

Supplementary Materials

Mass Spectrometry Insight for Assessing the Destiny of Plastics in Seawater

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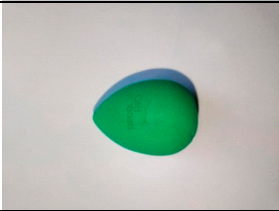

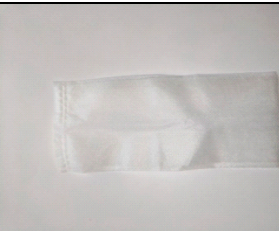
Table S1. List of analyzed plastic samples






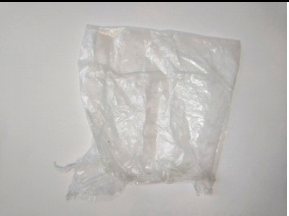

Table S2. Carbon and hydrogen isotope composition of IAEA-CH-7 at varying sample mass

Figure S1. Time-dependent variations of $\delta^{13}\text{D}$

Table S3. Removal of metals from plastic material

Table S1. List of analyzed plastic samples.

Code	Sample	Dimensions (mm)	Photo	Plastic type ^a
B1	Biodegradable knife	160 × 14 × 1		Starch PP
B2	Bio make-up sponge	55 × 37		Starch
B3	Biodegradable waste bags	125 × 60		LD PE
B4	Biodegradable seedling bags	145 × 60		S-PP

N1	Part of the food package	56 × 31		PP
N2	Part of the food package	60 × 22		PP
N3	Part of the food package	70 × 91		PP
N4	Pad	55 × 55		PVC
N5	Part of the food package	64 × 78		PE
N6	Part of the food package	116 × 76		PE
N7	A piece of Teflon mat	8 × 14		PTFE

N8	A piece of disposable cup	62×22		PP
N9	Medicine blister	96×39		PP
N10	Part of the food package	53×60		PE
N11	Packaging material	$112 \times 80 \times 0.3$		PP
P1	Packaging from capsules for the elemental analyzer	80×30		PE
P2	Test tube	119×16		PP
P3	Test Eppendorf tube	17×55		Virgin PP

P4	Disposable fork	162 × 23		PS
P5	Disposable spoon	164 × 37		PS
P6	Disposable cup	95 × 65		PP
P7	Packaging material	232 × 147		LD PE
B5	Biodegradable ball airsoft	5 × 5		PLA
P8	Ball airsoft	5 × 5		ABS
B6	Bio food container	190 × 145 × 70		Starch PP
P9	Teflon mat	400 × 300		PTFE

^a PE = polyethylene; PP = polypropylene; LD PE = low density PE; S-PP = spunbond PP; PVC = polyvinylchloride; PTFE = polytetrafluoroethylene; virgin PP = PP free of bio-

cides, plasticizers and latex; PS = polystyrene; PLA = polylactide; ABS = acrylonitrile butadiene styrene; starch PP = modified corn starch agglomerated with PP, monoglyceride, ethylene vinyl acetate; starch = tapioca starch, corn starch, potato starch.

Table S2. Carbon and hydrogen isotope composition of IAEA-CH-7 at varying sample mass.

Mass (mg)	$\delta^{13}\text{C}$	δD
0.41	-31.97	-100.24
0.98	-31.72	-98.18
1.37	-31.81	-98.23
1.86	-31.77	-99.31
2.34	-31.55	-100.16
2.66	-31.46	-98.84
3.05	-31.93	-100.34
3.49	-31.74	-98.89
4.12	-31.99	-97.88
4.68	-31.43	-99.16
5.15	-32.00	-100.12

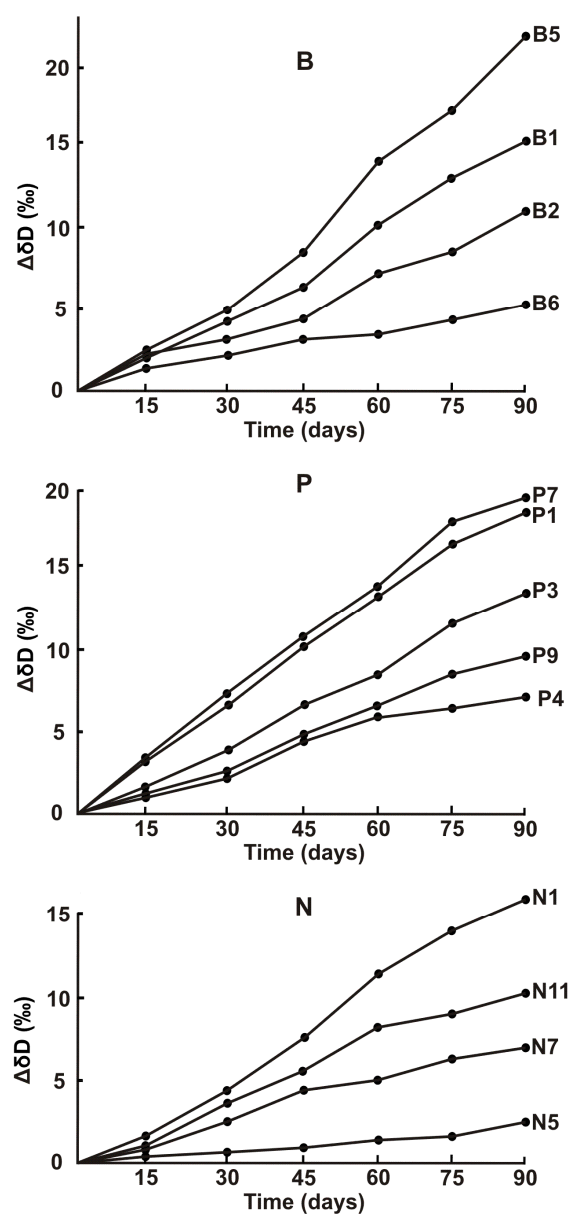


Figure S1. Time-dependent variations of $\delta^{13}\text{D}$. Indices B, P and N correspond to the respective polymer classes.

Table S3. Removal of metals from plastic material.

Metal	Sample	Concentration in Plastic Leachates ($\mu\text{g}\cdot\text{g}^{-1}$)			
		5%	10%	20%	30%
Cd	N6	0.007 ± 0.001	0.009 ± 0.001	0.021 ± 0.005	0.020 ± 0.001
	N7	0.03 ± 0.003	0.04 ± 0.003	0.010 ± 0.002	0.11 ± 0.005
Co	N6	0.20 ± 0.02	0.50 ± 0.01	0.60 ± 0.02	1.2 ± 0.07
	N7	0.50 ± 0.05	0.70 ± 0.04	0.90 ± 0.04	1.2 ± 0.1
Cu	N6	3.9 ± 0.3	4.0 ± 0.2	4.9 ± 0.3	5.6 ± 0.4
	N7	4.1 ± 0.3	5.5 ± 0.3	6.6 ± 0.5	7.8 ± 0.4
Cr	N6	4.3 ± 0.3	4.4 ± 0.4	4.8 ± 0.3	5.0 ± 0.4
	N7	4.3 ± 0.4	4.5 ± 0.5	4.7 ± 0.2	5.2 ± 0.3
Fe	N6	85 ± 7	87 ± 7	92 ± 8	95 ± 7
	N7	84 ± 8	89 ± 6	95 ± 6	99 ± 8
Mn	N6	5.4 ± 0.6	5.3 ± 0.4	5.8 ± 0.5	6.3 ± 0.6
	N7	46 ± 4	51 ± 5	55 ± 9	57 ± 6
Mo	N6	0.11 ± 0.01	0.15 ± 0.01	0.18 ± 0.01	0.22 ± 0.02
	N7	1.2 ± 0.1	1.5 ± 0.1	1.6 ± 0.2	1.7 ± 0.1
Ni	N6	5.4 ± 0.4	5.8 ± 0.3	6.0 ± 0.5	6.0 ± 0.5
	N7	4.0 ± 0.2	4.6 ± 0.4	4.9 ± 0.4	5.1 ± 0.5
Pb	N6	0.43 ± 0.03	0.46 ± 0.04	0.5 ± 0.05	0.51 ± 0.04
	N7	5.1 ± 0.4	5.4 ± 0.6	5.6 ± 0.4	5.8 ± 0.5
Ti	N6	0.49 ± 0.03	0.54 ± 0.02	0.57 ± 0.03	0.62 ± 0.05
	N7	2.5 ± 0.2	3.0 ± 0.3	3.1 ± 0.3	3.3 ± 0.2
V	N6	0.16 ± 0.01	0.18 ± 0.01	0.2 ± 0.01	0.22 ± 0.02
	N7	0.45 ± 0.05	0.47 ± 0.03	0.5 ± 0.04	0.53 ± 0.04
Zn	N6	14.3 ± 1.2	14.5 ± 1.2	14.8 ± 1.3	15.0 ± 1.0
	N7	15.1 ± 1.0	15.5 ± 1.2	15.8 ± 1.1	16.1 ± 1.3