Analysis of small microparticles from snow in Park City, Utah (USA):

How much of it is plastic?

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Figure S1. Example of images showing the combination of brightfield and epifluorescence analyses to identify categories of microparticles based on Table 2. We primarily focused on sMP-P and MF-P. Images from each column come all from the same filter on Line 1 of the column. Line 1: Image in brightfield. Line 2: Same image in Epifluorescence (ex: 390nm, Em: >420nm). The diameter of the filter is 2.5cm for scale reference. Lines 3-5 are 12.5x closeup areas of the filter, making the width of the image 2,000micron for Lines 3-5. Line 3: Closeup in bright field. Line 4: Same closeup in epifluorescence. Line 5: Images from Line 3 and Line 4 overlapped with one at 40% transparency. This helps identify that many epifluorescence microparticles are not visible in bright field.
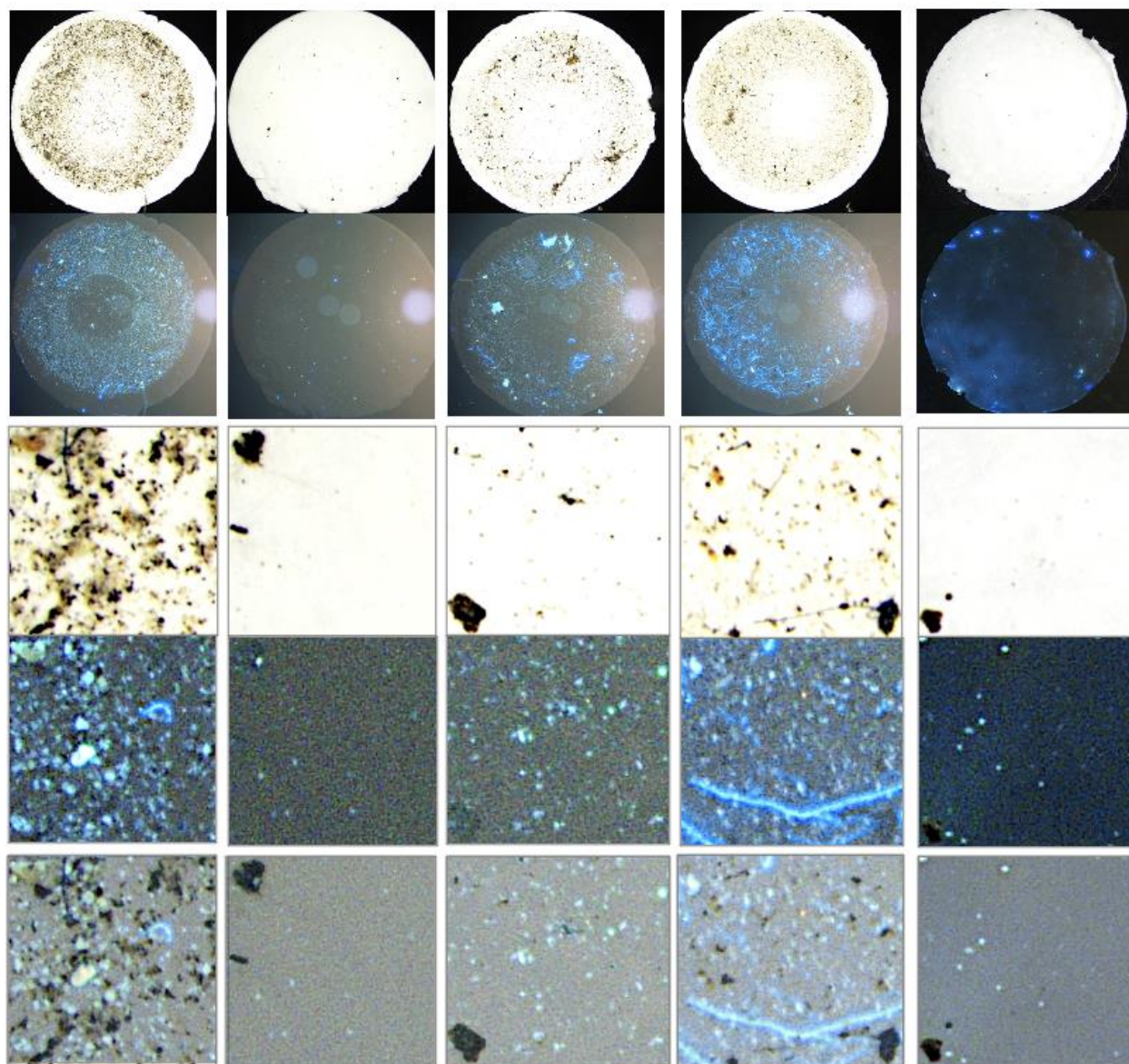
Figure S2. Example for four polymers of infrared spectra collected from within individual microparticle showing the range of infrared spectral signatures associated with weathered material (gray lines) relative to the closest standard material (bold line, collected using the same instrument and protocol).

All spectra analyzed from the 120 microparticles had a match to our standard database of polymer infrared spectral fingerprints.

Synthetic reference materials were standards from the PolymerKit 1.0; Hawaii Pacific University, while standards of cotton (natural polymer) and lyocell (manmade, semisynthetic cellulose-based material) were provided by Lenzing.
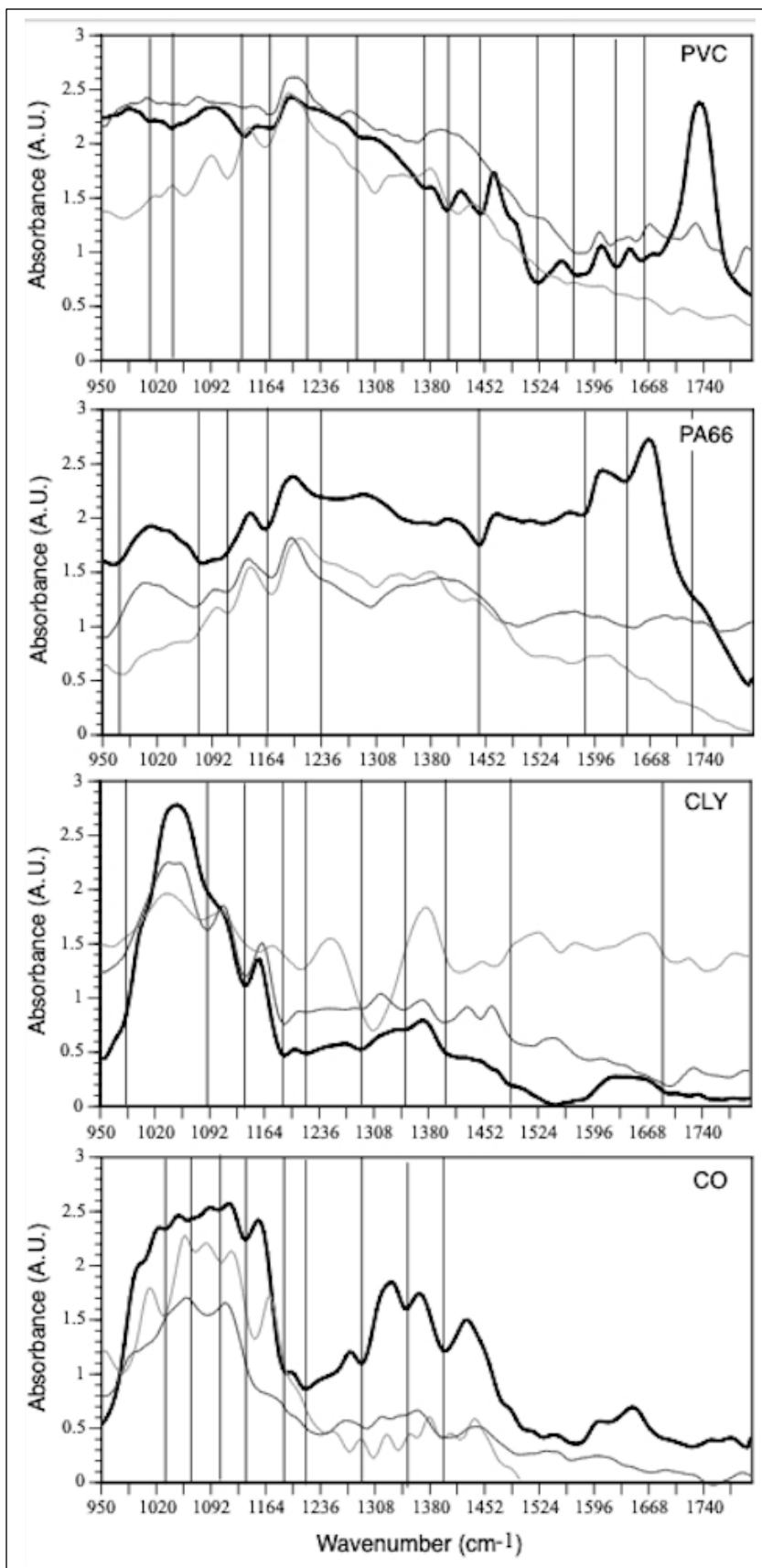
Table S1. Percent (%) of polymers identified at the various sites investigated in Park city Utah using infrared hyperspectral imaging (Quantum Cascade Laser InfraRed Spectroscopy Imaging). N represents the number of small microparticles or microfibers analyzed. Abbreviations: CA: Cellulose Acetate; CR: Crumbs from Rubber tire; EVA: Ethylene Vinyl Acetate; LDPE: Low Density PolyEthylene; PA: Polyamide 66 (nylon); PEST: Polyester; PET: Polyethylene terephthalate; PVC: Polyvinyl Chloride; CLY: Lyocell; CO: Cotton.

	Main-Bottom (N=20)	Main-Top (N=27)	Tombstone (N=22)	Peak 5 (N=33)	NinetyNine 90 (N=18)
CA	19.7	11.1	4.5	6.1	16.7
CR	0.0	3.7	0.0	12.1	11.1
EVA	0.0	3.7	0.0	0.0	0.0
LDPE	0.0	18.5	13.6	0.0	5.6
PA	9.9	7.4	9.1	9.1	22.2
PEST	10.1	7.4	4.5	0.0	0.0
PET	0.0	18.5	9.1	3.0	0.0
PVC	10.3	3.7	18.2	6.1	16.7
CLY	24.8	11.1	22.7	27.3	11.1
CO	25.2	14.8	18.2	36.4	16.7
	100%	100%	100%	100%	100%