

## Supporting information

### Spectroscopic and Electron Microscopic Analysis of Bi-ligand Functionalized Glycopolymer/FITC-Gold Nanoparticles

Kashyap Dave<sup>1</sup>, N. Naga Malleswara Rao<sup>2</sup>, M. Trinadh<sup>2</sup>, B. Anu Monisha<sup>1</sup>, Annadanam V.  
Sesha Sainath<sup>2\*</sup>, Marshal Dhayal<sup>1\*</sup>

<sup>1</sup>Clinical Research Facility, CSIR- Centre for Cellular and Molecular Biology, Uppal Road,  
Hyderabad- 500007, India

<sup>2</sup>Polymers and Functional Materials Division, CSIR-Indian Institute of Chemical  
Technology, Hyderabad 500007, India. E-mail:

\*Corresponding Authors E-mail: marshaldhayal@yahoo.com (MD) and  
avssainath@yahoo.com (AVSS), Tel: +91-40-27192500, Fax: +91-40- 27160591

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**Figure S2.** UV-vis spectra of FITC functionalized AuNP colloid suspension at (A) 10, (B) 20 and (C) 30  $\mu\text{L}$  of PEG (0.5 mg in 5 mL) in 3 mL of FITC-AuNP at various time intervals such as 0 (T1), 10 (T2), 20 (T3) and 30 min (T4).

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**Note for Figures S3 and S4:** Time and concentration dependent kinetics of PEG self-assembly on fluorescence quenched FITC-AuNP.

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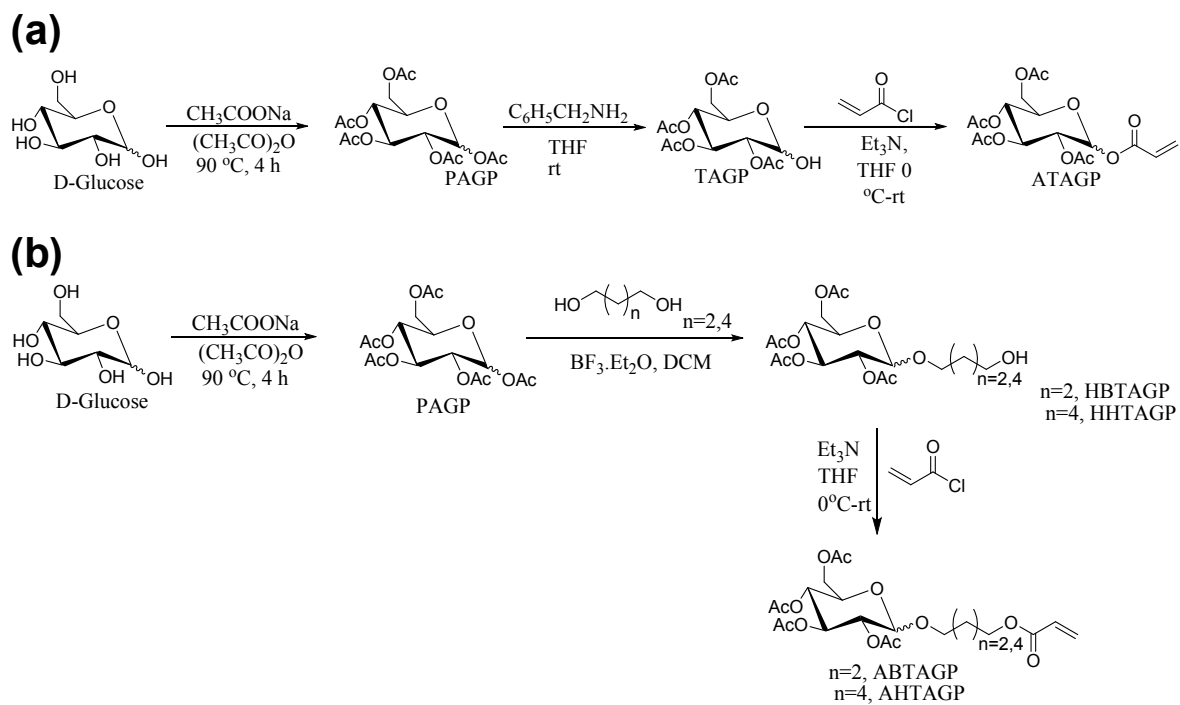
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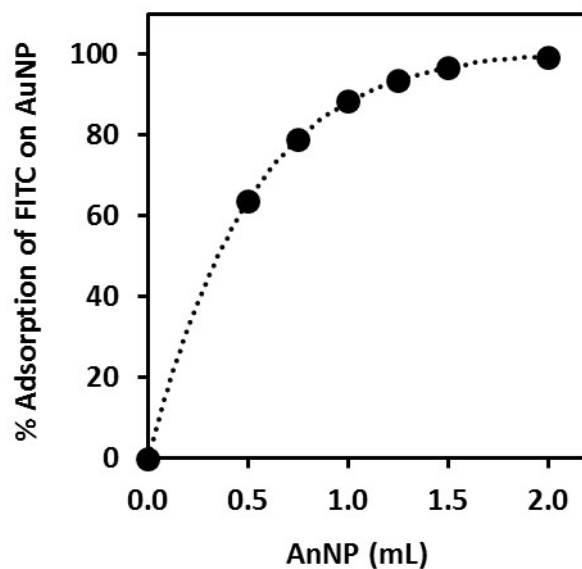
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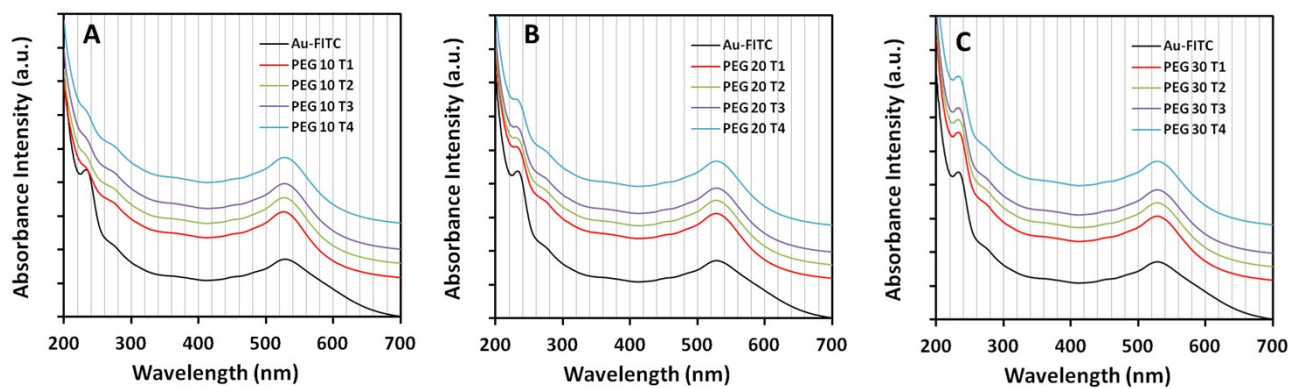
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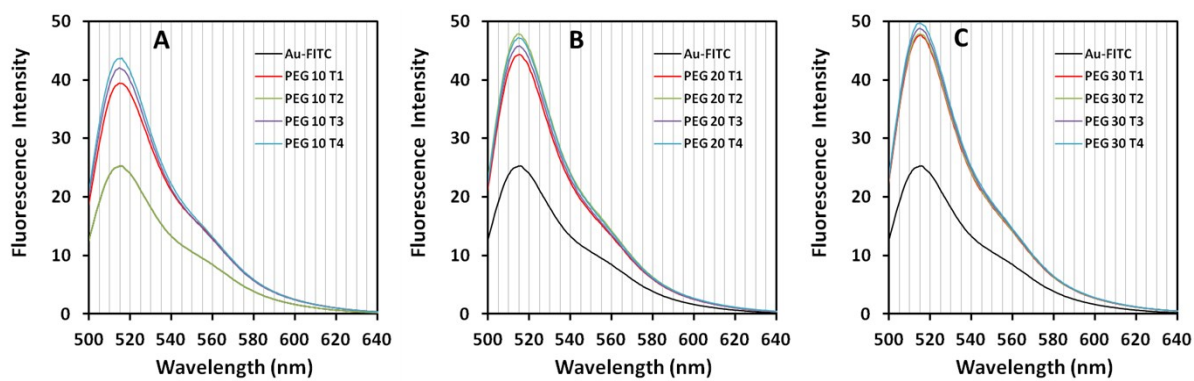
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**Figure S1.** Percentage of adsorption of FITC on AuNP surface. The % adsorption of FITC was calculated by measuring the amount of fluorescence reduced ( $F_{\text{FITC}} - F_{\text{Au-FITC}}$ ) with an increase in AuNP concentration for constant amount of FITC, where,  $F_{\text{FITC}}$ : fluorescence of 0.5  $\mu\text{M}$  of FITC in water and  $F_{\text{Au-FITC}}$ : fluorescence of FITC after adding different concentration of AuNP.



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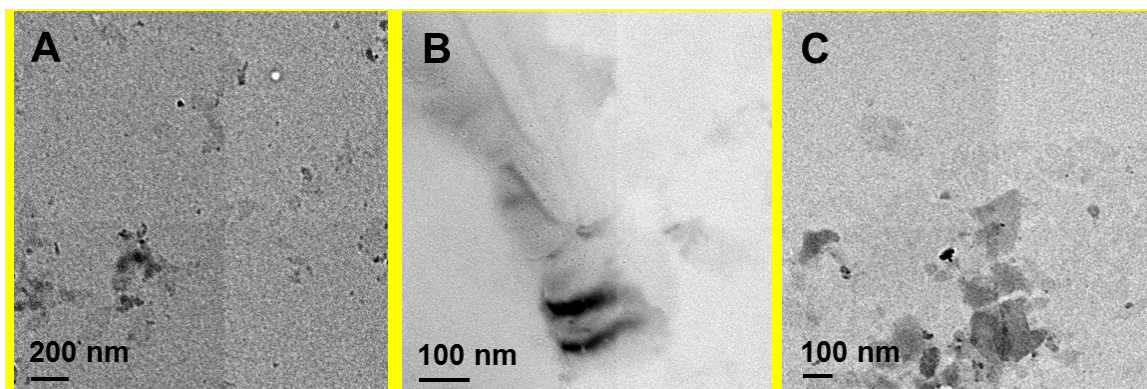


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**Note for Figures S3 and S4:** Time and concentration dependent kinetics of PEG self-assembly on fluorescence quenched FITC-AuNP

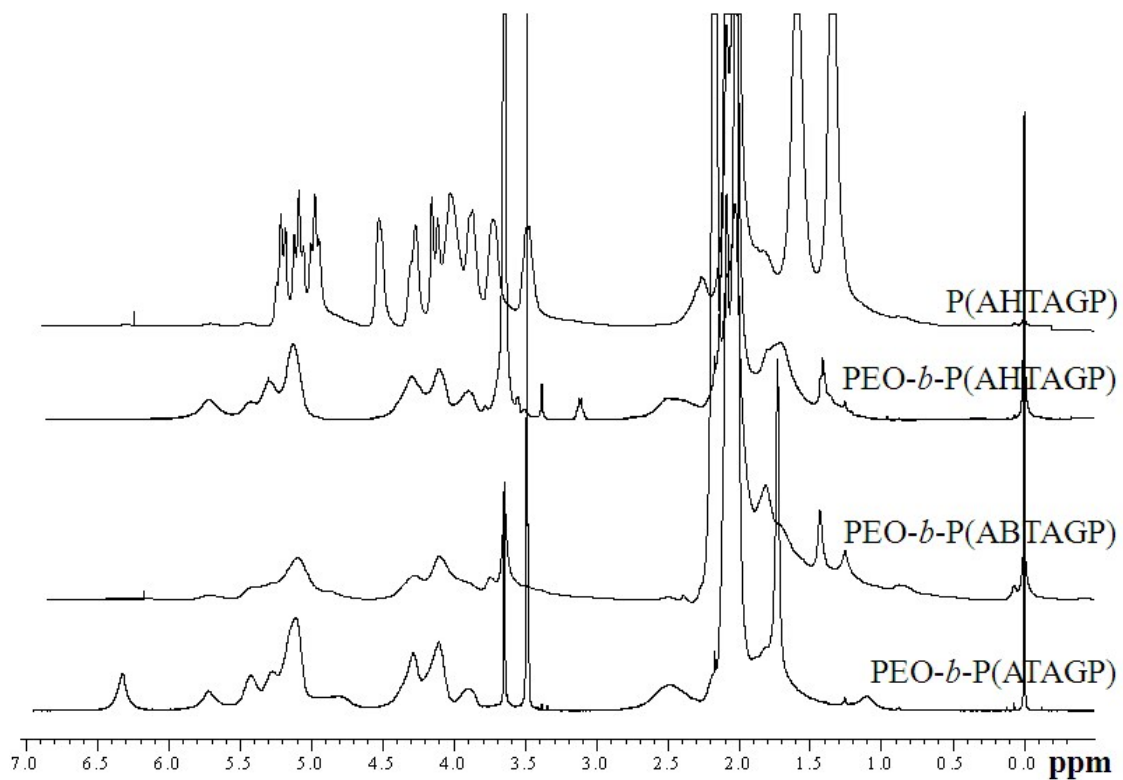
We have elaborated the self-assembly of poly(ethylene glycol) methyl ether thiol (average  $M_n$  800, Aldrich, Cat. No. 729108) (PEG) onto the surface of AuNP [1] at various time intervals (0-30min) and concentrations. Both the UV-Vis and fluorescence spectroscopy techniques were used to quantify the time and concentration based kinetics of the PEG assembly on AuNP by quantifying the release of FITC [2]. Figure S2 shows the absorbance spectra of 10-30  $\mu$ L of PEG (0.5 mg in 5 mL) in 3 mL of FITC-AuNP at various time intervals such as 0, 10, 20 and 30 min. We have observed that the absorption peak intensity at 238 nm depends on the amount of PEG concentration added in FITC-AuNP.

Figure S3 shows the fluorescence spectra of 10-30  $\mu$ L of PEG (0.5 mg in 5 mL) in 3 mL of FITC-AuNP at various time intervals such as 0, 10, 20 and 30 min. The release of the FITC quantified by an increase in the fluorescence intensity of FITC after addition of the PEG in FITC quenched FITC-AuNP. At the low concentration of PEG, about 60% of PEG assembly occurred and immediately after the addition of PEG, it followed a time dependent increase in the amount of PEG binds on the surface of AuNP. Figure S3B shows the fluorescence spectra of 20  $\mu$ L of PEG (0.5 mg in 5 mL) in 3 mL of FITC-AuNPs at 0, 10, 20 and 30 min time intervals. At the 20  $\mu$ L concentration of the PEG, about 80% of PEG assembly occurred and after the addition of PEG, it exhibited a time dependent increase in the amount of PEG binds on the surface of AuNPs. For the use of 30  $\mu$ L concentration of PEG, more than 90% of PEG assembly occurred and further addition of PEG, there was no significant change observed at higher time intervals.



**Figure S4.** TEM images of (A) PEG-I, (B) P(AHGP) and (C) PEG-*b*-P(AHGP) obtained by evaporation of water from 300  $\mu\text{g/ml}$  solution on TEM grid.





**Figure S5.** <sup>1</sup>H-NMR spectra of acetylated glycopolymers in CDCl<sub>3</sub>.

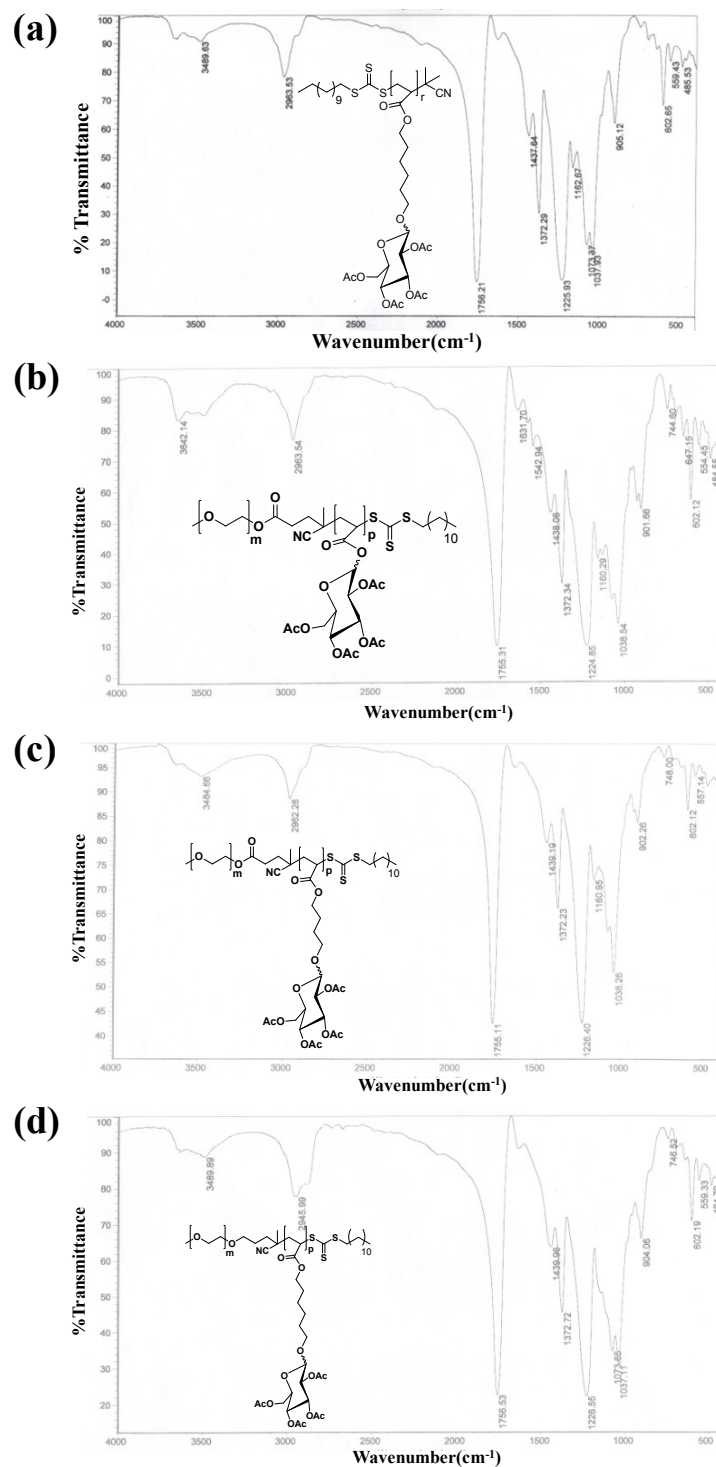
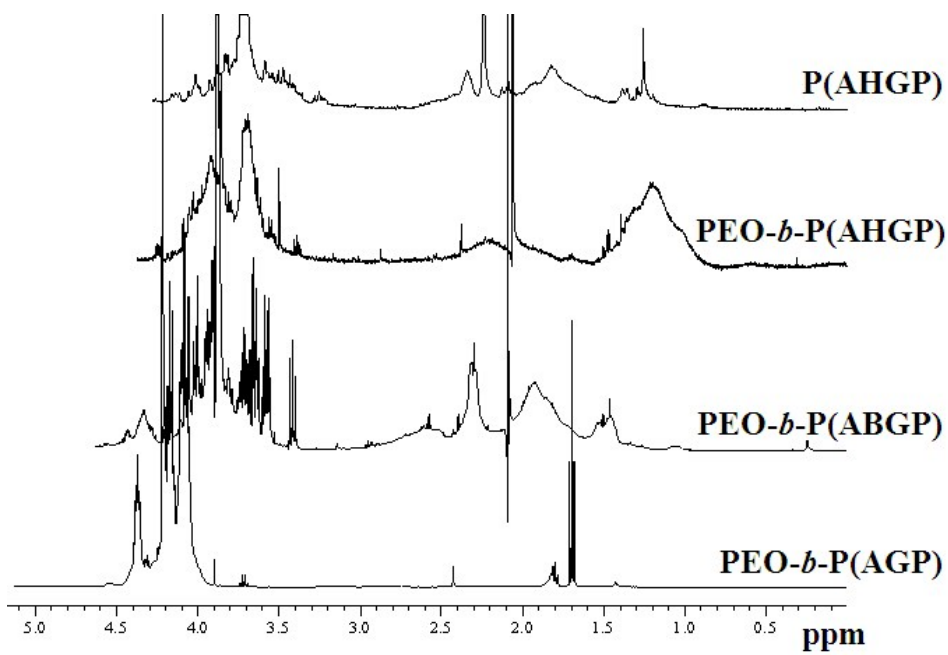


Figure S6. FT-IR spectra of acetylated glycopolymers.



**Figure S7.** <sup>1</sup>H-NMR spectra of deacetylated glycopolymers in D<sub>2</sub>O.

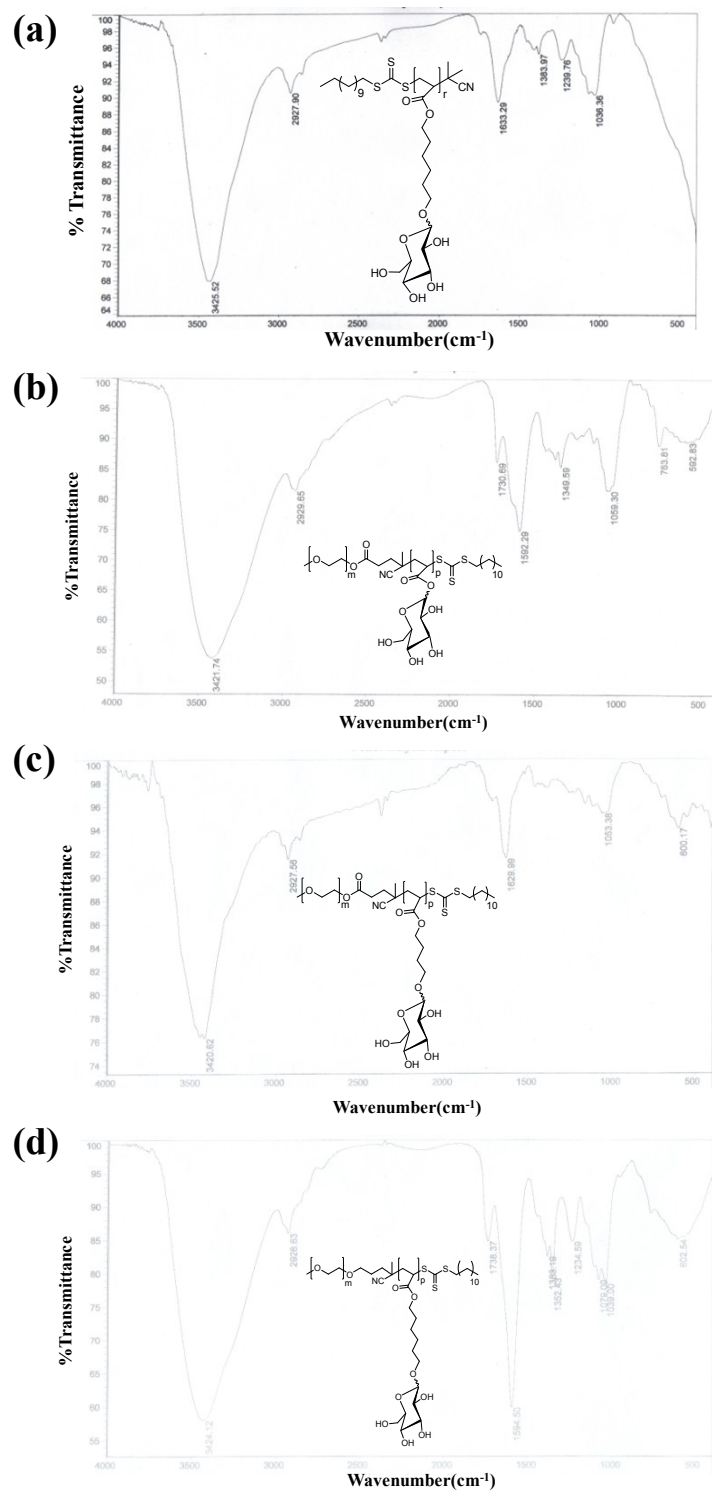
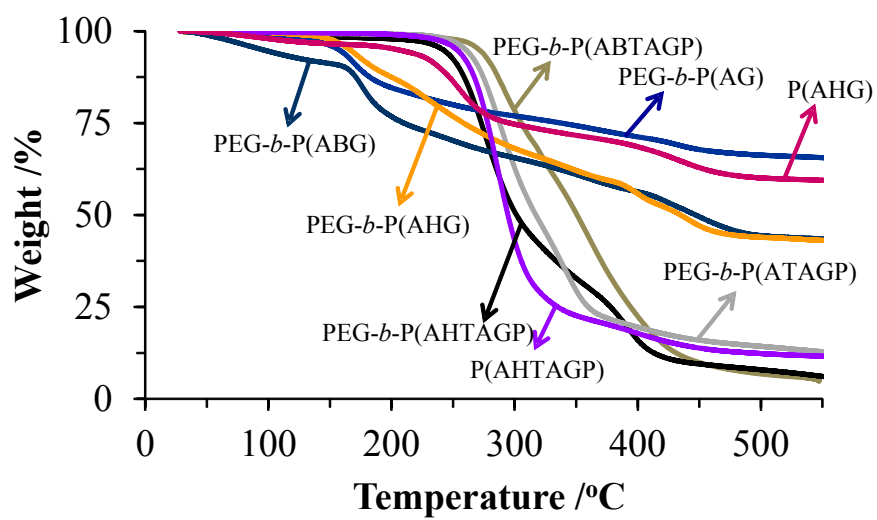
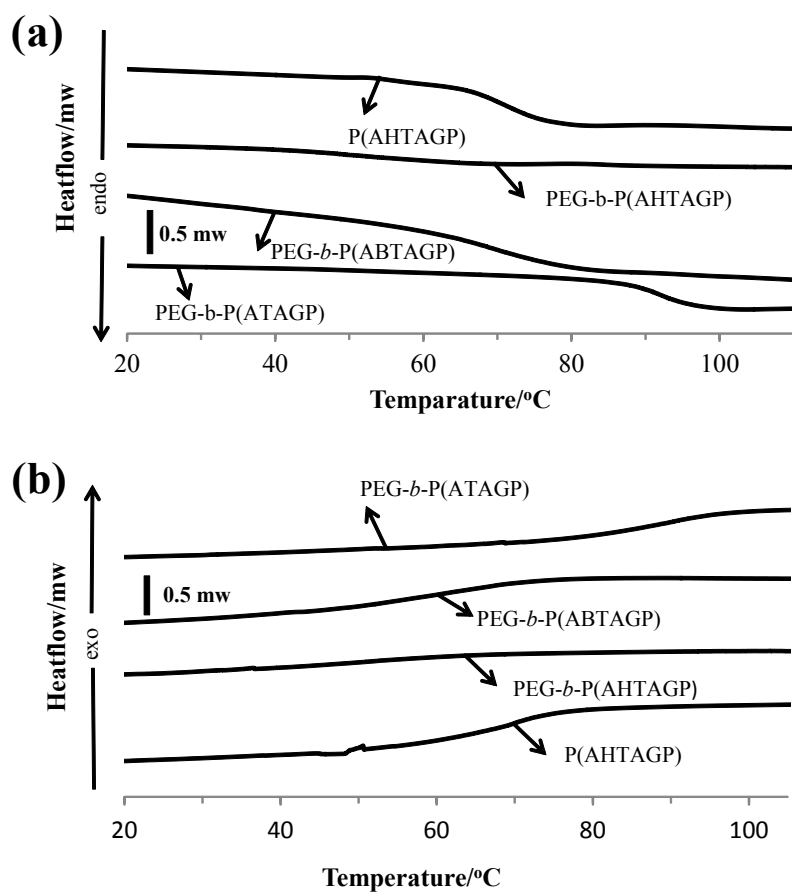


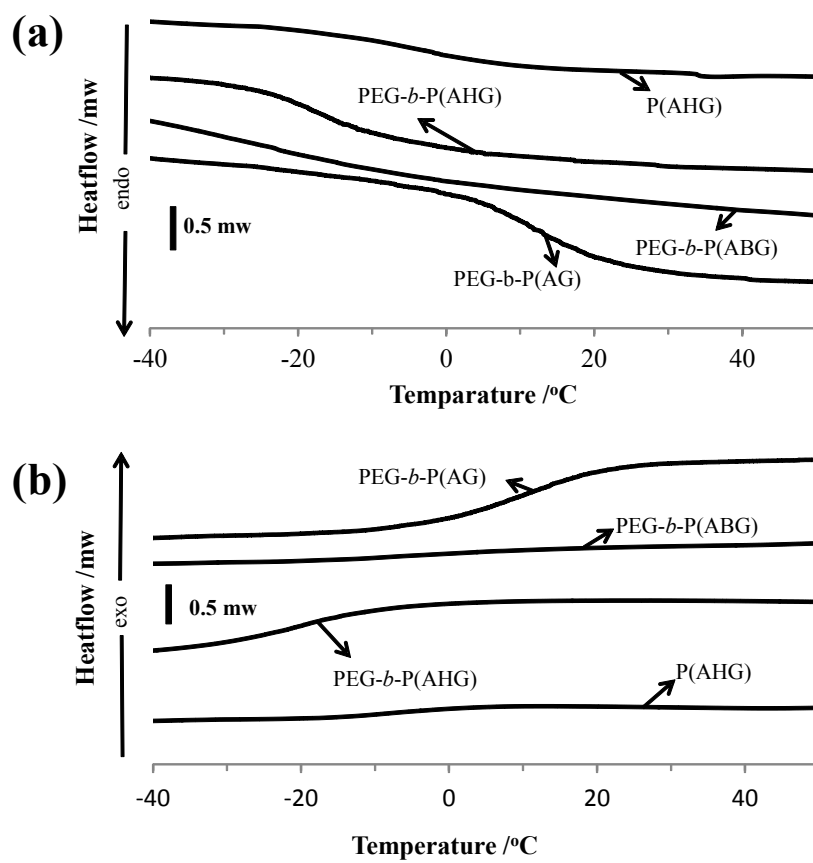
Figure S8. FT-IR spectra deacetylated glycopolymers.



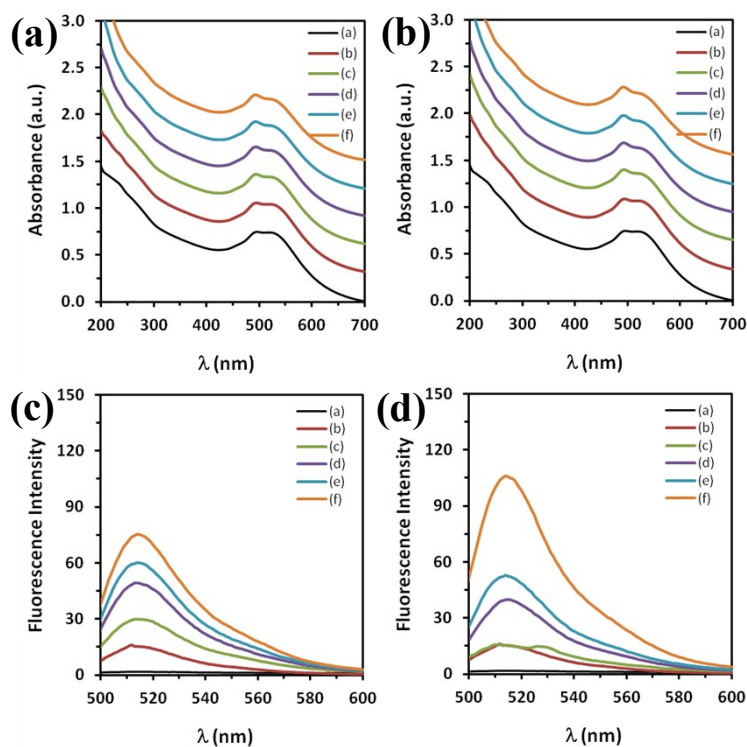
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## References

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- [2] S. V. Agarwal, S. S. Reddy and M. Dhayal, *RSC Adv.*, 2014, **4**, 18250-18256.