

ELECTRONIC SUPPLEMENTARY INFORMATION

Nanophasic Morphologies as a Function of Composition and Molecular Weight of Macromolecular Cross-linker in Poly(*N*-vinylimidazole)-*l*-poly(tetrahydrofuran) Amphiphilic Conetworks: Bicontinuous Domain Structure in Broad Composition Ranges

Csaba Fodor,^{a†*} Gergely Kali,^{a#} Ralf Thomann,^b Yi Thomann,^b Béla Iván^{a*} and Rolf Mülhaupt^b

^aPolymer Chemistry Research Group, Institute of Materials and Environmental Chemistry, Research Centre for Natural Sciences, Hungarian Academy of Sciences
H-1117 Budapest, Magyar tudósok körútja 2, Hungary

^bFreiburg Materials Research Center, Albert-Ludwigs University Freiburg
Stefan-Meier-Str. 21, D-79104 Freiburg, Germany

[†] Present address: Macromolecular Chemistry and New Polymeric Materials, Zernike Institute for Advanced Materials, University of Groningen, Nijenborgh 4, 9747 AG Groningen, The Netherlands

[#] Present address: Department of Organic Macromolecular Chemistry, Saarland University, Campus C 4.2, 66123 Saarbrücken, Germany

* Authors to whom correspondence should be addressed

Supporting Table and Figures

Table S1. Molecular weights of methacrylate-telechelic PTHF cross-linkers, feed ratios, compositions of poly(*N*-vinylimidazole)-*l*-poly(tetrahydrofuran) (PVI*m*-*l*-PTHF) conetworks and average molecular weights of PVI*m* segments between two cross-linking points (M_c).

Sample ID	M_n of PTHF (g·mol ⁻¹)	VIm/PTHF in feed (wt %)	PVI <i>m</i> /PTHF in conetwork (wt %)	M_c of PVI <i>m</i> (g·mol ⁻¹)
P2.2k-25	2170	80/20	75/25	3255
P2.2k-36		70/30	62/36	1770
P2.2k-47		60/40	53/47	1224
P2.2k-59		50/50	41/59	754
P2.2k-74		40/60	26/74	381
P2.2k-89		70/30	11/89	134
P6.8k-52	6850	80/20	48/52	3162
P6.8k-61		70/30	39/61	2190
P6.8k-69		60/40	31/69	1539
P6.8k-80		50/50	20/80	856
P6.8k-81		40/60	19/81	803
P6.8k-84		70/30	16/84	652
P10k-46	10000	80/20	54/46	5870
P10k-61		70/30	39/61	3197
P10k-66		60/40	34/66	2576
P10k-77		50/50	23/77	1494
P10k-86		40/60	14/86	814
P10k-91		70/30	9/91	495

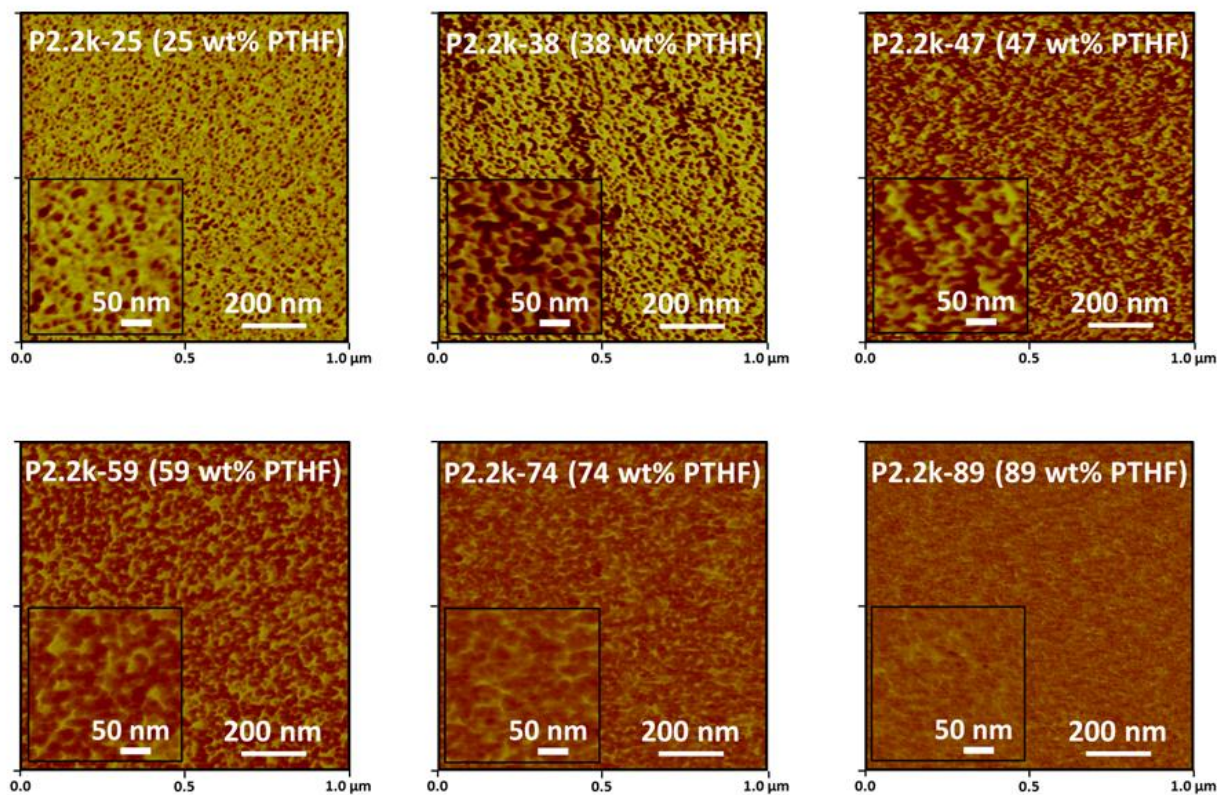


Figure S1. Phase mode AFM images of cross sections of poly(*N*-vinylimidazole)/poly(tetrahydrofuran) conetwork samples (P2.2k series) with varying PTHF content (25 wt%, 38 wt%, 47 wt%, 59 wt%, 74 wt% and 89 wt% PTHF). Inset: AFM image magnification of the conetwork sample (picture dimensions 250 nm x 250 nm). The softer PTHF phase appears dark and the harder PVIm is bright.

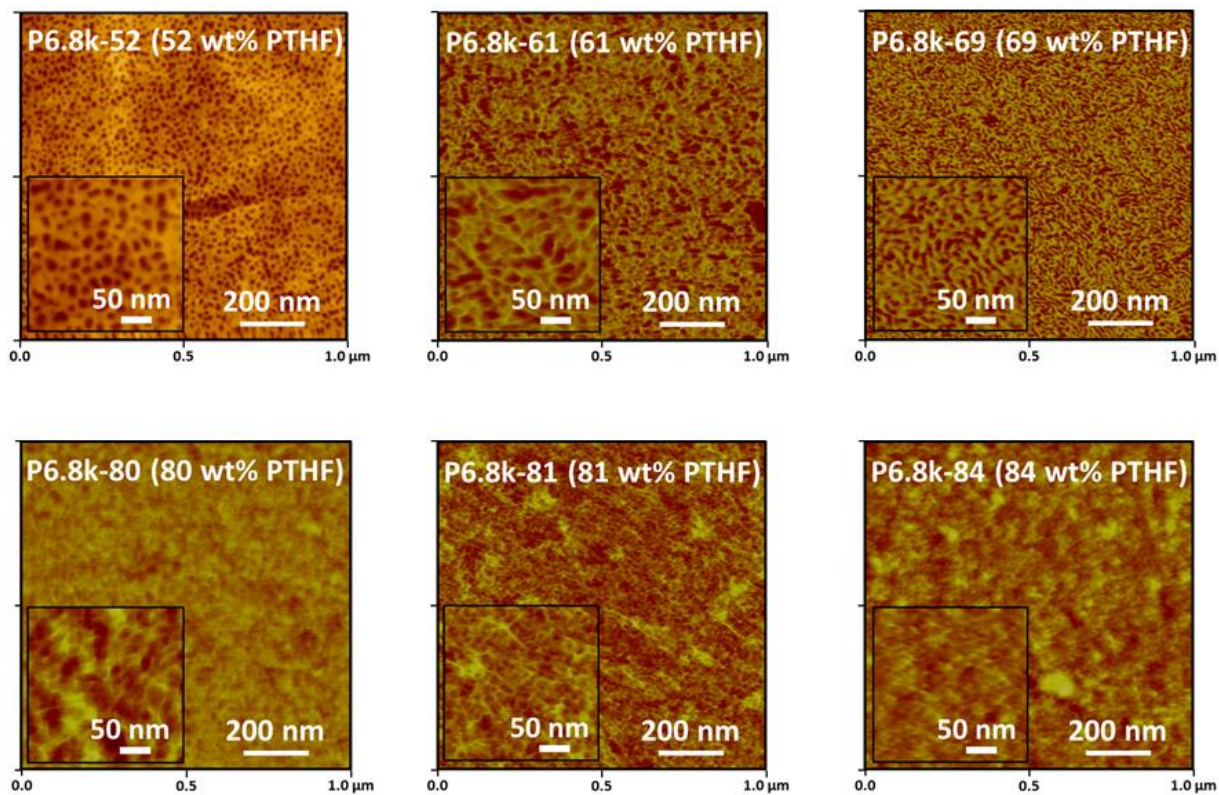


Figure S2. Phase mode AFM images of cross sections of poly(*N*-vinylimidazole)/poly(tetrahydrofuran) conetwork samples (P6.8k series) with varying PTHF content (52 wt%, 61 wt%, 69 wt%, 80 wt%, 81 wt% and 84 wt% PTHF). Inset: AFM image magnification of the conetwork sample (picture dimensions 250 nm x 250 nm). The softer PTHF phase appears dark and the harder PVIm is bright.

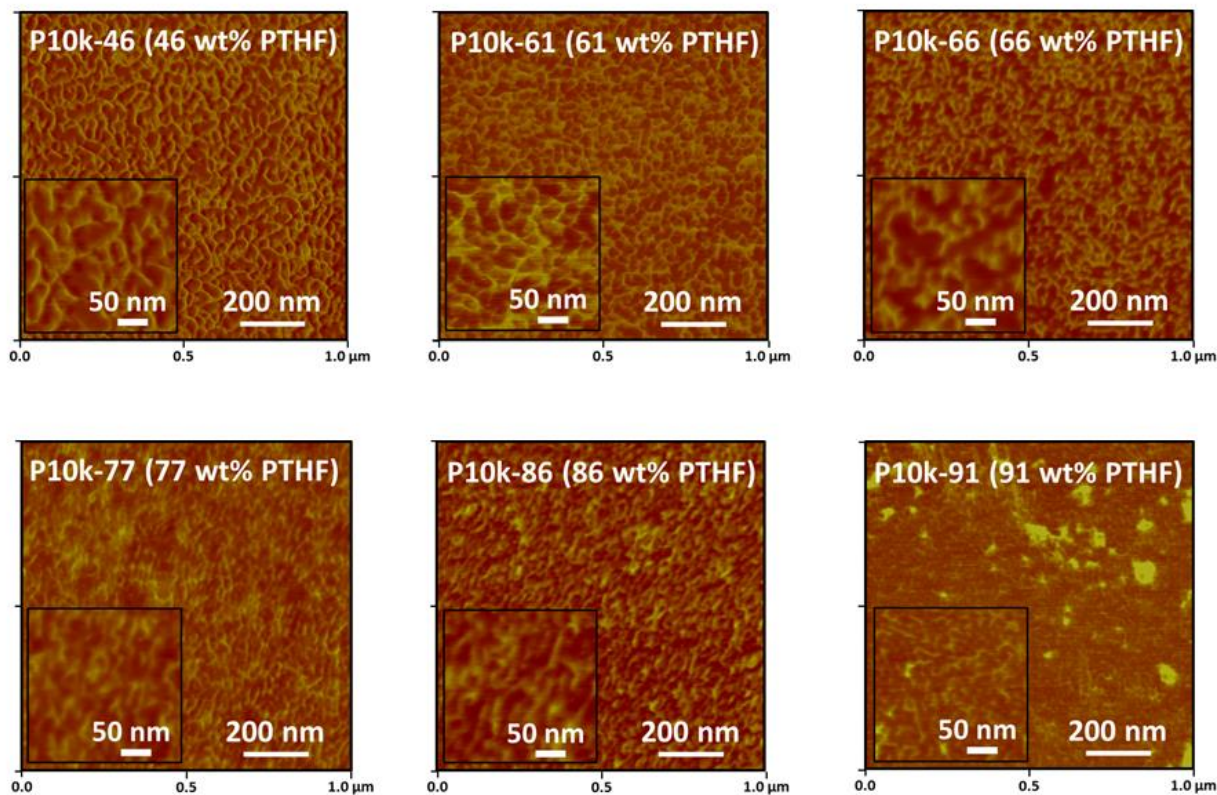


Figure S3. Phase mode AFM images of cross sections of poly(*N*-vinylimidazole)-/*l*-poly(tetrahydrofuran) conetwork samples (P10k series) with varying PTHF content (46 wt%, 61 wt%, 66 wt%, 77 wt%, 86 wt% and 91 wt% PTHF). Inset: AFM image magnification of the conetwork sample (picture dimensions 250 nm x 250 nm). The softer PTHF phase appears dark and the harder PVIm is bright.

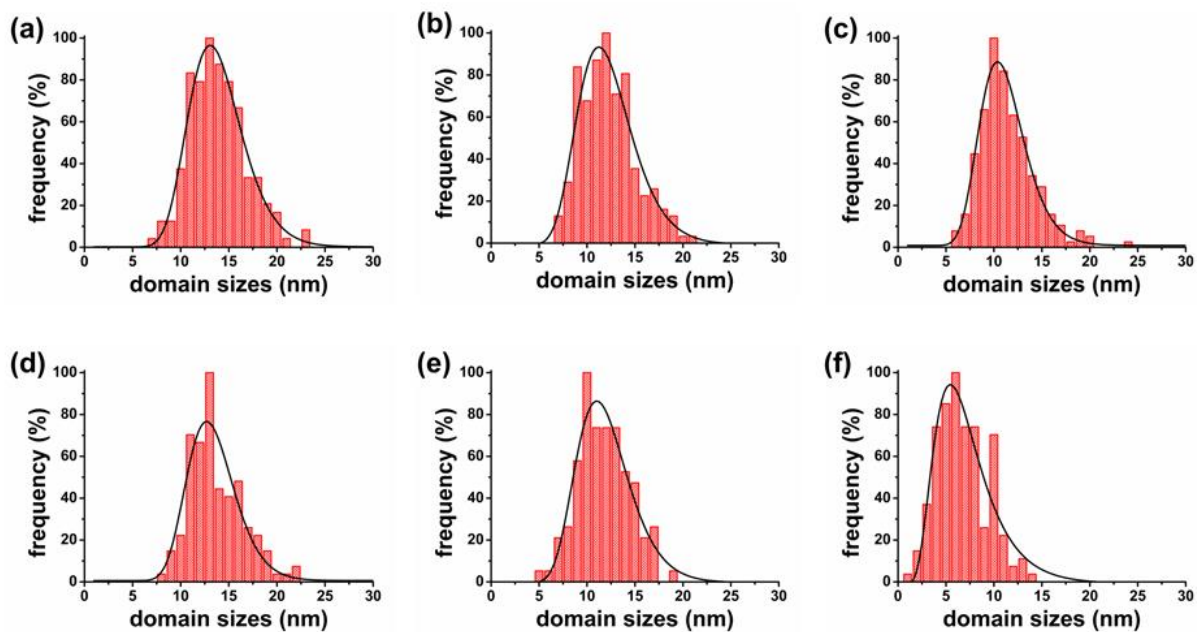


Figure S4. The average PTHF domain sizes from the AFM phase mode images of the P2.2k conetworks cross sections with varying PTHF content (a) 25 wt%, (b) 38 wt%, (c) 47 wt%, (d) 59 wt%, (e) 74 wt% and (f) 89 wt% PTHF.

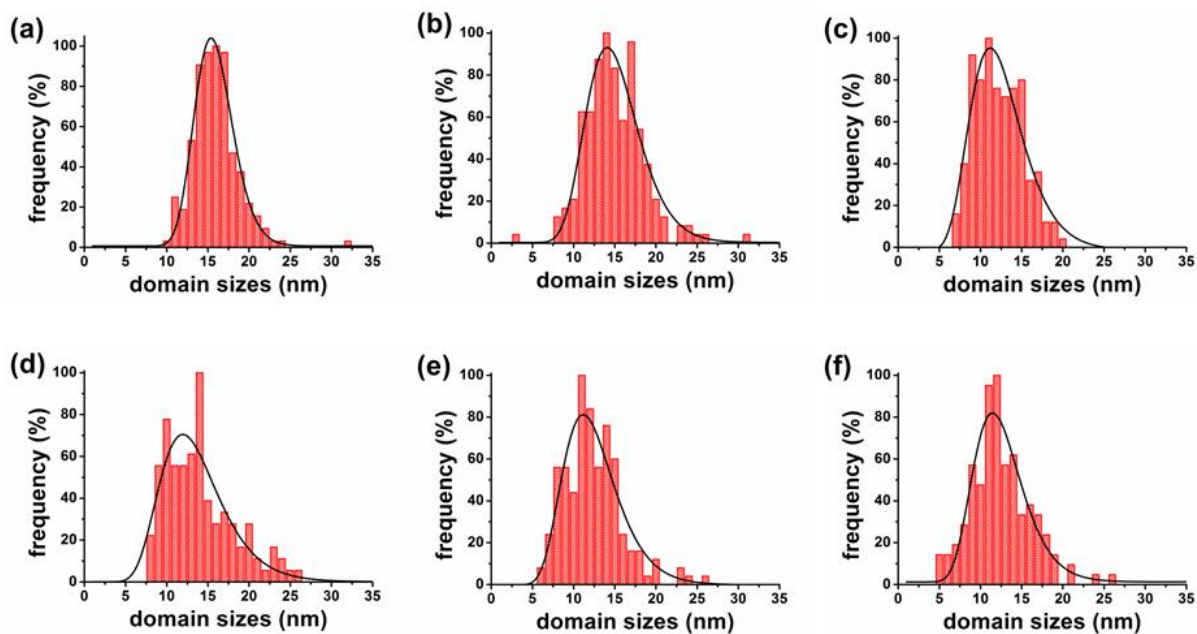


Figure S5. The average PTHF domain sizes from the AFM phase mode images of the P6.8k conetworks cross sections with varying PTHF content (a) 52 wt%, (b) 61 wt%, (c) 69 wt%, (d) 80 wt%, (e) 81 wt% and (f) 84 wt% PTHF.

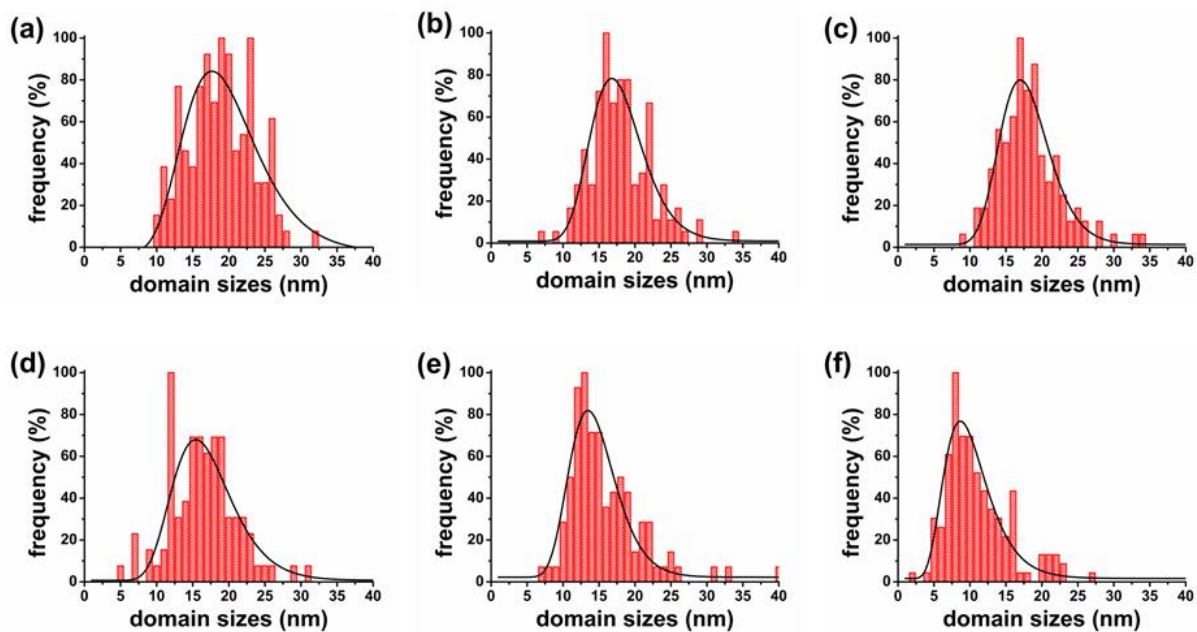


Figure S6. The average PTHF domain sizes from the AFM phase mode images of the P10k conetworks cross sections with varying PTHF content (a) 46 wt%, (b) 61 wt%, (c) 66 wt%, (d) 77 wt%, (e) 86 wt% and (f) 91 wt% PTHF.

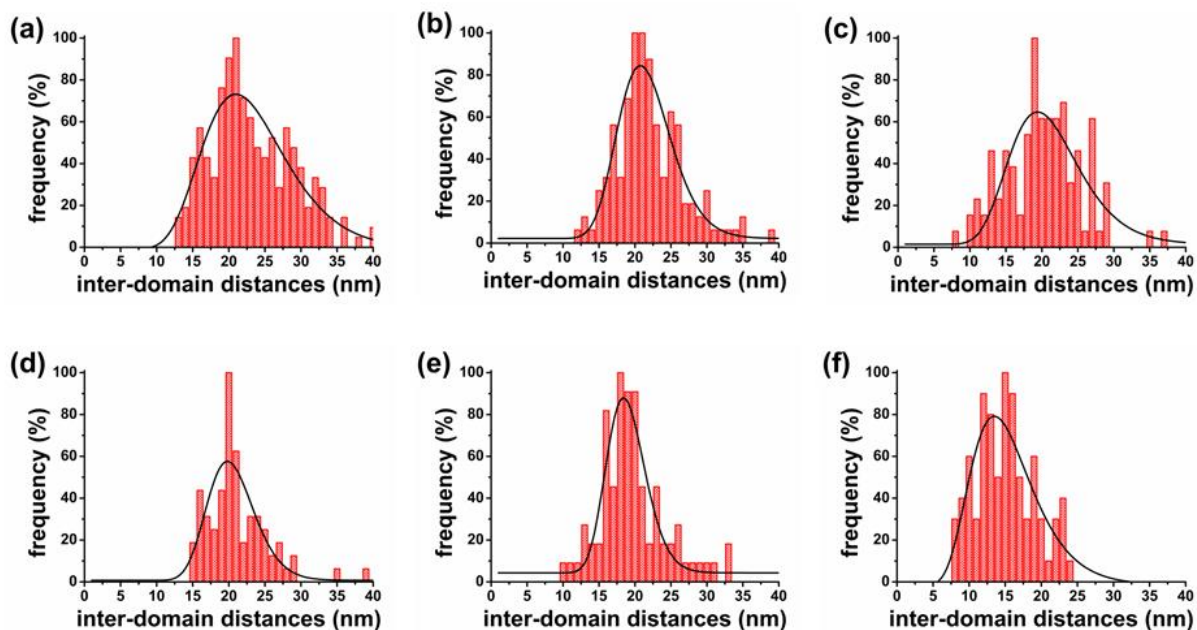


Figure S7. The average PTHF inter-domain distances from the AFM phase mode images of the P2.2k conetworks cross sections with varying PTHF content (a) 25 wt%, (b) 38 wt%, (c) 47 wt%, (d) 59 wt%, (e) 74 wt% and (f) 89 wt% PTHF.

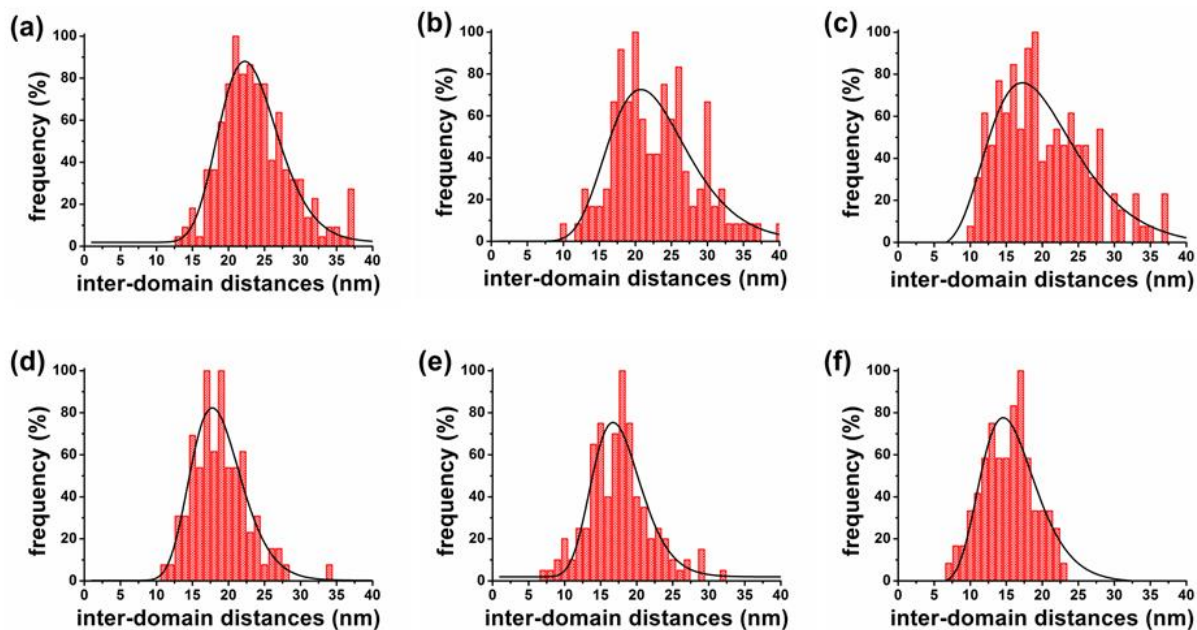


Figure S8. The average PTHF inter-domain distances from the AFM phase mode images of the P6.8k conetworks cross sections with varying PTHF content (a) 52 wt%, (b) 61 wt%, (c) 69 wt%, (d) 80 wt%, (e) 81 wt% and (f) 84 wt% PTHF.

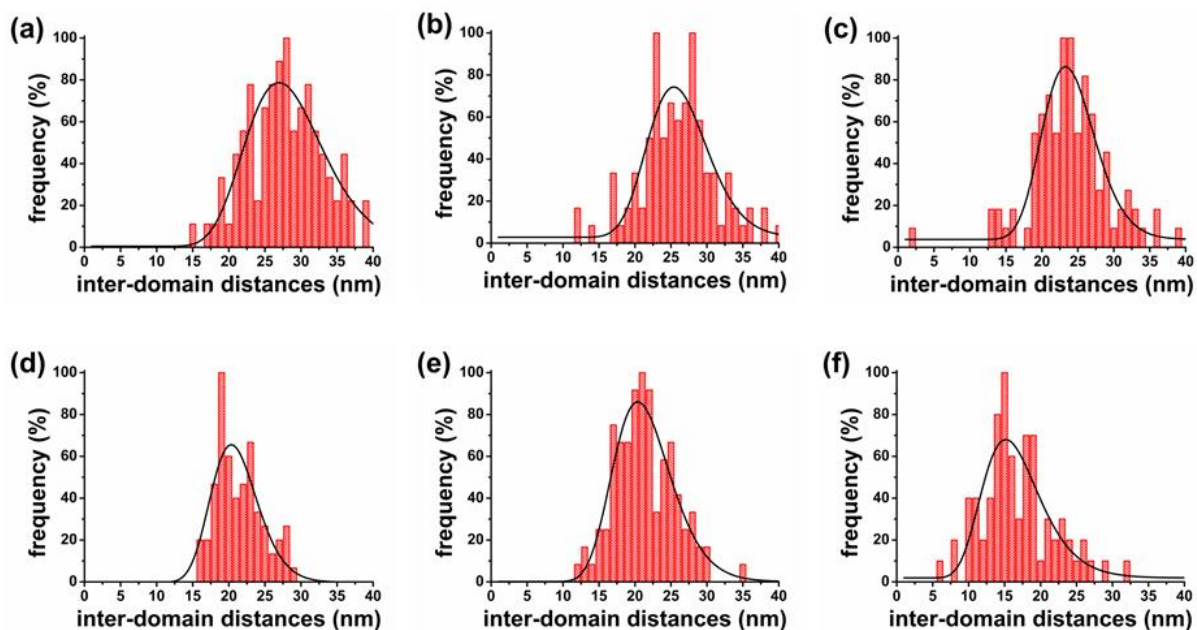


Figure S9. The average PTHF inter-domain distances from the AFM phase mode images of the P10k conetworks cross sections with varying PTHF content (a) 46 wt%, (b) 61 wt%, (c) 66 wt%, (d) 77 wt%, (e) 86 wt% and (f) 91 wt% PTHF.