Supplementary Material

A neutron scattering study of the structure of poly(dimethylsiloxane)-stabilized poly(methyl methacrylate) (PDMS–PMMA) latexes in dodecane

James E. Hallett,[*,†,§] Isabelle Grillo,[‡,‖] and Gregory N. Smith[¶,⊥]

†*H. H. Wills Physics Laboratory, University of Bristol, Tyndall Avenue, Bristol, BS8 1TL, UK*

‡*Institut Laue–Langevin, 71 avenue des Martyrs, 38042 Grenoble Cedex 9, France*

¶*Department of Chemistry, University of Sheffield, Brook Hill, Sheffield, South Yorkshire, S3 7HF. UK*

§*Current address: Physical & Theoretical Chemistry Laboratory, Oxford University, South Parks Road, Oxford, OX1 3QZ, UK*

‖*Deceased (4 August 2019)*

⊥*Current address: Niels Bohr Institute, University of Copenhagen, H. C. Ørsted Institute, Universitetsparken 5, 2100 Copenhagen, Denmark*

E-mail: james.hallett@chem.ox.ac.uk

Electron microscopy

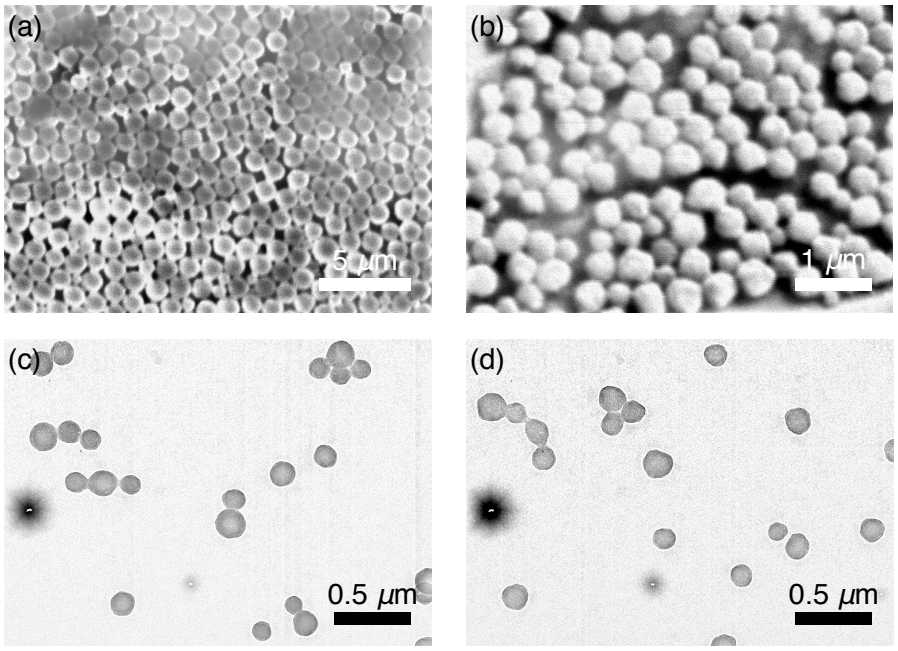

Figure S1: Scanning (a,b) and transmission (c,d) electron microscopy images for particle systems a) H_{1357}, b) H_{501}, c) H_{252} and d) D_{243}.

Spherical form factor

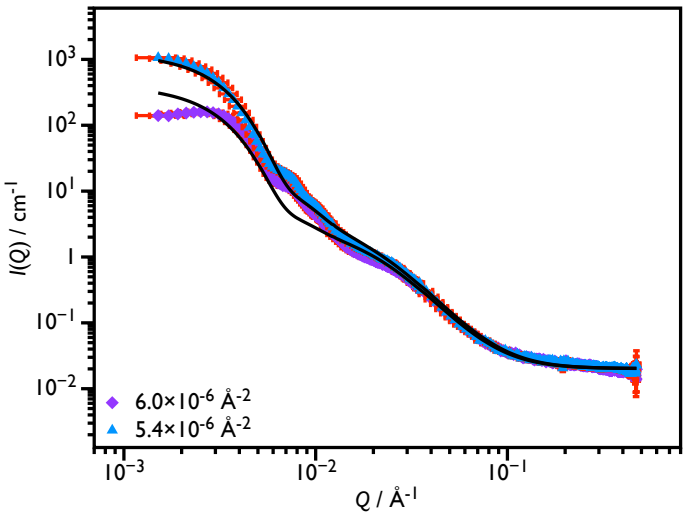

Figure S2: SANS obtained for crosslinked PMMA-d_8 PDMS-stabilized latexes (D_{243}). Solid lines are a three component fit with a spherical form factor of diameter 113 nm, $\sigma = 0.21$.

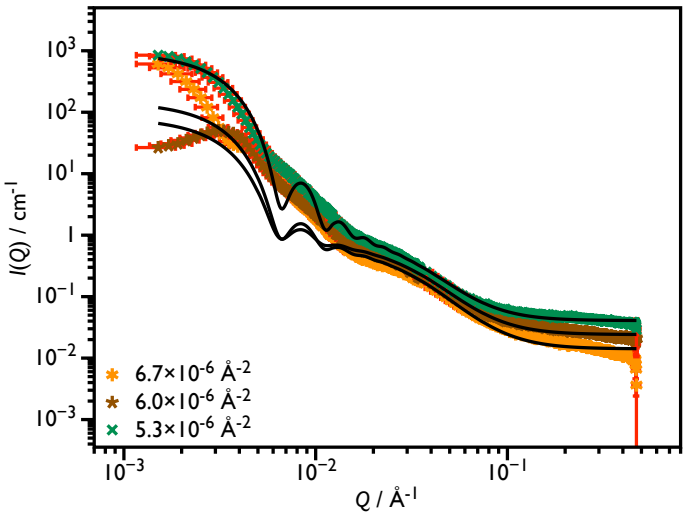

Figure S3: SANS obtained for crosslinked PMMA-d_8 PDMS-stabilized latexes (DX_{242}). Solid lines are a three component fit with a spherical form factor of diameter 138 nm, $\sigma = 0.03$.

Fitting parameters

Table S1: Spherical form factor fit parameters for H252 system

scale	background	ρ_{core} / 10^{-6} Å^{-2}	ρ_{solvent} / 10^{-6} Å^{-2}	r /Å	σ_r
0.0048149	0.022138	1.07	-0.464	894.27	0.19985

Table S2: PDMS polymer excluded volume and flat background (high Q) fit parameters for D243 fits at different solvent neutron scattering densities.

ρ_{solvent} / 10^{-6} Å^{-2}	Scale	Background	R_g / Å	Porod exponent
6.03	2.3298	0.020253	88.363	3
5.26	2.6338	0.020158	88.363	3

Table S3: Fitting parameters used for onion-shell model to fit D243 data at different solvent neutron scattering densities.

ρ_{solvent} 10^{-6} Å^{-2}	scale	ρ_{core} 10^{-6} Å^{-2}	r_{core} Å	$\rho_{\text{in,1}}$ 10^{-6} Å^{-2}	$\rho_{\text{out,1}}$ 10^{-6} Å^{-2}	T_1 Å	σ_{T_1}	A_1	$\rho_{\text{in,2}}$ 10^{-6} Å^{-2}	$\rho_{\text{out,2}}$ 10^{-6} Å^{-2}	T_2 Å	A_2
6.03	0.017	6.86	1	6.86	6.86	800.53	0.198	1	5.4049	6.03	601.27	-1.53E-6
5.26	0.017	6.86	1	6.86	6.86	800.53	0.198	1	4.8492	5.26	601.27	-1.53E-6

Table S4: PDMS polymer excluded volume and flat background (high Q) fit parameters for DX242 fits at different solvent neutron scattering densities..

ρ_{solvent} / 10^{-6} Å^{-2}	Scale	Background	R_g / Å	porod exponent
5.36	0.93221	0.040778	62.296	3
6.04	0.72958	0.024125	62.296	3
6.71	0.59886	0.014127	62.296	3

Table S5: Fitting parameters used for onion-shell model with constant core SLD to fit DX242 data at different solvent neutron scattering densities.

ρ_{solvent} 10^{-6} Å^{-2}	scale	ρ_{core} 10^{-6} Å^{-2}	r_{core} Å	$\rho_{\text{in,1}}$ 10^{-6} Å^{-2}	$\rho_{\text{out,1}}$ 10^{-6} Å^{-2}	T_1 Å	σ_{T_1}	A_1	$\rho_{\text{in,2}}$ 10^{-6} Å^{-2}	$\rho_{\text{out,2}}$ 10^{-6} Å^{-2}	T_2 Å	A_2
5.36	0.017	6.53	1	6.533	5.916	749.78	0.199	0	5.1322	5.36	439.04	-1.93E-6
6.04	0.017	6.53	1	6.533	5.916	749.78	0.199	0	5.5432	6.04	439.04	-1.93E-6
6.71	0.017	6.53	1	6.533	5.916	749.78	0.199	0	5.7933	6.71	439.04	-1.93E-6

Table S6: Fitting parameters used for onion-shell model with exponential core SLD to fit DX242 data at different solvent neutron scattering densities.

ρ_{solvent} 10^{-6} Å^{-2}	scale	ρ_{core} 10^{-6} Å^{-2}	r_{core} Å	$\rho_{\text{in,1}}$ 10^{-6} Å^{-2}	$\rho_{\text{out,1}}$ 10^{-6} Å^{-2}	T_1 Å	σ_{T_1}	A_1	$\rho_{\text{in,2}}$ 10^{-6} Å^{-2}	$\rho_{\text{out,2}}$ 10^{-6} Å^{-2}	T_2 Å	A_2
5.36	0.013	6.86	1	6.86	5.916	862.9	0.214	1.4564	4.6007	5.36	227.8	-9.79E-4
6.04	0.013	6.86	1	6.86	5.916	862.9	0.214	1.4564	5.2736	6.04	227.8	-9.79E-4
6.71	0.013	6.86	1	6.86	5.916	862.9	0.214	1.4564	6.0068	6.71	227.8	-9.79E-4