SUPPLEMENTARY INFORMATION

Microplastic-sorbed persistent organic pollutants in coastal Mediterranean Sea areas of Tunisia

Badreddine Barhoumi,*[ab] Marc Metian,[c] Hatem Zaghden,[b] Abdelkader Derouiche,[a] Walid Ben Ameur,[ad] Sihem Ben Hassine,[a] François Oberhaensli,[c] Janeth Mora,[c] Nikolaos Mourgkogiannis,[e] Abdulla M. Al-Rawabdeh,[f] Lassaad Chouba,[g] Carlos M. Alonso-Hernández,[c] Hrissi K. Karapanagioti,[e] Mohamed Ridha Driss,[a] Ahmed Mliki[b] and Soufiane Touil[a]

[a]*Laboratory of Hetero-Organic Compounds and Nanostructured Materials (LR18ES11), Department of Chemistry, Faculty of Sciences of Bizerte, University of Carthage, 7021 Zarzouna, Tunisia*

[b]*Laboratory of Plant Molecular Physiology, Centre of Biotechnology of Borj-Cédria, 2050 Hammam-Lif, Tunisia*

[c]*International Atomic Energy Agency, Marine Environment Laboratories, Radioecology Laboratory, 4a, Quai Antoine 1er, MC-98000 Monaco, Principality of Monaco*

[d]*Ecologie de La Faune Terrestre UR17ES44, Département des Sciences de La Vie, Faculté Des Sciences de Gabès, Université de Gabès, Tunisia*

[e]*Department of Chemistry, University of Patras, 26504 Patras, Greece*

[f]*Department of Earth and Environmental Science, Yarmouk University, Irbid 21163, Jordan*

[g]*Laboratory of Marine Environment, National Institute of Marine Science and Technology (INSTM), Goulette, Tunisia*

*Corresponding author

E-mail: barhoumibadredine@yahoo.fr

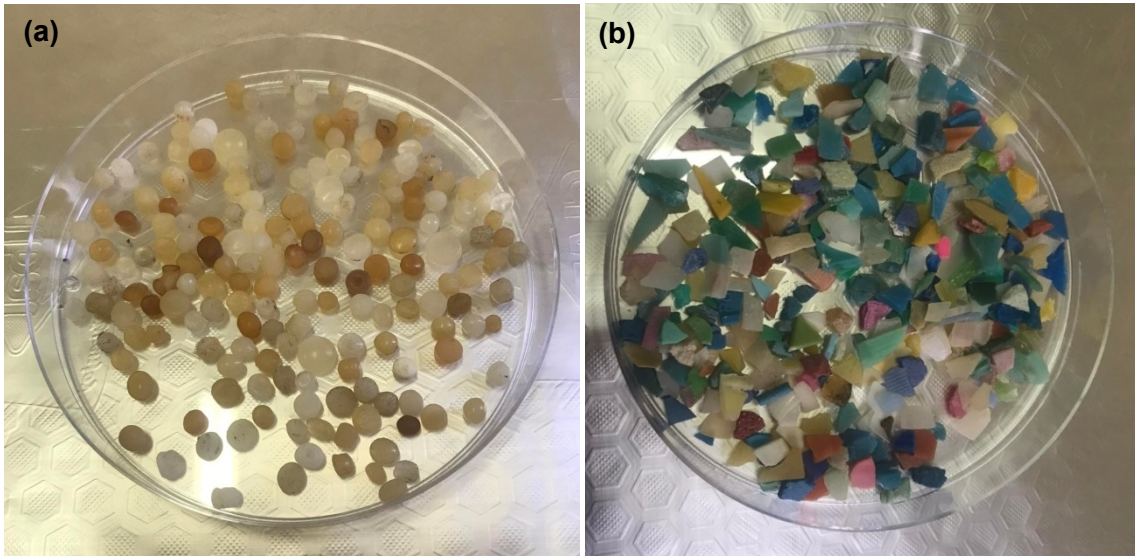

Fig. S1. Photographs of types of MPs (1-5 mm) included in the present study. (a) pellets; (b) fragments.

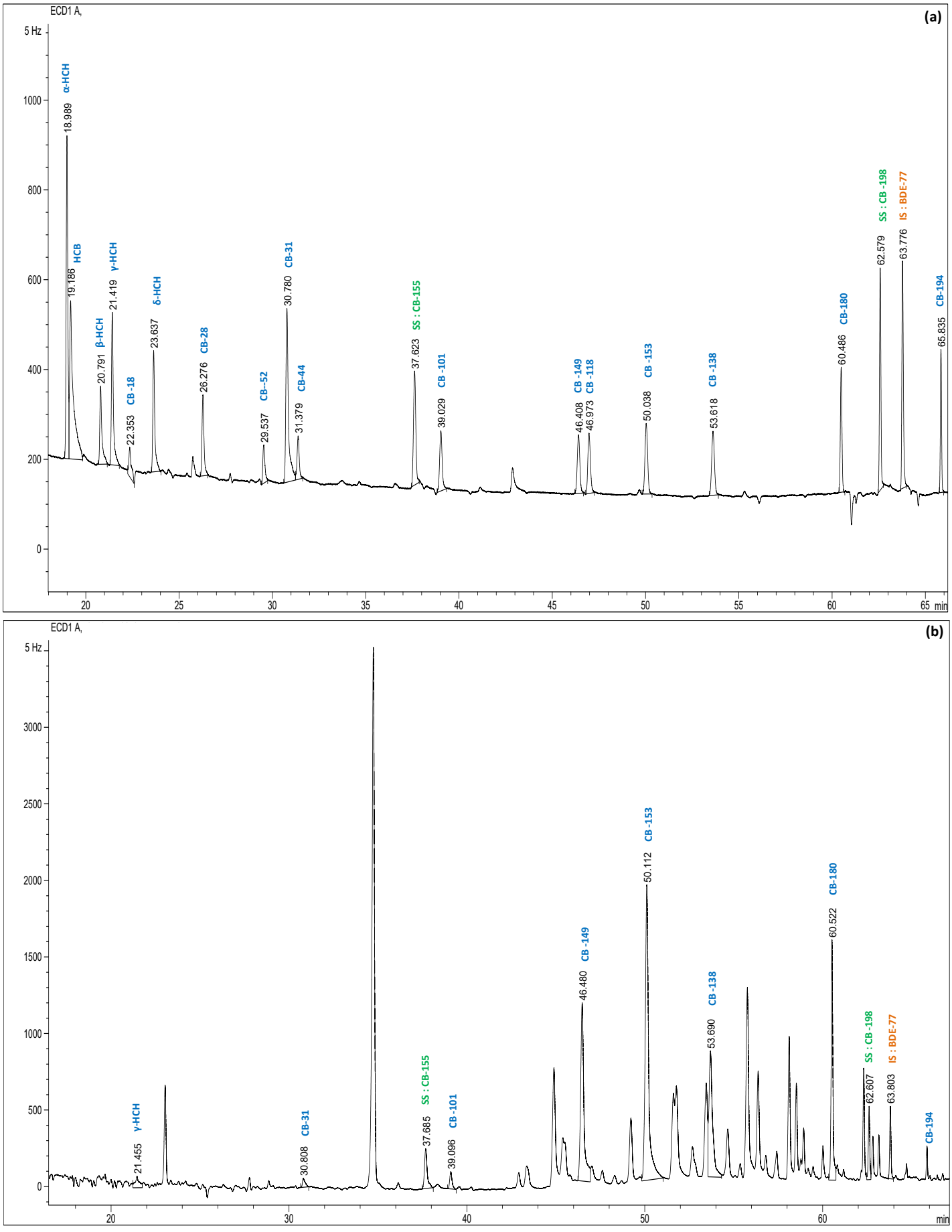

Fig. S2. GC-ECD chromatograms for (a) a POPs calibration standard (20 ng mL^{-1}), and (b) a MPs sample (pellets). SS: surrogate standard; IS: injection standard.

Table S1. Method detection limit (MDL), method quantification limit (MQL), and matrix-spike recovery (MSR, % mean ± SD) of individual PCBs and OCPs in MPs.

	MDL (ng g^{-1})		MQL (ng g^{-1})		MSR (*n = 3)*	
	Pellets	Fragments	Pellets	Fragments	Pellets	Fragments
PCBs						
CB-18	1.74	1.05	4.56	3.35	82 ± 3	75 ± 10
CB-28	0.56	0.26	0.78	0.36	108 ± 6	101 ± 4
CB-31	0.31	0.19	0.69	0.41	91 ± 9	84 ± 7
CB-44	0.42	0.26	1.55	0.94	86 ± 3	87 ± 18
CB-52	0.62	0.38	1.11	0.68	87 ± 14	81 ± 21
CB-101	0.94	0.46	1.73	0.84	93 ± 11	102 ± 15
CB-118	0.51	0.32	1.07	0.67	110 ± 7	112 ± 10
CB-138	0.69	0.36	1.07	0.56	111 ± 19	98 ± 19
CB-149	0.38	0.24	0.58	0.36	104 ± 16	113 ± 17
CB-153	0.30	0.18	0.60	0.37	94 ± 17	96 ± 4
CB-180	0.40	0.23	1.08	0.62	110 ± 22	104 ± 16
CB-194	0.48	0.28	0.63	0.37	89 ± 15	87 ± 10
OCPs						
HCB	0.14	0.09	0.49	0.30	99 ± 4	88 ± 7
α-HCH	0.23	0.13	0.64	0.37	82 ± 12	74 ± 1
β-HCH	0.54	0.32	1.68	1.01	79 ± 12	81 ± 11
γ-HCH	0.32	0.20	0.41	0.25	84 ± 3	88 ± 14
δ-HCH	0.23	0.13	0.75	0.25	94 ± 18	91 ± 5

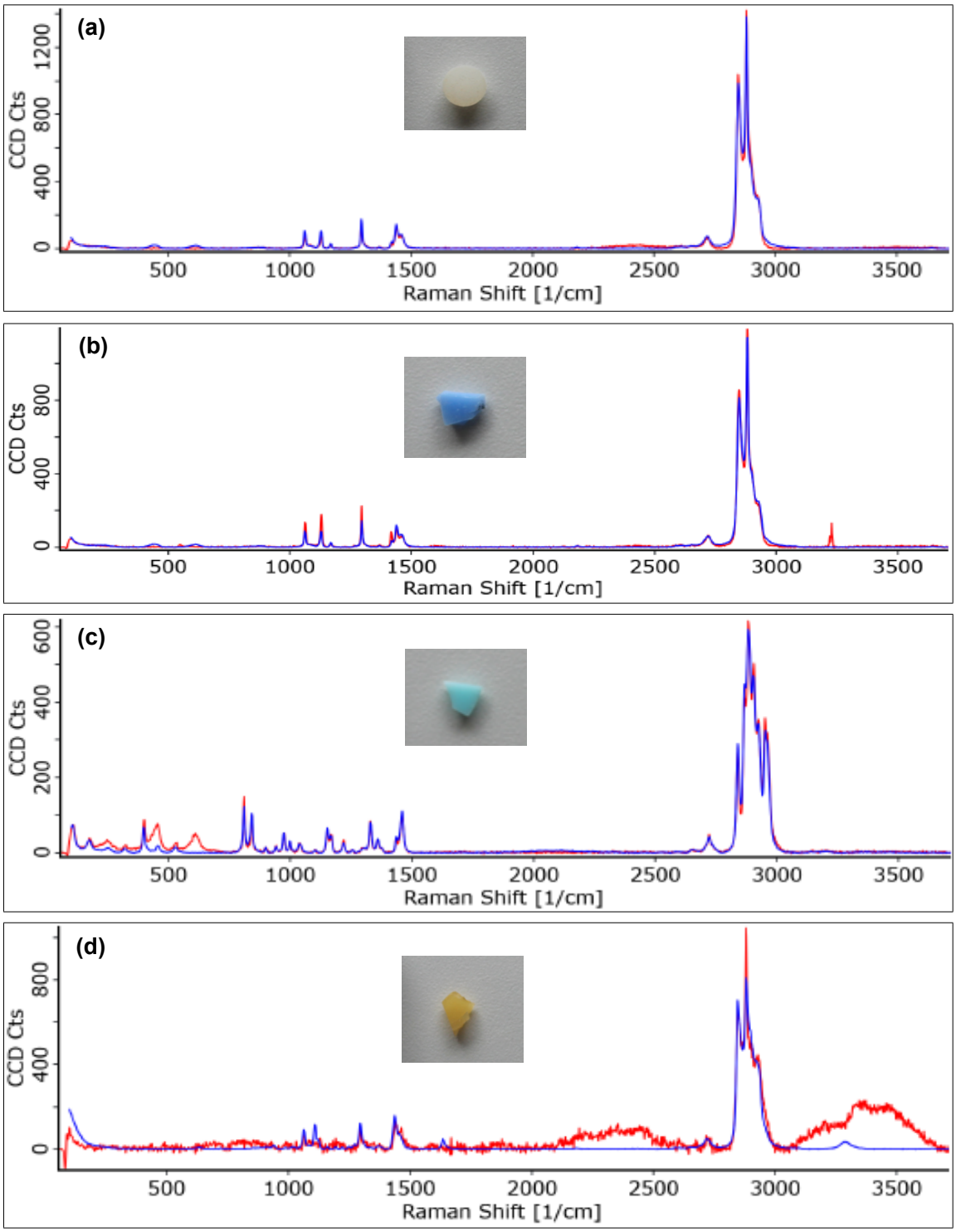

Fig. S3. Examples of Raman spectra of some collected MPs (pellets and fragments). (a,b) polyethylene, (c) polypropylene and (d) polyamide nylon. Red and blue spectra correspond to the MPs sample and the reference polymer, respectively.

Table S2. Pearson correlation coefficients (r) among the concentrations of individual POPs in pellets and fragments collected from Tunisian beaches (*n* = *12*).

	γ-HCH	CB-28	CB-31	CB-52	CB-101	CB-118	CB-138	CB-149	CB-153	CB-180	CB-194
	Pellets										
γ-HCH	1										
CB-28	-0.425	1									
CB-31	**0.913****	-0.230	1								
CB-52	n.d.	n.d.	n.d.	1							
CB-101	0.549	-0.229	**0.619***	n.d.	1						
CB-118	0.368	-0.349	0.425	n.d.	**0.728****	1					
CB-138	0.179	-0.274	0.161	n.d.	**0.682***	**0.764****	1				
CB-149	-0.041	-0.206	0.030	n.d.	**0.627***	**0.859*****	**0.734****	1			
CB-153	-0.022	-0.226	0.009	n.d.	**0.652***	**0.846*****	**0.868*****	**0.969******	1		
CB-180	0.212	-0.292	0.234	n.d.	**0.675***	**0.817*****	**0.985******	**0.747****	**0.867*****	1	
CB-194	0.214	-0.117	0.221	n.d.	**0.615***	**0.693****	**0.962******	**0.599***	**0.746****	**0.958******	1
	Fragments										
γ-HCH	1										
CB-28	-0.306	1									
CB-31	**0.655***	-0.436	1								
CB-52	-0.322	0.185	**-0.721****	1							
CB-101	0.403	0.152	0.048	0.112	1						
CB-118	0.290	-0.115	0.345	-0.532	0.358	1					
CB-138	0.276	-0.016	0.349	-0.309	**0.734****	0.544	1				
CB-149	0.378	0.089	0.447	-0.362	**0.673***	0.566	**0.937******	1			
CB-153	0.179	-0.083	0.337	-0.433	**0.675***	0.537	**0.907******	**0.801****	1		
CB-180	0.247	-0.157	0.375	-0.375	**0.662***	0.574	**0.959******	**0.957******	**0.883*****	1	
CB-194	-0.058	**0.757****	-0.278	0.176	0.379	0.107	0.261	0.371	0.209	0.284	1

Numbers in bold indicate significant correlations. Asterisks indicate the signification of the correlations (2-tailed): **p < 0.05*, ***p < 0.01*, ****p < 0.001*, *****p < 0.0001*. n.d.: not detected (<LOD).