

Supporting Information

Peptide functional branched semi-interpenetrating hydrogel networks: synthesis behaviour and use as substrates for cell culture

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Table S1 - Concentrations of the HB-PNIPAM component entrapped within a X-PVP BS-IPN system

5% HB- PNIPAM	Concentrations / %		
	10% HB- PNIPAM	20% HB- PNIPAM	30% HB- PNIPAM
3.83	5.12	8.19	14.41
4.11	2.78	13.37	11.34
2.54	3.22	5.85	10.43

Table S2- Formulations of hydrogels

Table S2a - Formulations for HB-PNIPAM PVP-co-DEGDA semi IPNs at 10% crosslinker

Sample	NVP / g	DEGDA / g	isopropanol / g	HB-PNIPAM / g	HMPP / g
5% HB-PNIPAM	4.5	0.5	3	0.25	0.05
10%HB-PNIPAM	4.5	0.5	3	0.5	0.05
20%HB-PNIPAM	4.5	0.5	3	1.0	0.05
30%HB-PNIPAM	4.5	0.5	3	1.5	0.05

Table S2b - Formulations for HB-PNIPAM PVP-co-DEGDA semi IPNs at 40% crosslinker

Sample	NVP / g	DEGDA / g	isopropanol / g	HB-PNIPAM / g	HMPP / g
5% HB-PNIPAM	3	2	3	0.25	0.05
10%HB-PNIPAM	3	2	3	0.5	0.05
20%HB-PNIPAM	3	2	3	1.0	0.05
30%HB-PNIPAM	3	2	3	1.5	0.05

Swelling/water content data

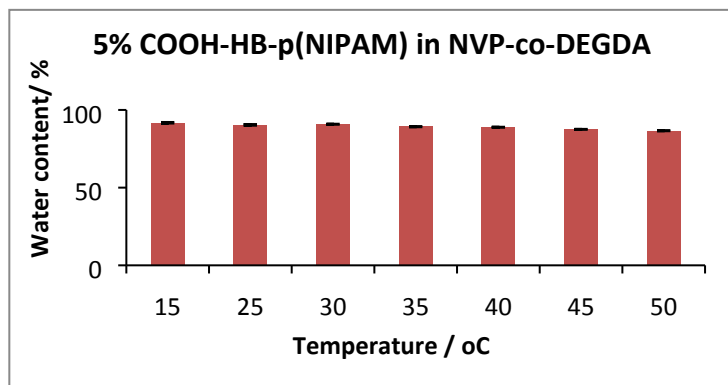


Figure S1 Swelling data in water for S-IPNs produced with 5 wt% HB-PNIPAM

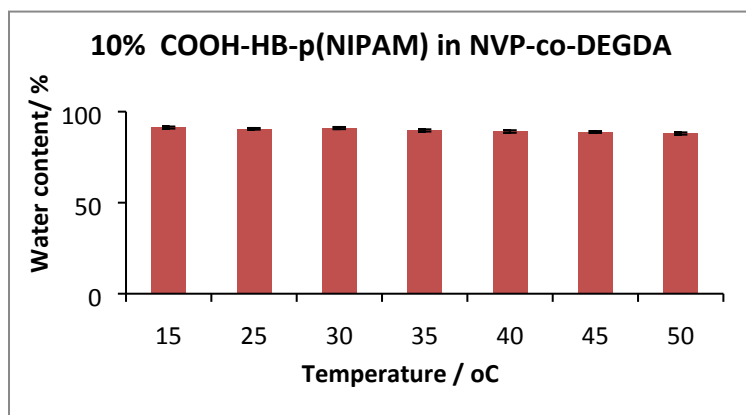


Figure S2 Swelling data in water for S-IPNs produced with 10 wt% HB-PNIPAM

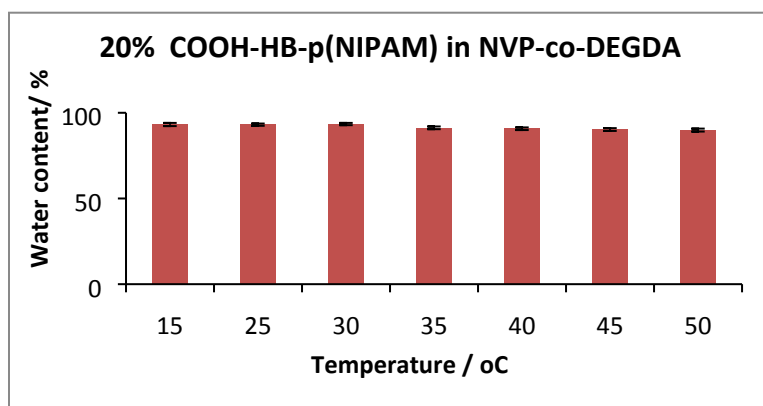


Figure S3 Swelling data in water for S-IPNs produced with 20 wt% HB-PNIPAM

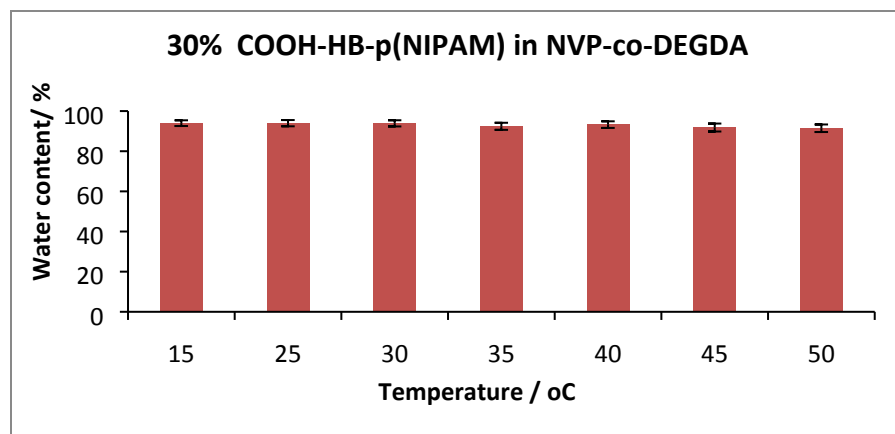


Figure S4 Swelling data in water for S-IPNs produced with 30 wt% HB-PNIPAM

Determination of LCST by FTIR

The following data show the change in the wavenumber of the amide I carbonyl between 25 and 50 °C, and the return to the original wavenumber upon cooling to 25°C. The return to the original wavenumber is important, as a loss of water from the sample can give a similar looking result. However, a dehydration of this kind will be non-reversible, so reducing the sample temperature to 25°C will not cause the reversible shift in peak position.

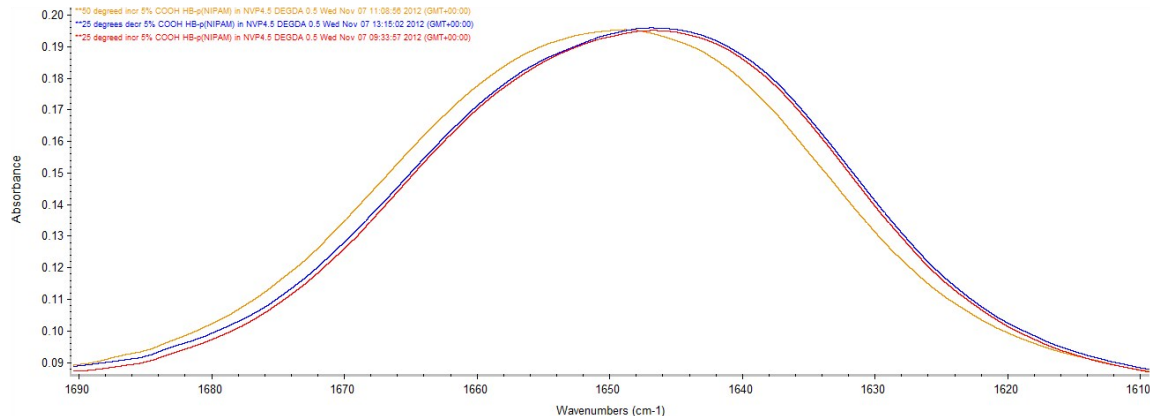


Figure S5 - Amide I carbonyl shift of 5%HB-PNIPAM-GRGDS X-PVP BS-IPN. Red - initial 25°C, orange - 50°C and blue - final 25

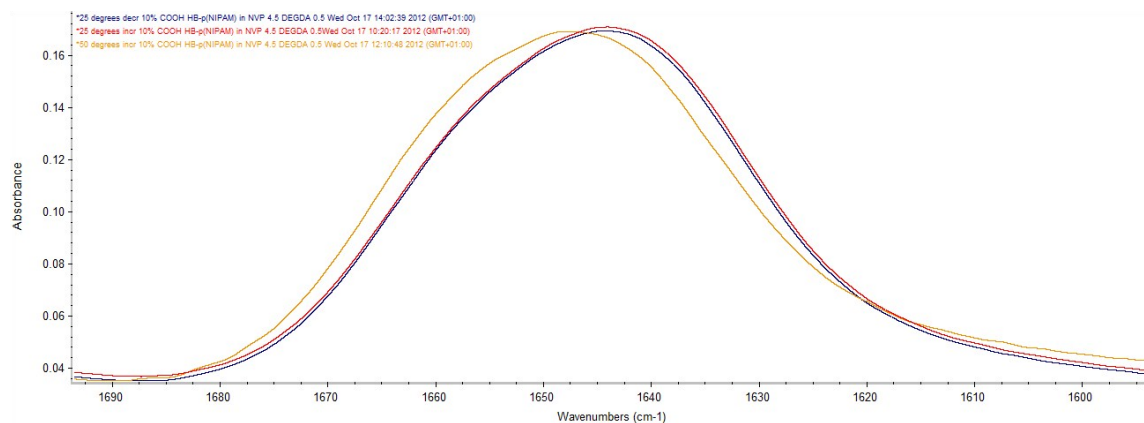


Figure S6 - Amide I carbonyl shift of 10%HB-PNIPAM-GRGDS X-PVP BS-IPN. Red - initial 25°C, orange - 50°C and blue - final 25.°C

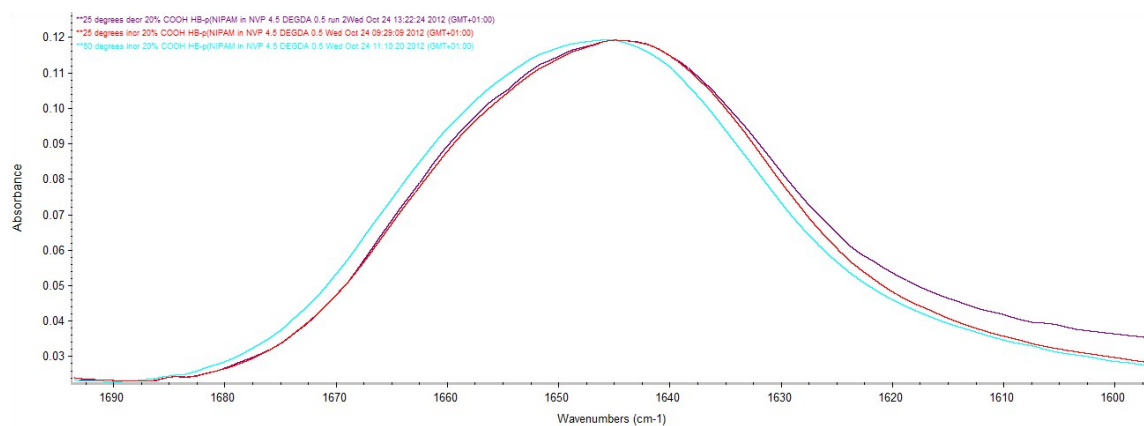


Figure S7 - Amide I carbonyl shift of 20%HB-PNIPAM-GRGDS X-PVP BS-IPN. Red - initial 25°C, orange - 50°C and blue - final 25°C.

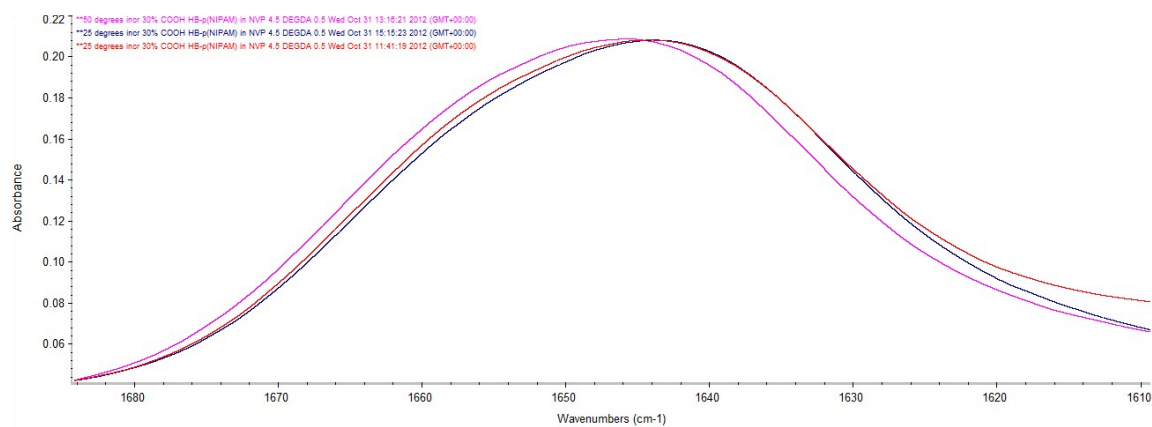


Figure S8 - Amide I carbonyl shift of 30%HB-PNIPAM-GRGDS X-PVP BS-IPN. Red – initial 25°C, fuchsia 50°C and blue final

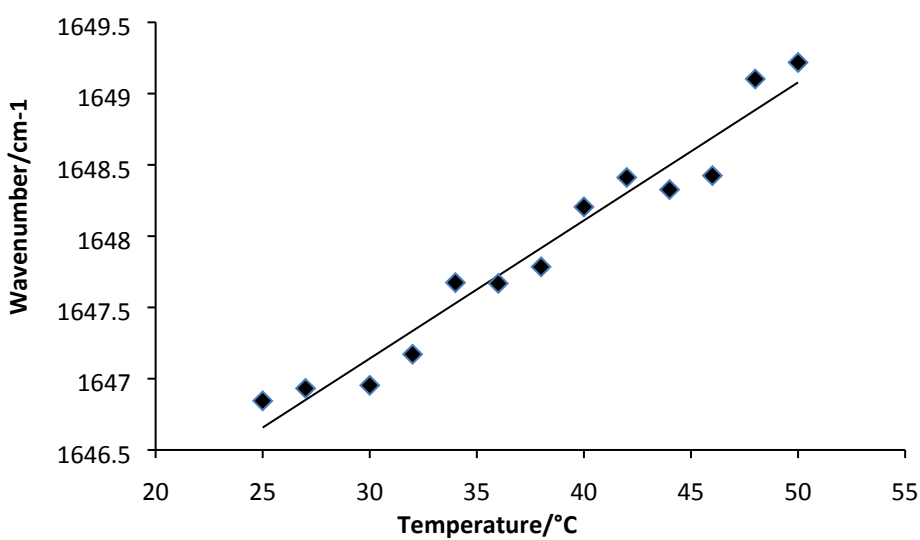


Figure S9 - A graph showing the shift in wavenumber of the amide carbonyl in a 5wt% HB-PNIPAM S-IPN within a PVP matrix and 10% DEGDA crosslinker.

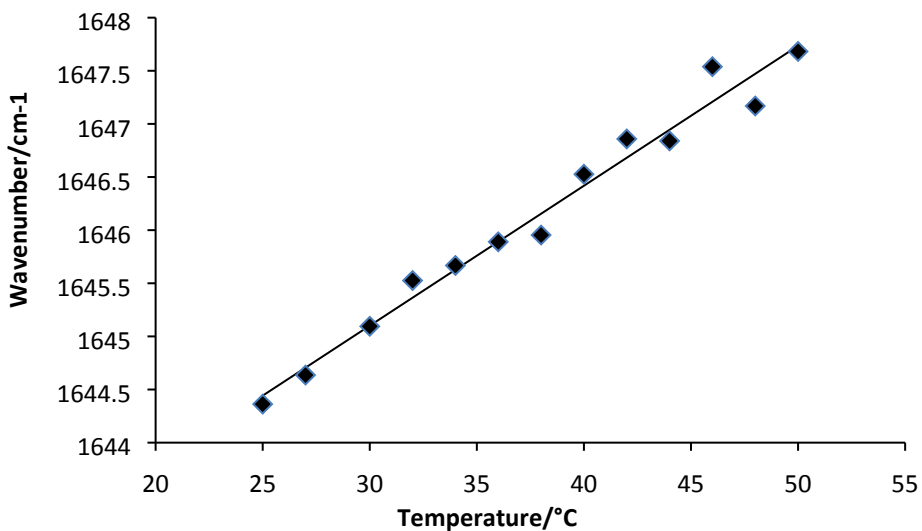


Figure S10 - A graph showing the shift in wavenumber of the amide carbonyl in a 10wt% HB-PNIPAM S-IPN with a PVP matrix and 10% DEGDA crosslinker.

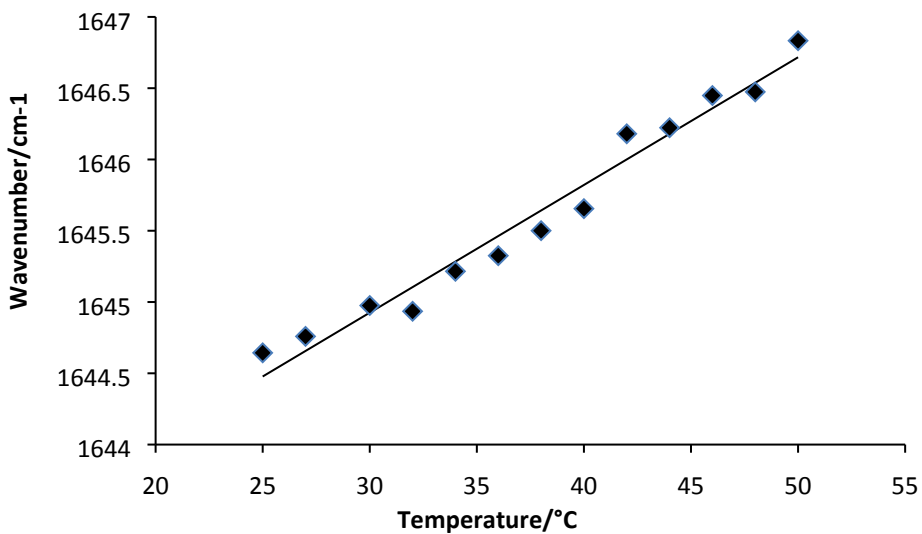


Figure S11 - A graph showing the shift in wavenumber of the amide carbonyl in a 20wt% HB-PNIPAM S-IPN with a PVP matrix and 10% DEGDA crosslinker.

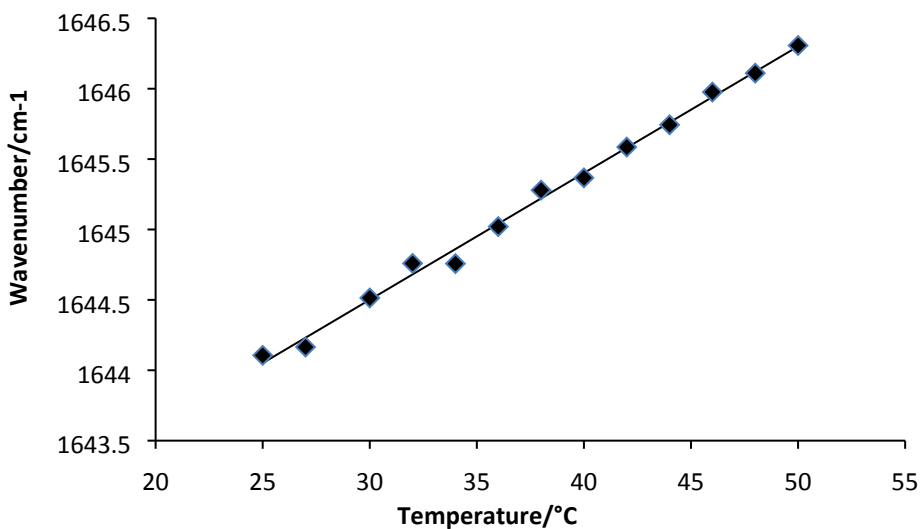


Figure S12 - A graph showing the shift in wavenumber of the amide carbonyl in a 30wt% HB-PNIPAM S-IPN with a PVP matrix and 10% DEGDA crosslinker.

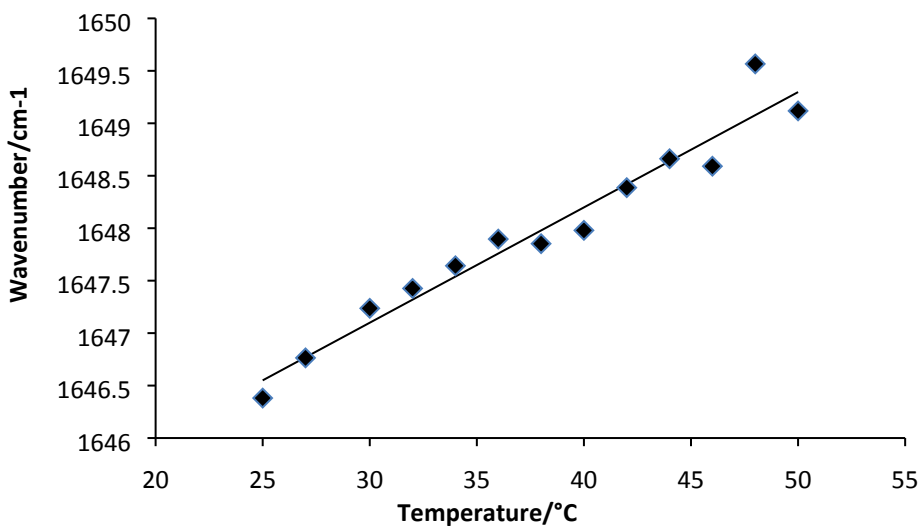


Figure S13 - A graph showing the shift in wavenumber of the amide carbonyl in a 5wt% HB-PNIPAM S-IPN with a PVP matrix and 40% DEGDA crosslinker.

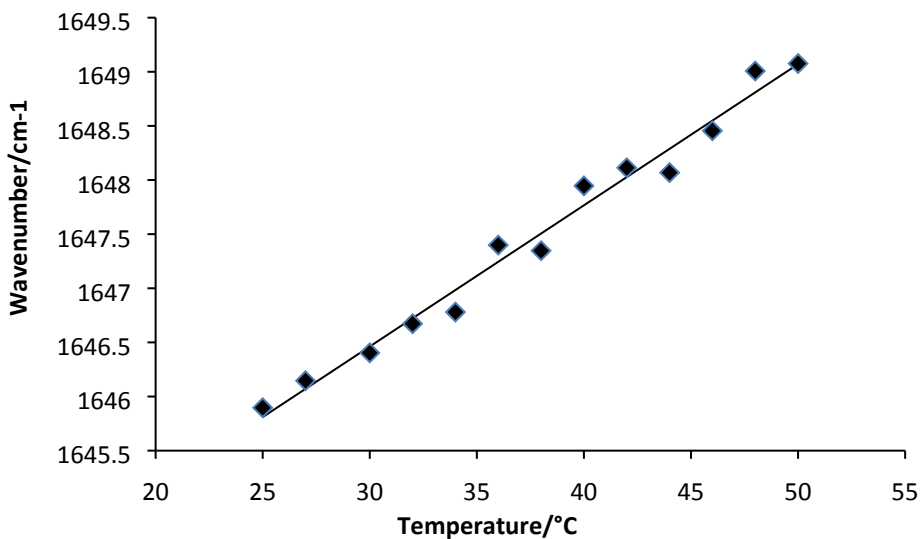


Figure S14 - A graph showing the shift in wavenumber of the amide carbonyl in a 10wt% HB-PNIPAM S-IPN with a PVP matrix and 40% DEGD crosslinker.

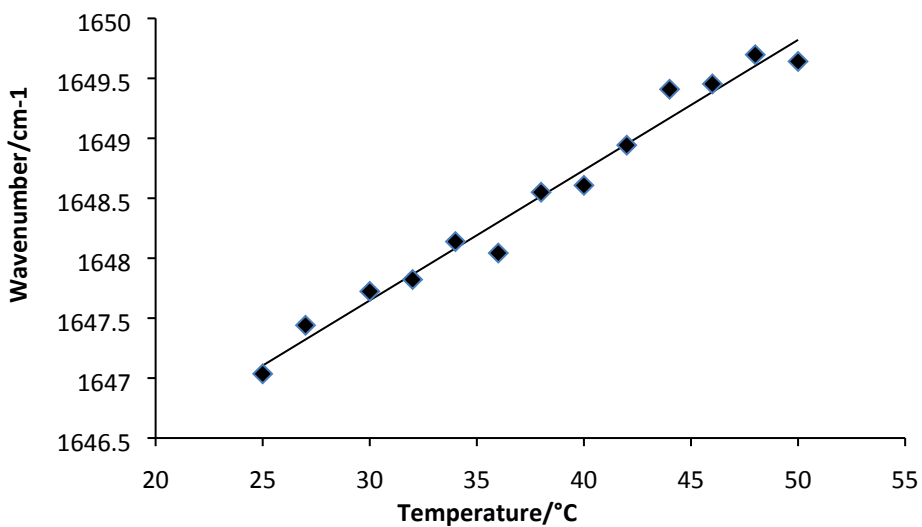


Figure S15 - A graph showing the shift in wavenumber of the amide carbonyl in a 20wt% HB-PNIPAM S-IPN with a PVP matrix and 40% DEGD crosslinker.

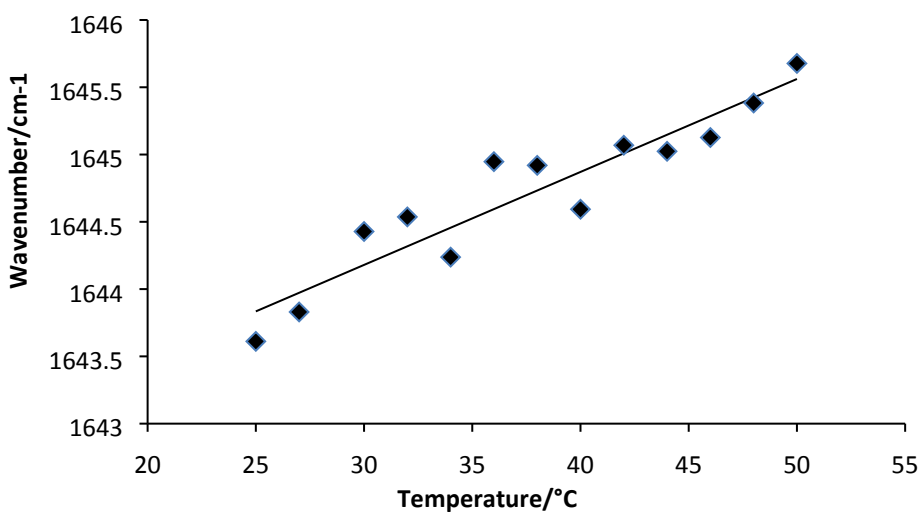


Figure S16 - A graph showing the shift in wavenumber of the amide carbonyl in a 30wt% HB-PNIPAM S-IPN with a PVP matrix and 40% DEGDA crosslinker.

Concentrations of HB-PNIPAM by FTIR

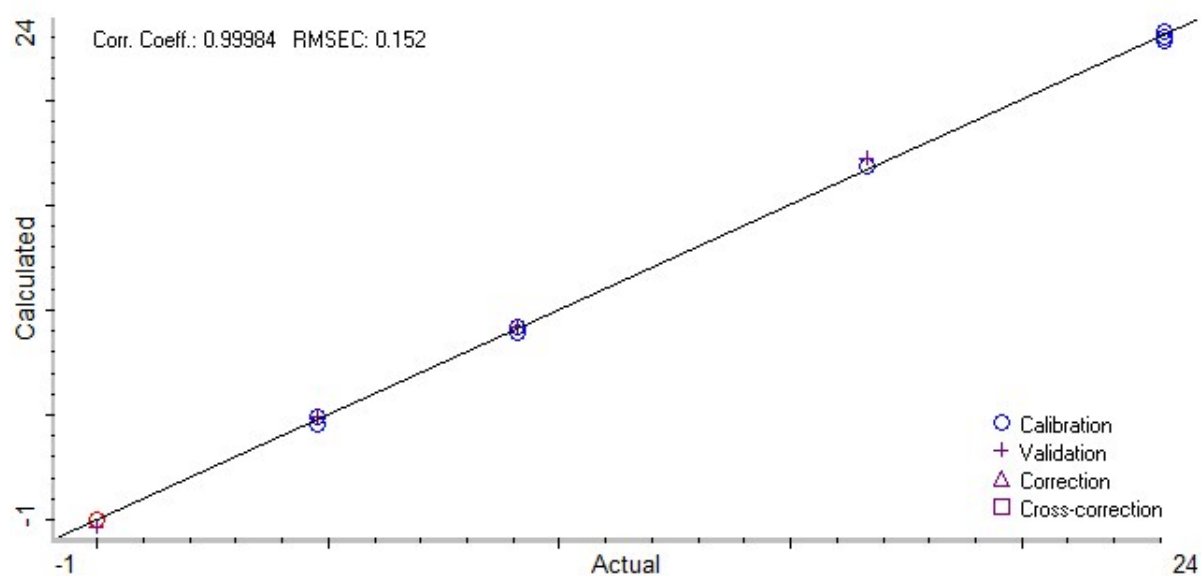


Figure S17 - Actual percentage of HB-PNIPAM vs Calculated percentage of HB-PNIPAM for crosslinked PVP BS-IPN with HB-PNIPAM at 40% crosslinker.

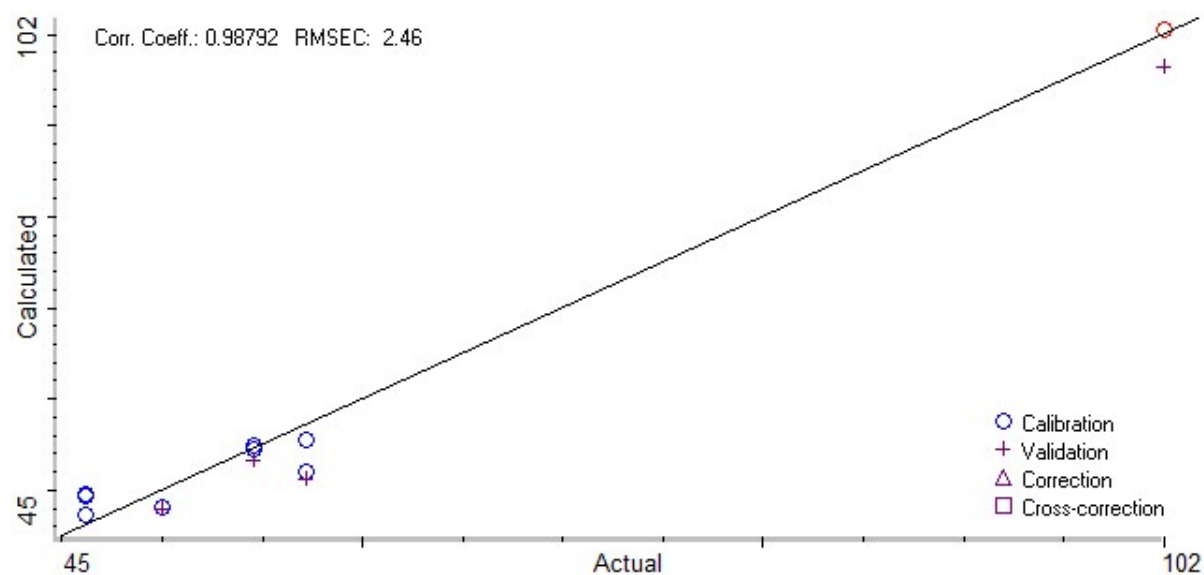


Figure S18 - Actual percentage of PVP vs Calculated percentage of PVP for crosslinked PVP BS-IPN with HB-PNIPAM at 40% crosslinker.

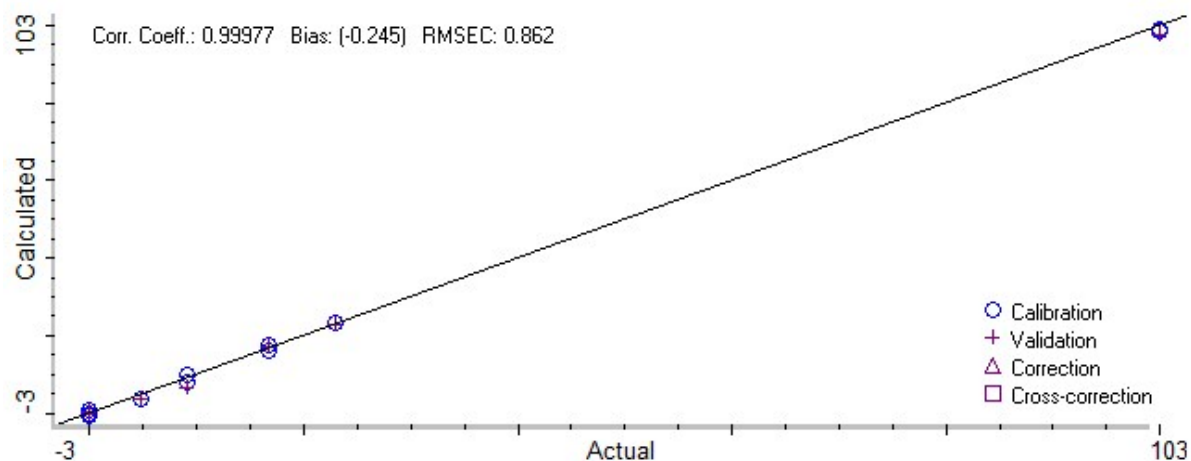


Figure S18 - Actual percentage of HB-PNIPAM vs Calculated percentage of HB-PNIPAM for crosslinked PVP BS-IPN with HB-PNIPAM at 10% crosslinker.

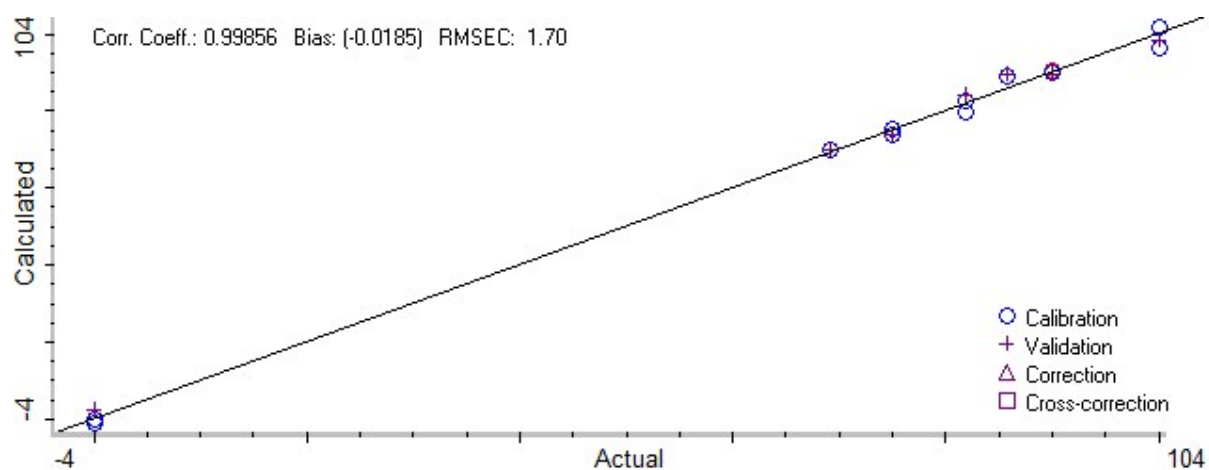


Figure S19 - Actual percentage of PVP vs Calculated percentage of PVP for crosslinked PVP BS-IPN with HB-PNIPAM at 10% crosslinker.

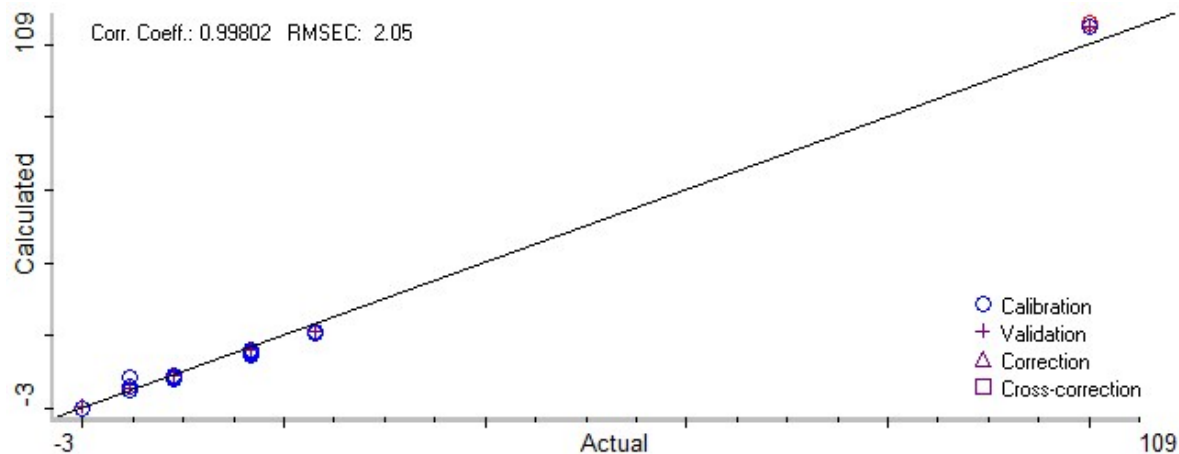


Figure S20 - Actual percentage of HB-PNIPAM vs Calculated percentage of HB-PNIPAM for crosslinked PEG BS-IPN with HB-PNIPAM.

Table S2 - Absorbance measurements at 570 nm for MTT cell viability and proliferation assay

0% HB-PNIPAM-GRGDS	2.5% HB-PNIPAM-GRGDS	5% HB-PNIPAM-GRGDS	10% HB-PNIPAM-GRGDS	TCP
0.018	0.031	0.03	0.025	0.031
0.019	0.019	0.035	0.04	0.021
0.013	0.032	0.029	0.021	0.03
0.024	0.031	0.03	0.023	0.033
0.011	0.025	0.036	0.026	0.03
0.015	0.033	0.024	0.021	0.03