Supplementary Information: Quantitation of Micro and Nanoplastics in Human Blood by Pyrolysis-Gas Chromatography–Mass Spectrometry

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- Fig S1. The custom-made sequential filtration assembly to allow for sequential filtration through two glass microfiber filter. The device consist of two fritted bases to accommodate 25 mm filters and constrictors to decrease the diameter to concentrate the filtered sample on an 8 mm surface area.
- Fig S2. The effect of carrier gas flow on the area of 5-hexene-1,3,5-triyltribenzene (styrene trimer) (*m/z* 91). Higher carrier gas flow rates result in improved peak shapes and signal intensity.
- Fig S3. The normalised area intensity plot for the compounds selected for the quantitation of PVC, PMMA, PP, PE, PET, and PS produced at different pyrolysis times (12, 30, and 60 seconds) and temperatures (500, 600, and 700 °C).

- Table S1. Linearity, calibration uncertainties, and the concentrations for the working range
- Table S2. Summary of the MNPs concentrations (ng/mL) (sum of the 0.7 and 0.3 µm fractions) in whole blood of 68 donors. Red values are below LOD, green values are between LOD and LOQ, and values in bold are higher than LOQ.

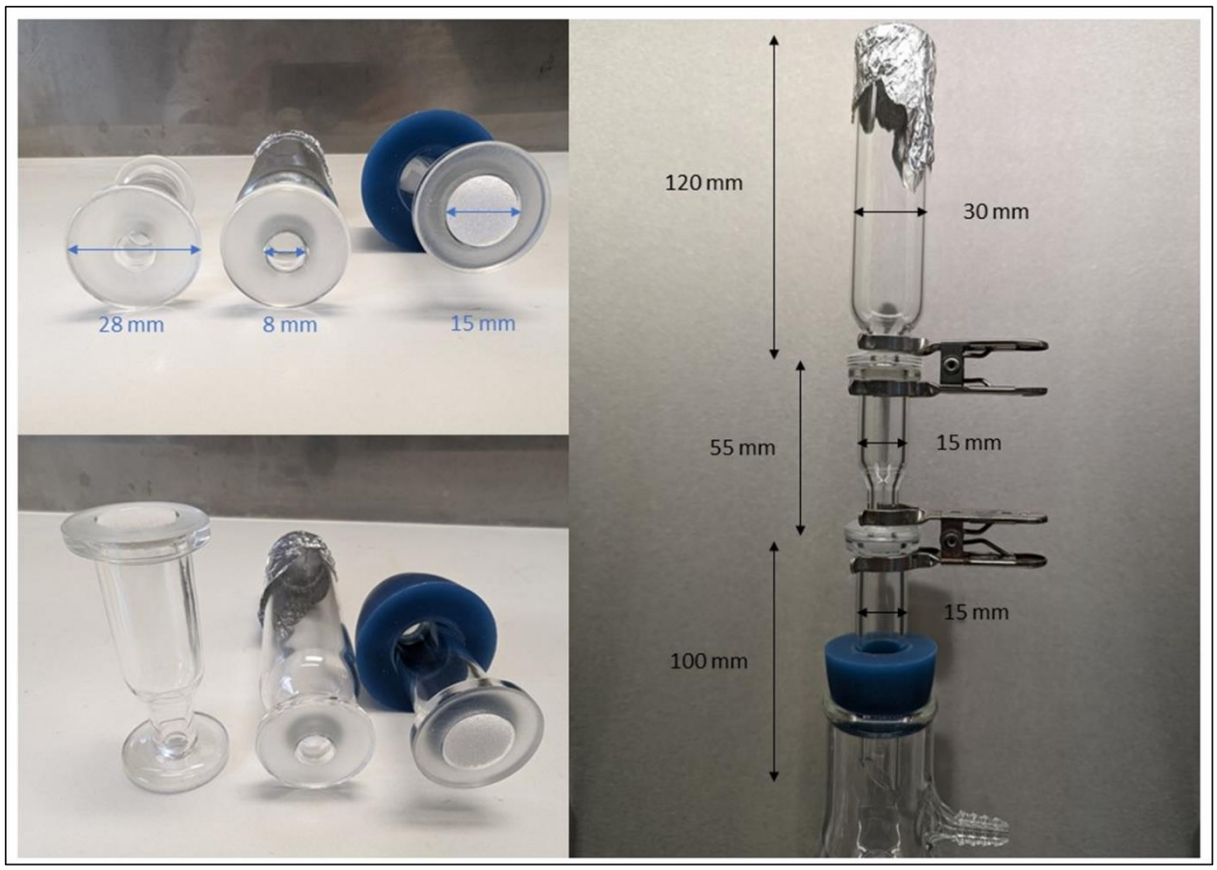

Fig S1. The custom-made sequential filtration assembly to allow for sequential filtration through two glass microfiber filter. The device consist of two fritted bases to accommodate 25 mm filters and constrictors to decrease the diameter to concentrate the filtered sample on an 8 mm surface area.

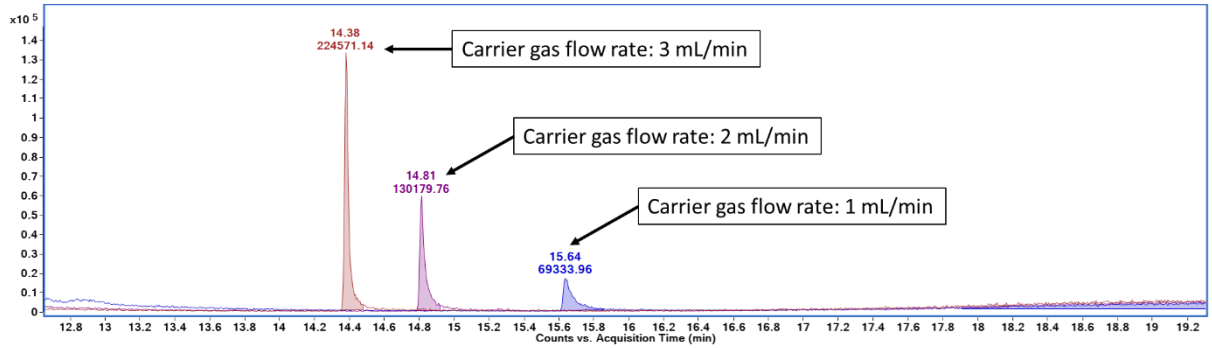

Fig S2. The effect of carrier gas flow on the area of 5-hexene-1,3,5-triyltribenzene (styrene trimer) (*m/z* 91). Higher carrier gas flow rates result in improved peak shapes and signal intensity.

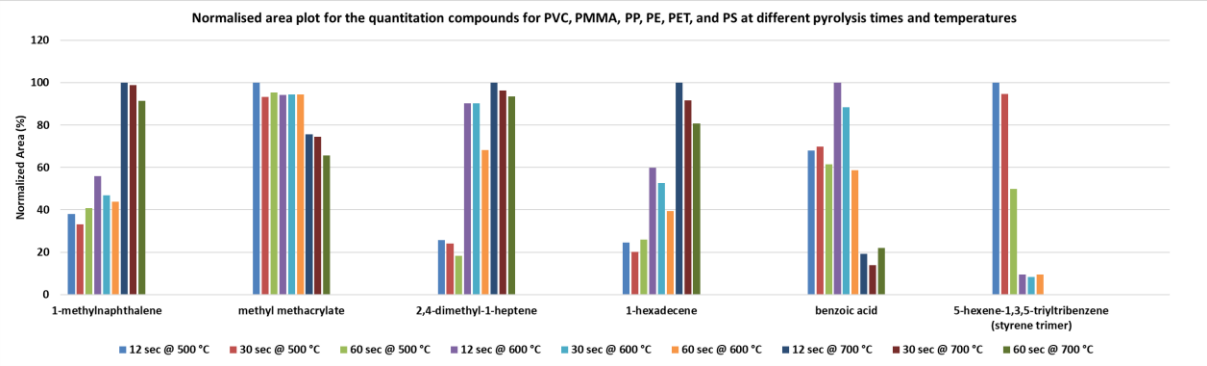

Fig S3. The normalised area intensity plot for the compounds selected for the quantitation of poly(vinyl chloride) (1-methylnaphthalene), poly(methyl methacrylate) (methyl methacrylate), polypropylene (2,4-dimethyl-1-heptene), polyethylene (1-hexadecene), polyethylene terephthalate (benzoic acid), and polystyrene (5-hexene-1,3,5-triyltribenzene) produced at different pyrolysis times (12, 30, and 60 seconds) and temperatures (500, 600, and 700 °C).

Table S1. Linearity, calibration uncertainties, and the concentrations for the working range

Polymer	Quantitation compound	Coefficient of determination (r^2)	Random calibration uncertainty ($s_{y/x}$)	Uncertainty in the slope (s_b)	Uncertainty in the intercept (s_a)	Working range (ng)
Poly(methyl methacrylate)	methyl methacrylate	0.9891	0.063	0.0000336	0.0312	27 - 2133
Polypropylene	2,4-dimethyl-1-heptene	0.9996	0.0008	0.0000002	0.0004	54 - 4354
Polystyrene	5-hexene-1,3,5-triyltribenzene	0.9989	0.0136	0.0000054	0.0067	36 - 2857
Polyethylene	1-hexadecene	0.9946	0.0019	0.0000003	0.0010	88 - 7014
Polyethylene terephthalate	benzoic acid	0.9924	0.1319	0.0000138	0.0651	135 - 10819
Poly(vinyl chloride)	1-methylnaphthalene	0.9993	0.0009	0.0000002	0.0005	61 - 4908

Table S2. Summary of the MNPs concentrations (ng/mL) in whole blood of 68 donors. Red values are below LOD, green values are between LOD and LOQ, and values in bold are higher than LOQ.

	PMMA (methyl methacrylate) (ng/mL)	PP (2,4-dimethyl-1-heptene) (ng/mL)	PS (5-hexene-1,3,5-triyltribenzene) (ng/mL)	PE (1-hexadecene) (ng/mL)	PET (benzoic acid) (ng/mL)	PVC (1-methyl-naphthalene) (ng/mL)
Sample 1	<31	<244	<36	562*	<48	<250
Sample 2	<31	<244	<36	610*	**171**	<250
Sample 3	<31	<244	<36	315*	108*	285*
Sample 4	<31	<244	<36	366*	<48	<250
Sample 5	<31	<244	<36	298*	<48	285*
Sample 6	<31	<244	<36	379*	<48	<250
Sample 7	<31	<244	<36	477*	56*	<250
Sample 8	<31	<244	<36	**1867**	<48	276*
Sample 9	<31	<244	<36	249*	<48	<250
Sample 10	<31	<244	<36	572*	62*	<250
Sample 11	<31	<244	<36	372*	<48	<250
Sample 12	<31	<244	<36	270*	<48	<250
Sample 13	<31	<244	<36	418*	57*	<250
Sample 14	<31	<244	<36	369*	<48	<250
Sample 15	<31	<244	<36	**753**	<48	384*
Sample 16	<31	<244	<36	565*	**251**	<250
Sample 17	<31	<244	<36	292*	<48	<250
Sample 18	<31	<244	<36	**1050**	61*	488*
Sample 19	<31	<244	<36	605*	49*	400*
Sample 20	<31	<244	<36	**671**	<48	<250
Sample 21	<31	<244	<36	471*	<48	<250
Sample 22	<31	<244	<36	**1383**	<48	379*
Sample 23	<31	<244	<36	600*	<48	<250
Sample 24	<31	<244	<36	382*	<48	<250
Sample 25	<31	<244	<36	572*	<48	<250
Sample 26	<31	<244	<36	480*	<48	<250
Sample 27	52*	<244	<36	290*	<48	<250
Sample 28	<31	<244	<36	**1711**	87*	486*
Sample 29	<31	<244	<36	**743**	72*	389*
Sample 30	<31	<244	<36	**1669**	<48	750*
Sample 31	<31	<244	<36	**706**	<48	281*
Sample 32	<31	<244	<36	362*	**272**	<250
Sample 33	<31	<244	<36	**815**	67*	256*
Sample 34	<31	<244	<36	418*	<48	<250
Sample 35	<31	<244	<36	558*	<48	265*
Sample 36	<31	<244	<36	438*	<48	<250
Sample 37	<31	<244	<36	363*	<48	<250
Sample 38	<31	<244	<36	479*	75*	<250
Sample 39	<31	<244	<36	662*	<48	<250
Sample 40	<31	<244	<36	274*	<48	<250

Sample 41	<31	<244	<36	296*	<48	<250
Sample 42	<31	<244	<36	516*	<48	<250
Sample 43	<31	<244	<36	363*	<48	434*
Sample 44	<31	<244	<36	464*	<48	<250
Sample 45	<31	<244	<36	588*	111*	<250
Sample 46	<31	<244	<36	496*	<48	365*
Sample 47	<31	<244	<36	<202	<48	<250
Sample 48	<31	<244	<36	419*	<48	<250
Sample 49	<31	<244	<36	**1656**	<48	**829**
Sample 50	<31	<244	<36	475*	<48	308*
Sample 51	<31	<244	<36	**935**	<48	780*
Sample 52	<31	<244	<36	665*	<48	<250
Sample 53	<31	<244	<36	<202	<48	<250
Sample 54	<31	<244	<36	325*	<48	<250
Sample 55	<31	<244	<36	<202	<48	303*
Sample 56	<31	<244	<36	347*	55*	<250
Sample 57	<31	<244	<36	352*	69*	<250
Sample 58	<31	<244	<36	<202	<48	<250
Sample 59	<31	<244	<36	400*	<48	<250
Sample 60	<31	<244	<36	399*	<48	744*
Sample 61	<31	<244	<36	<202	<48	414*
Sample 62	<31	<244	<36	463*	<48	**880**
Sample 63	<31	<244	<36	325*	<48	341*
Sample 64	<31	<244	<36	587*	<48	<250
Sample 65	<31	<244	<36	210*	53*	<250
Sample 66	<31	<244	<36	<202	<48	<250
Sample 67	<31	<244	<36	**1834**	<48	334*
Sample 68	<31	<244	<36	235*	<48	<250