

Table S 1: Global PERMANOVA on the factor of sampling date, chemical composition and material size

	Df	Sum of square	Mean of square	F value	R ²	Pr(>F)	p.betadisper
Size	3	1.2434	0.41447	1.842	0.04783	0.011	0.05165
chemical composition	2	3.5863	1.79314	8.8822	0.13796	0.001	0.4128
sampling date	3	10.149	3.3828	23.483	0.3904	0.001	0.0001397
Total	113	25.995			1.0000		

Df: degree of freedom. Note that: except for seawater, all the rest of samples were used for the analyses of the global PERMANOVA. The size fraction include the 100 μm , 3mm and 18 mm, where the size fraction of the 100 μm had two material forms of the irregular and regular shapes. Chemical composition included the PE, PLA and glass. Sampling date included the Day 3 (D3), D10, D30 and D66.