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Supporting Information

Measuring the size and density of nanoparticles by centrifugal sedimentation and flotation

Caterina Minelli,* Aneta Sikora, Raul Garcia-Diez, Katia Sparnacci, Christian Gollwitzer, Michael Krumrey and Alex G. Shard

Table S1. Composition and yield of the PS nanoparticle samples.

Sample	Styrene ml	SDS g	Yield %
PS600	70.0	-	96.6
PS300	70.0	0.1	98.1
PS250	70.0	0.3	97.6
PS200	50.0	0.3	96.9
PS120	30.0	0.3	98.0

Table S2. Size (mode of the light extinction weighted size distribution) and density measurements by DCS in sedimentation, flotation and combined mode.

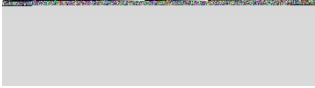| Sample	Sedimentation		Flotation		Combined	
	Size (nm)	Density* (g/cm^3)	Size (nm)	Density* (g/cm^3)	Size (nm)	Density** (g/cm^3)
PS600	552.0 ± 1.4	1.050	588.3 ± 0.6	1.050	576.4	1.047
PS300	302.7 ± 0.6	1.050	296.0 ± 1.0	1.050	298.6	1.051
PS250	236.7 ± 1.2	1.050	235.0 ± 0.0	1.050	235.9	1.050
PS200	188.7 ± 1.2	1.050	188.3 ± 0.6	1.050	188.4	1.050
PS120	115.7 ± 0.6	1.050	115.0 ± 0.0	1.050	115.2	1.050

* Assumed density, inputted in software
** Measured density

Table S3. Widths of the size distributions as measured by DCS (light extinction weighted size distribution) in sedimentation and flotation modes, SEM and SAXS (Gaussian distribution model).

Name	DCS sedimentation PDI (%)	DCS flotation PDI (%)	SEM PDI (%)	SAXS PDI (%)
PS120	7.2	11.6	9.7	10.9
PS200	5.1	9.6	6.0	7.2
PS250	3.8	7.5	3.8	4.2
PS300	3.4	4.1	3.1	n.m.
PS600	3.8	4.2	3.2	n.m.

The polydispersity index (PDI) for the DCS technique is defined as the ratio of the full width

half maximum (FWHM) over the mode of the size distribution.

The polydispersity index (PDI) for the SEM technique is defined as the ratio of the full width half maximum (FWHM) over the mean of the size distribution. The FWHM is calculated as 2.355 times the standard deviation of the distribution, in the assumption the distribution is close to Gaussian.

The polydispersity index (PDI) of SAXS measurements is defined as the ratio of the FWHM of the Gaussian diameter distribution over the mean of the diameter distribution.