

Supplementary Information (SI)

Relatively homogeneous network structures of temperature-responsive gels synthesized *via* atom transfer radical polymerization

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Table S1. Composition of monomer, cross-linker and initiators in the feed for preparing ATRP gels.

MBAA content (mol%)	In feed solution (monomer solution)								
	NIPAAm		MBAA		2-CI-PA		CuCl ₂		Water
	(mg)	(mol)	(mg)	(mol)	(mg)	(mol)	(mg)	(mol)	mL
0.5	452.9	4.00	3.41	0.022	1.08	0.01	0.008	1.08	3
1			6.81	0.044					
3			20.45	0.13					
5			31.54	0.20					
10			63.51	0.41					
13			82.31	0.53					

Table S2. Composition of monomer, cross-linker and initiators in the feed for preparing FRP gels.

MBAA content (mol%)	In feed solution (monomer solution)								
	NIPAAm		MBAA		TEMED		APS		Water
	(mg)	(mol)	(mg)	(mol)	(mg)	(mol)	(mg)	(mol)	(mL)
0.05	452.93	4	0.34	0.002	11.8	0.08	2.26	0.01	3.0
0.1			0.68	0.004					
0.5			3.41	0.022					
1			6.78	0.044					
3			20.35	0.132					
5			31.84	0.207					
10			63.1	0.409					
13			82.28	0.533					

Table S3. Compression moduli of as-prepared and swollen ATRP and FRP gels with various cross-linker contents.

MBAA content (mol%)	Compression modulus (kPa)			
	ATRP gel		FRP gel	
	as-prepared	swollen	as-prepared	swollen
0.05	—	—	2.3	1.5
0.1	—	—	3.7	2.4
0.5	0.8	0.8	10.2	7.5
1	5.7	5.7	16.1	10.1
3	31.7	35.3	54.4	46.6
5	55.0	62.0	84.1	56.7
10	88.9	94.8	84.5	63.5
13	103.6	107.7	86.7	62.2

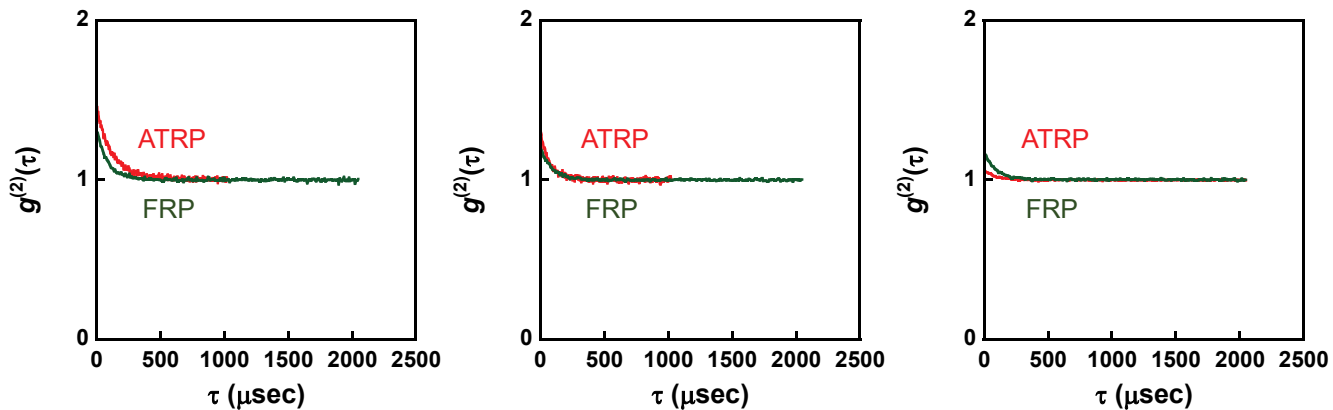


Fig. S1. Examples of intensity correlation function profiles for the ATRP gel (—) and FRP gel (—) at an arbitrary position. Their cross-linker contents were (a) 1, (b) 3 and (c) 5 mol%. The DLS measurements were performed at 25 °C.

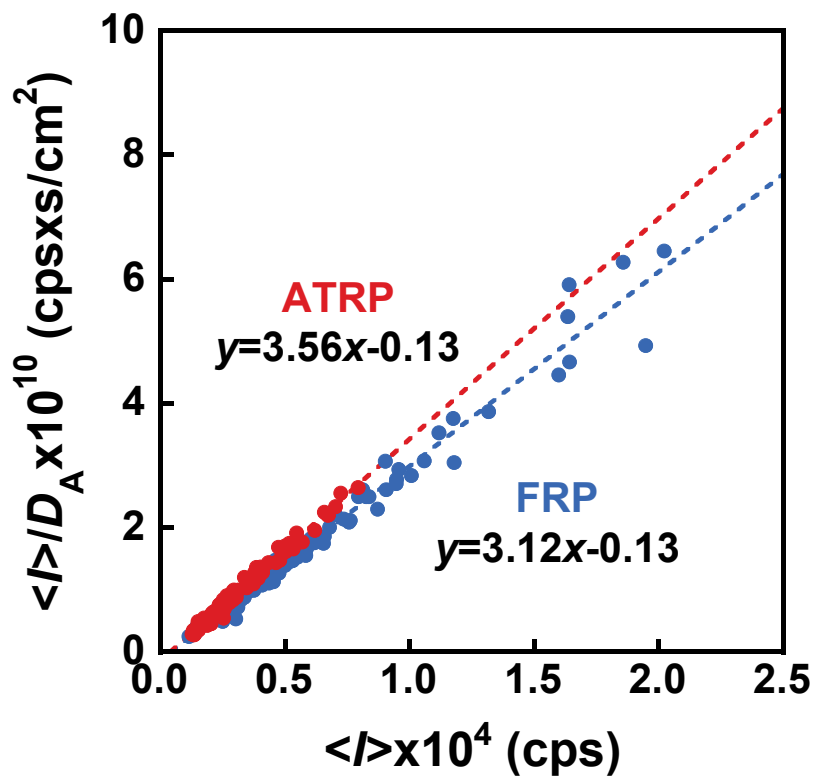


Fig. S2. Decomposition plots for PNIPAAm gels synthesized *via* ATRP (●) and FRP (●) at 5 °C. Their cross-linker content was 3mol%. The DLS measurements were performed at 25 °C.

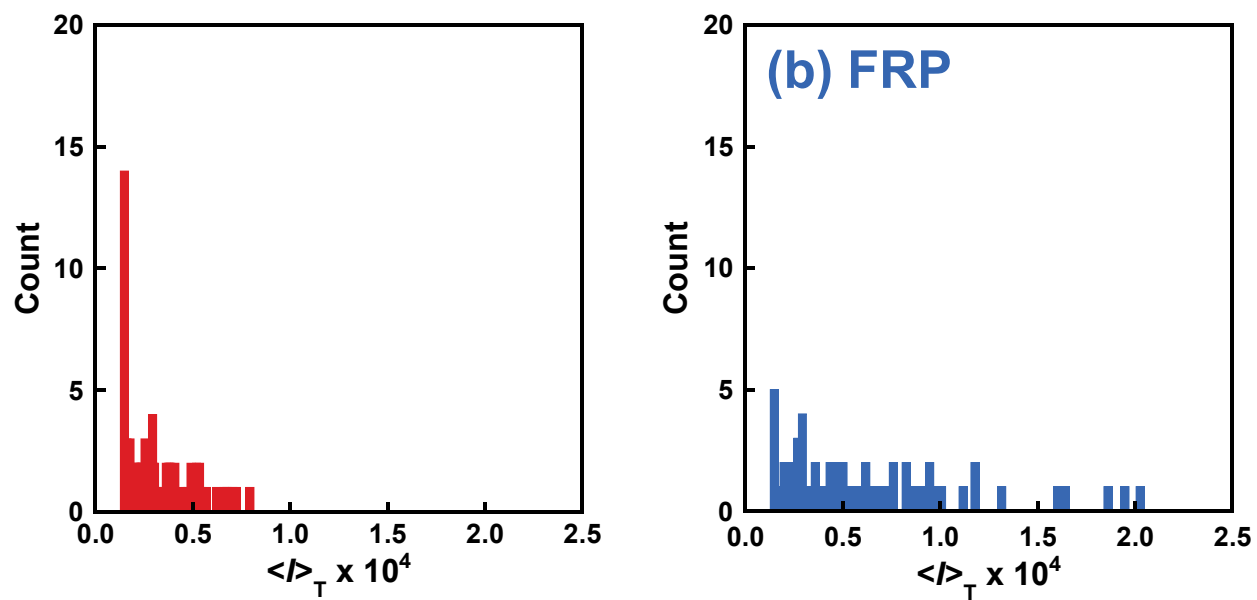


Fig. S3. Histograms of the scattered intensity, $\langle I \rangle_T$, for PNIPAAm gels synthesized *via* ATRP (a) and FRP (b) with a cross-linker content of 3mol% at 5 °C. The DLS measurements were performed at 25 °C.