Supplementary Information

Batch analysis of microplastics in water using multi-angle static light scattering and chemometric methods

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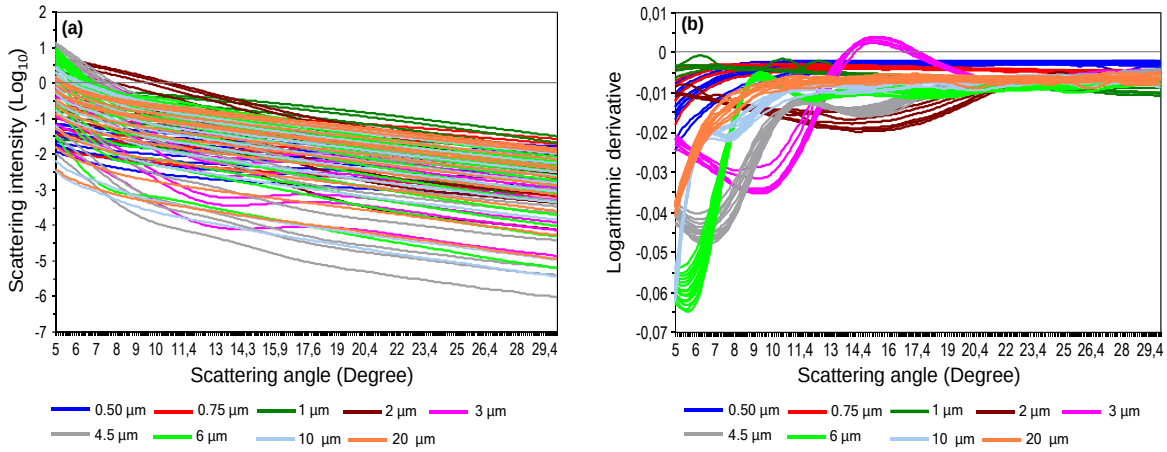

Fig. S1. Logarithmic scattering intensity patterns of different concentrations of PS MPs (a), and their corresponding 1st derivative (b).

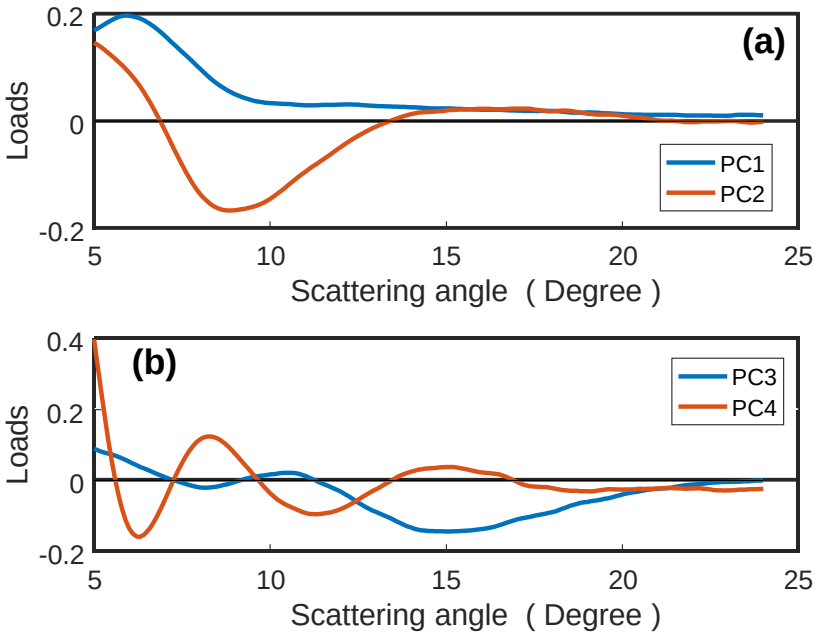

Fig. S2. Loading plots of 4 PCs that were used to discriminate between the size of the particles in monodisperse samples. (a) shows the loading of PC1 and PC2, and (b) shows the loading of PC3 and PC4.

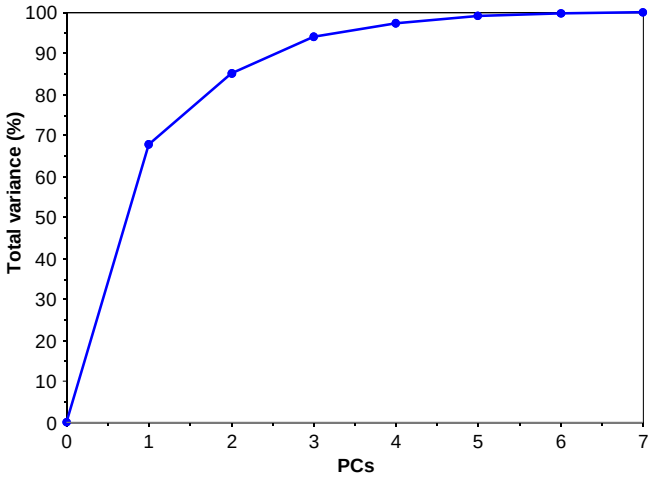

Fig. S3. The contribution of each PC in explaining the total variance of data in the calibration set.

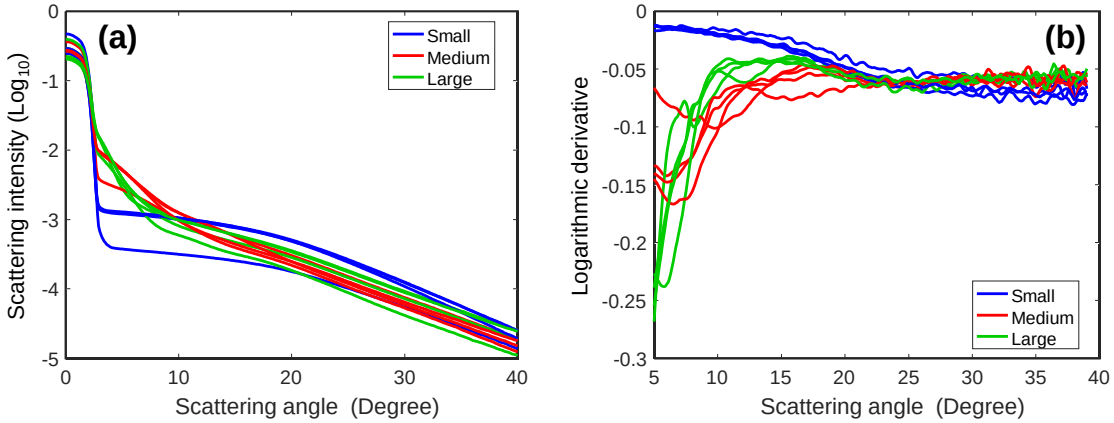

Fig. S4. Logarithmic scattering intensity patterns of polydisperse samples (a), and their corresponding 1st derivative (b).

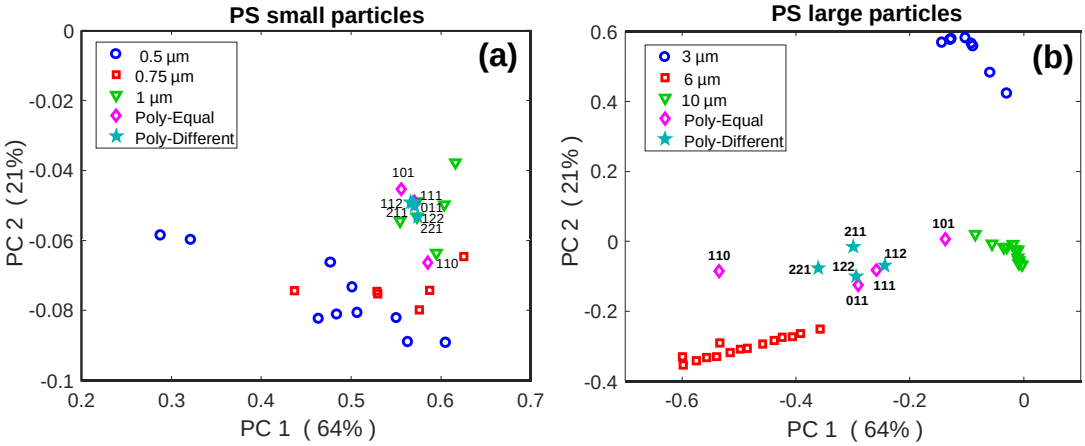

Fig. S5. Projection of the PCA maps of the small (a) and large (b) PS polydisperse samples onto the PCA maps of their constituent particles. The pink diamonds and the pale blue stars show the PCA maps of PS polydisperse samples with equal and unequal concentrations of each size, respectively.

Table S1. The classification of PS, PE and PMMA polydisperse samples using the PCA-LDA model that was trained by different numbers of PCs. S, M, and L stand for “Small”, “Medium” and “Large”, respectively.

Type of MPs	Mixture	Assigned class		
		2PCs*-LDA	3PCs-LDA	4PCs-LDA
PS	0.50 - 0.75 - 1 µm	S	S	S
	0.50 - 0.75 µm	S	S	S
	0.50 - 1 µm	S	S	S
	0.75 - 1 µm	S	S	S
	2 - 3 - 4.5 µm	M	M	M
	2 - 3 µm	M	M	M
	2 - 4.5 µm	M	M	M
	3 - 4.5 µm	M	M	M
	3 - 10 µm	L	L	L
	3 - 6 - 10 µm	L	L	L
	3 - 6 µm	L	L	L
	6 - 10 µm	L	L	L
	0.50 - 0.75 - 1 µm (221)**	S	S	S
	0.50 - 0.75 - 1 µm (211)	S	S	S
	0.50 - 0.75 - 1 µm (122)	S	S	S
	0.50 - 0.75 - 1 µm (112)	S	S	S
	2 - 3 - 4.5 µm (221)	M	M	M
	2 - 3 - 4.5 µm (211)	M	M	M
	2 - 3 - 4.5 µm (122)	M	M	M
	2 - 3 - 4.5 µm (112)	M	M	M
	3 - 6 - 10 µm (221)	L	L	L
	3 - 6 - 10 µm (211)	L	L	L
	3 - 6 - 10 µm (122)	L	L	L
	3 - 6 - 10 µm (112)	L	L	L
PE	1 – 4 µm	M	M	M
	3 – 16 µm	L	L	L
	20 – 27 µm	L	L	L
PMMA	3 -10 µm	L	L	L

* Is the number of PCs that is used to train the LDA classifier.

** Demonstrates the concentration ratio of each corresponding size in a polydisperse sample.