

Figure S1. Principle of single spot particle analysis in the PerkinElmer FT-IR Microscopy System. **A:** Operator view of the 500 μm × 500 μm microscope image with marked particles. Each red and white dashed square (20 μm × 20 μm) equals one marked particle. All unmarked particles did not fit the criteria or were out of bound. **B:** same view as 'A' without the markings.

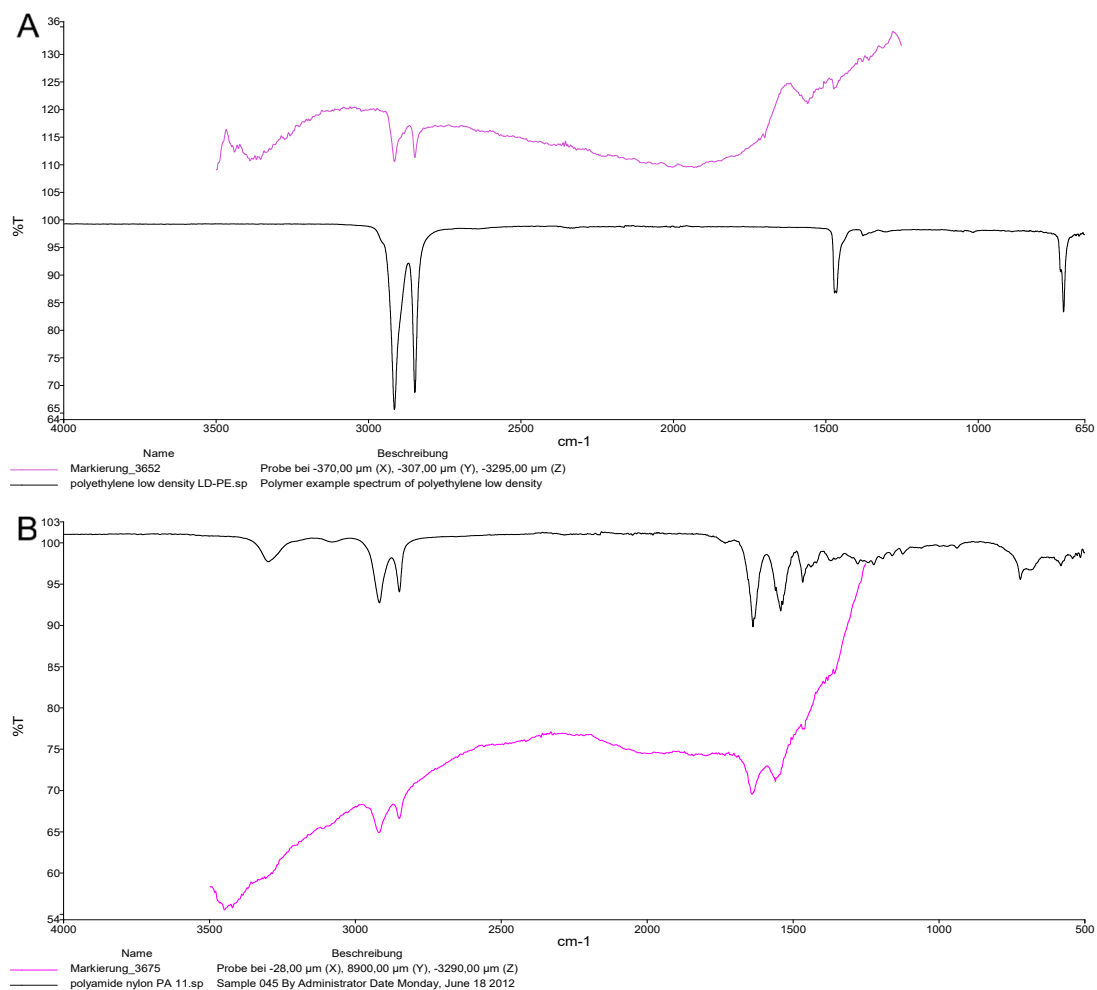


Figure S2. **A:** Example spectra of Polyethylene (PE) with a correlation coefficient of 0.79. **B:** Example spectra of Polyamide (PA) with a correlation coefficient of 0.70. A Correlation of 70 % was chosen to be the smallest correlation counted as positive.

Polymer composition data

Table S1. Polymer composition calculated by summation of particle numbers of samples of each sampling method.

Polymer	Depth sample 0 m		Depth sample 3 m		Depth sample 6 m		Cartridge filters		Net filters (65 µm)		Net filters (105 µm)		%
	p·L ⁻¹	%	p·L ⁻¹	%	p·L ⁻¹	%	p·L ⁻¹	%	p·L ⁻¹	%	p·L ⁻¹	%	
Polyethylene terephthalate (PET)	20122.8	63%	18691.0	30%	31953.8	55%	1378.0	64%	28.4	31%	17.0	37%	46%
Polytetrafluorethylene (PTFE)	7488.8	23%	11253.7	18%	18739.4	32%	574.6	27%	10.3	11%	2.7	6%	25%
Polyethylene (PE)	2043.1	6%	14058.1	22%	513.3	<1%		0%	7.2	8%	4.6	10%	11%
Polyamid (PA)	911.3	3%	6830.9	11%	623.8	1%	24.1	1%	6.5	7%	5.4	12%	5%
Ethylenevinyl acetate (EVA)	322.3	1%	6454.9	10%	91.0	<1%		0%	9.3	10%	0.2	<1%	4%
Polycarbonate (PC)	595.4	2%		0%	4304.5	7%	20.6	<1%		0%		0%	3%
Ethylene Vinylalcohol Copolymer (EVOH)	44.3	<1%	3842.0	6%	616.9	1%	50.7	2%	27.0	29%	14.3	31%	3%
Polysulfone (PSU)		0%	1585.0	3%	1287.0	2%	2.6	<1%		0%	0.4	<1%	2%
Polypropylene (PP)	335.8	1%		0%		0%	23.7	1%	0.4	<1%		0%	0%
Polybutylene terephthalate (PBT)		0%	166.7	<1%		0%		0%	3.9	4%	1.5	3%	0%
Polypropylene terephthalate (PPT)	83.0	<1%		0%		0%	37.0	2%	0.1	<1%		0%	0%
Polyether sulfone (PES)	83.0	<1%		0%		0%		0%		0%		0%	0%
Polyvinyl chloride (PVC)		0%		0%		0%	24.6	1%		0%	0.2	<1%	0%
Polystyrene (PS)		0%		0%		0%	6.1	<1%		0%		0%	0%
Polyurethane (PU)		0%		0%		0%		0%	2.1	2%		0%	0%

Particle amount data

Table S2. Particle numbers of each sample of the sampling methods.

Sampling method	Net filters 105µm /p·L ⁻¹	Net filters 65µm /p·L ⁻¹	Cartridge filters /p·L ⁻¹	Depth samples 0m / p·L ⁻¹	All depth samples p·L ⁻¹
Particle number of samples	31.8	78.5	2817.8	44561.5	44561.5
	79.1	151.8	2989.0	22012.1	22012.1
	27.7	55.4	2589.1	28544.8	28544.8
			2313.3		41253.4
					76467.0
					70926.2
					3437.3
					8850.8
Average	46.2	95.2	2677.3	31706.1	37006.6
Variance	816.2	2532.4	85717.7	134614486.2	714122831.7
Standard deviation	28.6	50.3	292.8	11602.3	26723.1
Coefficient of variation	62%	53%	11%	37%	72%