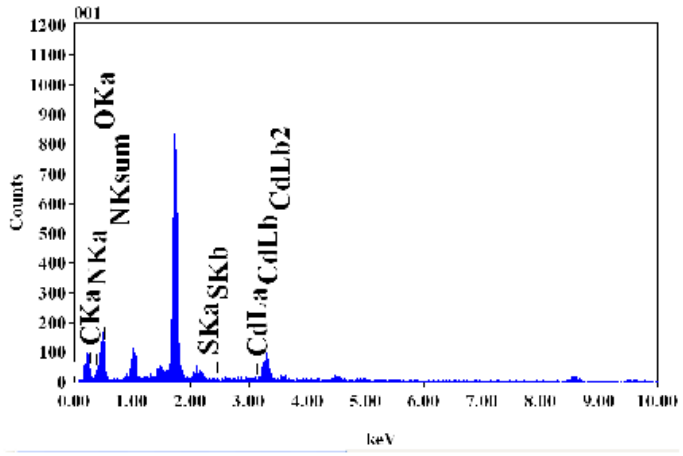


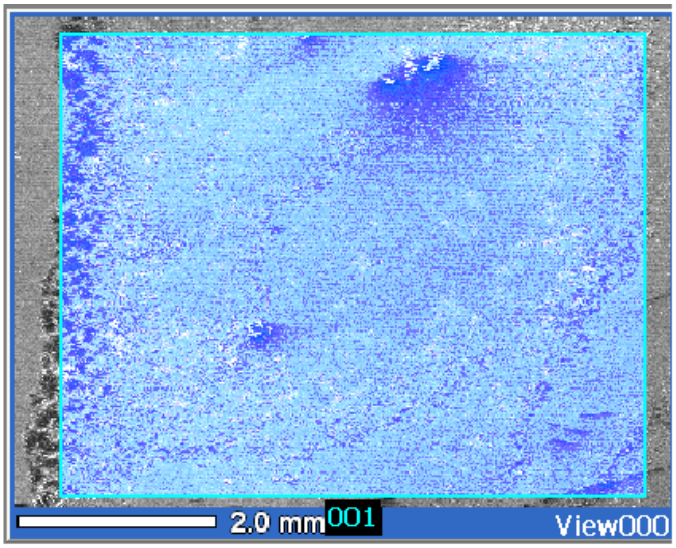
Figure S12: Mass spectra of tripeptide **2.**

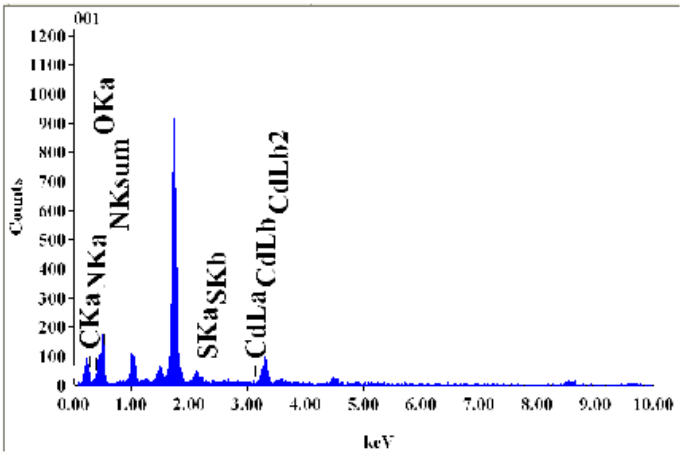




Ele...	Cl...	(keV)	mass%	Error%	At%
C	K	0.277	19.75	3.51	25.58
N	K				
O	K	0.525	75.92	6.88	73.82
S	K				
Cd	L	3.132	4.32	8.50	0.60
Total			100.00		100.00

Figure S13: EDS data of Peptide2-CdS conjugate.





Ele...	Cl...	(keV)	mass%	Error%	At%
C	K	0.277	11.00	3.98	15.39
N	K				
O	K	0.525	79.10	7.56	83.13
S	K				
Cd	L	3.132	9.90	9.32	1.48
Total			100.00		100.00

Figure S14: EDS data of Peptide1-CdS conjugate.

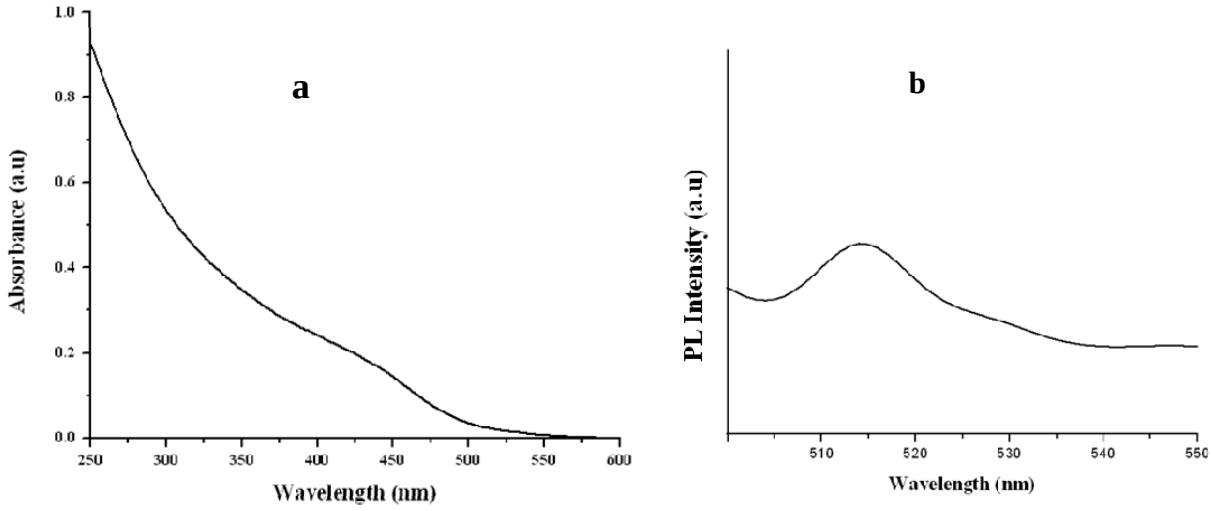


Figure S15: (a) Absorption and (b) emission spectra of free CdS nanoparticles. Free CdS particles have absorption maxima at 450 nm, and when exited at 450 nm they show the PL band having maxima at 515 nm. The absorption and PL maxima of free CdS nanoparticles are red shifted than that of the peptide **1** and **2** – CdS conjugates.

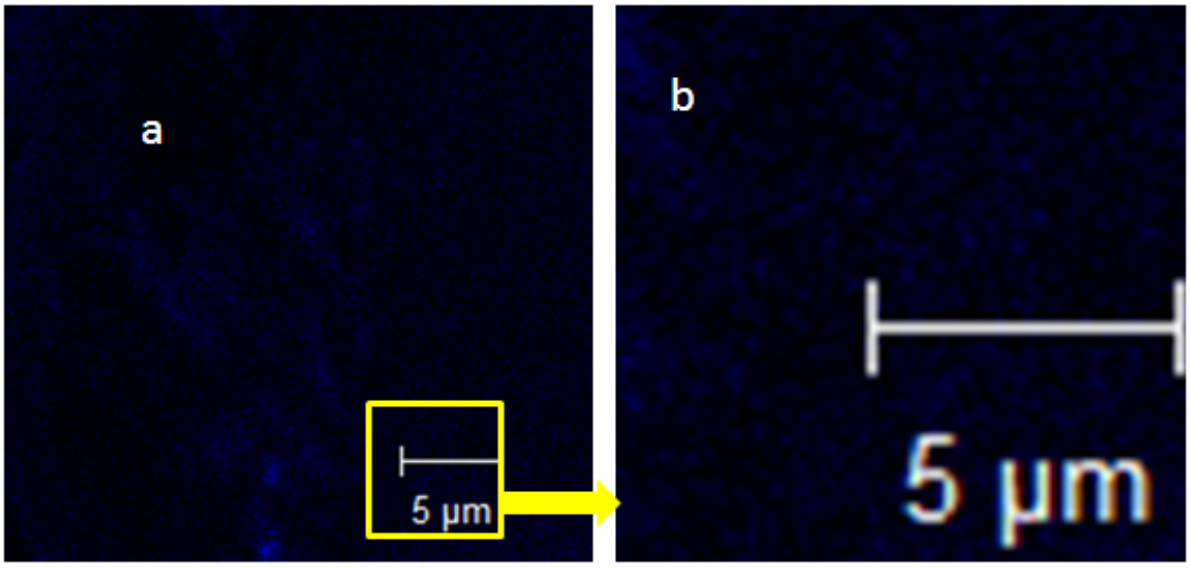


Figure S16: (a) and (b) Laser scanning confocal picture of CdS quantum dots embedded in peptide **1** nanospheres. Excitation laser wavelength is 405 nm.