

Supplementary information

“Bulk Polymer Nanocomposites with Preparation Protocol Governed Nanostructure: The Origin and Properties of Aggregates and Polymer Bound Clusters”

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1. Additional TEM Images

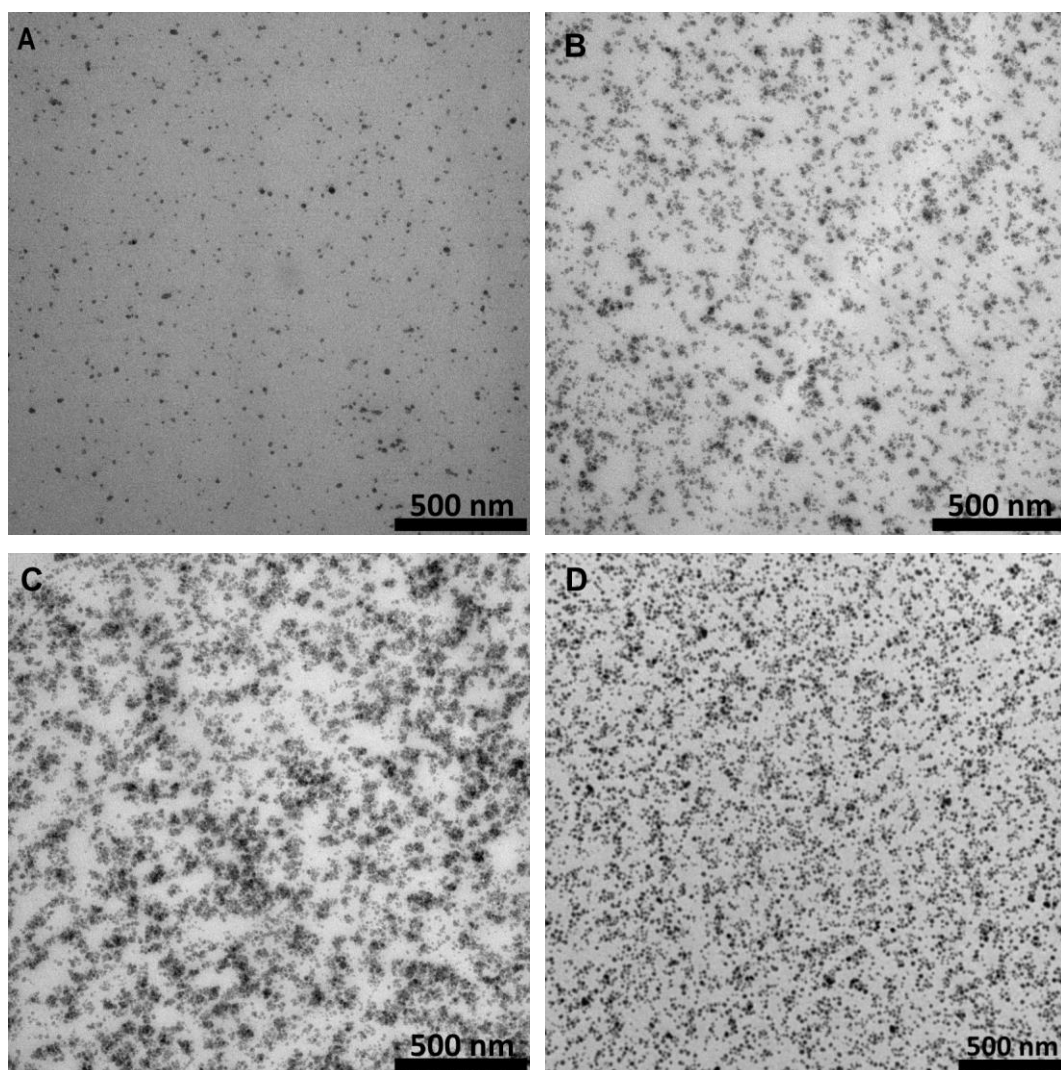


Figure S1: TEM images of isolated NPs and small aggregates in PNC samples prepared from acetone mixture with NP loadings of (A) 0.5, (B) 5, and (C) 10 vol. % and (D) from ethyl acetate with NP loading of 5 vol.%.

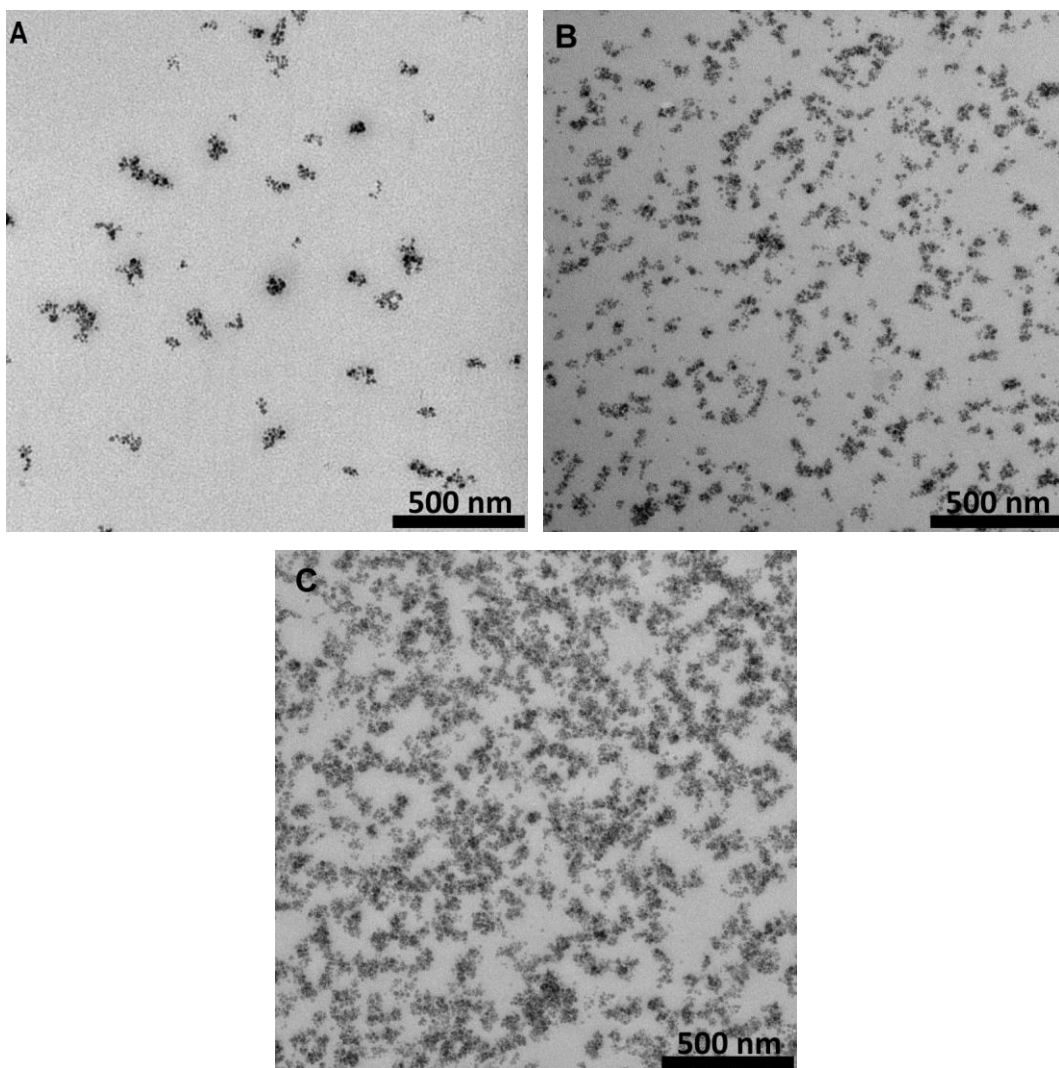


Figure S2: TEM images of chain bound NP clusters in PNC samples prepared from acetone-toluene 1:1 mixture with NP loadings of (A) 0.5, (B) 5, and (C) 10 vol. %.

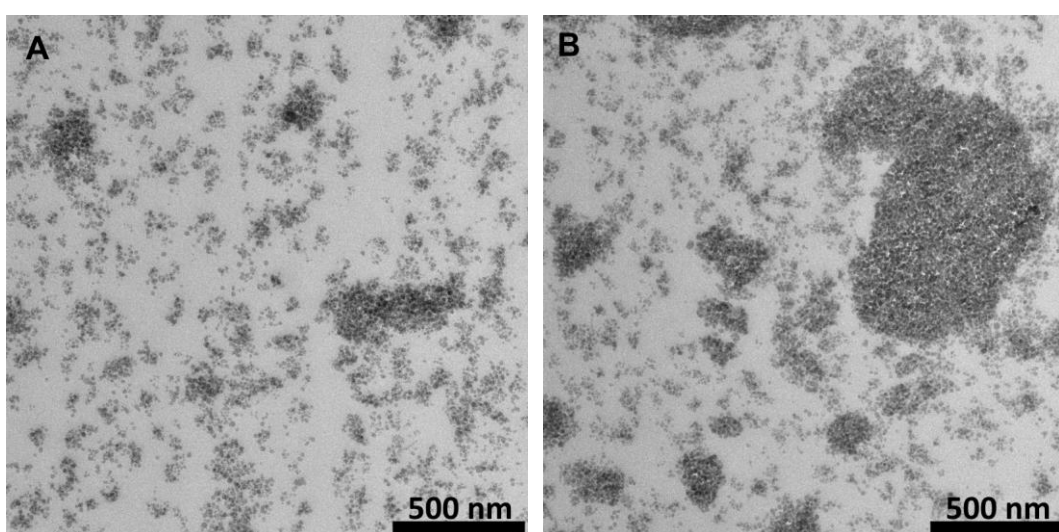


Figure S3: TEM images of aggregates in PNC samples prepared from toluene with NP loadings of (A) 5, and (B) 10 vol. %.

2. Additional USAXS data

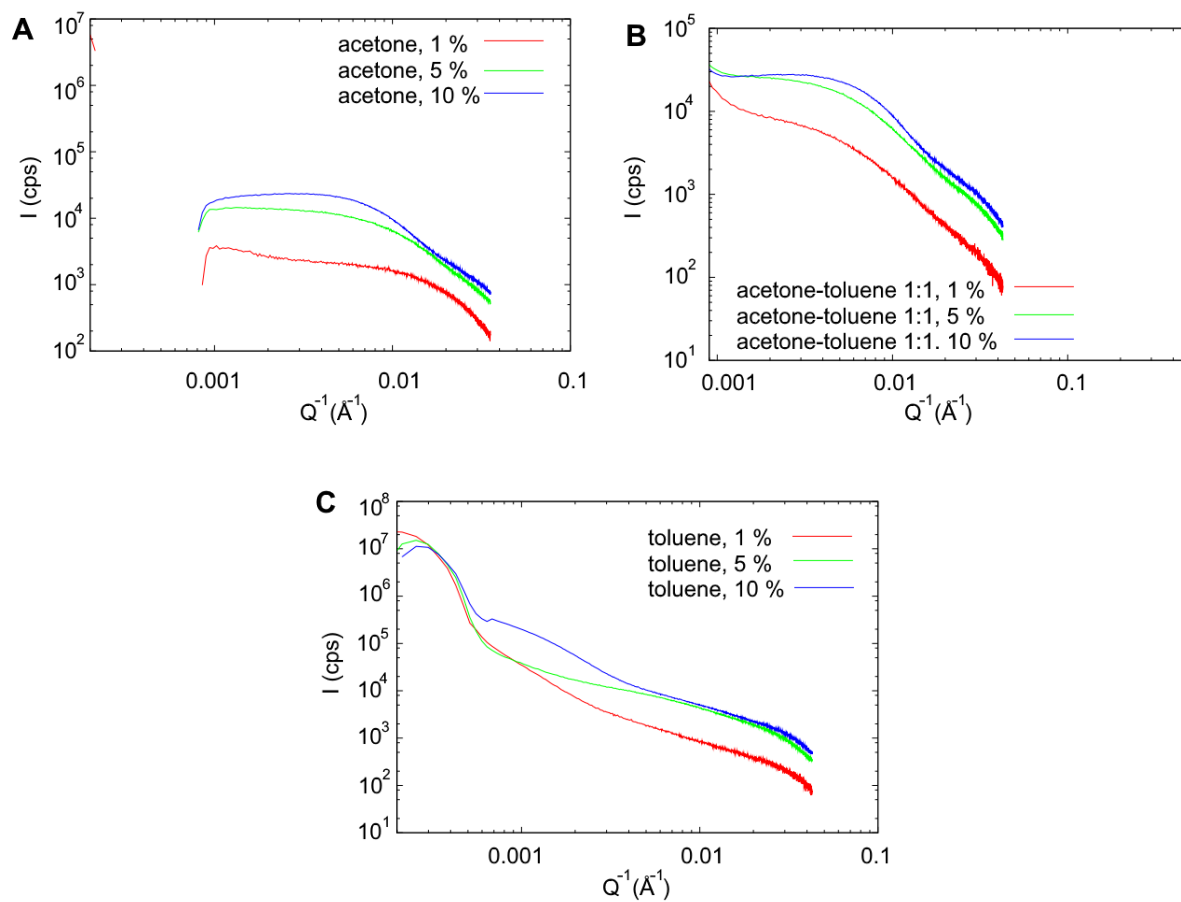


Figure S4: USAXS dependence of intensity I on length of scattering vector q extracted from USAXS data for (A) acetone, (B) acetone-toluene 1:1, and (C) toluene series.

3. E and C values of Drago's concept

Acid	C _a	E _a	
silica	1.08	4.36	
Bases	C _b	E _b	ΔH on silica (kcal·mol ⁻¹)
PMMA	0.96	0.68	-4.0
THF	4.27	0.978	-8.9
DMF (N,N-dimethylformamide)	2.48	1.23	-8.0
acetone	2.33	0.987	-6.8
ethyl acetate	1.74	0.975	-6.1
benzene	0.71	0.486	-2.9
<i>p</i> -xylene	1.78	0.416	-3.7
toluene	1.24*	0.45*	-3.3
acetone-toluene 1:1			-5.1**

Table S1: Overview of E and C values according to Drago's concept for silica and various bases^{24, 29} and calculated adsorption enthalpies ΔH onto silica for the listed bases. * Values obtained as an average of benzene and *p*-xylene. ** Value obtained as an average of acetone and toluene.