**Supplementary information**

The following is a list of plastic samples that were used as reference materials in the SCOAP database and their sources.

Polymer Sample Kit #205 (from Scientific Polymer Products Inc., Ontario NY; scipoly.com)

Butyl methacrylate/isobutyl methacrylate copolymer

Cellulose

Cellulose acetate

Cellulose acetate butyrate

Cellulose propionate

Cellulose triacetate

Ethyl cellulose

Ethylene/acrylic acid copolymer – 15% acrylic acid

Ethylene/ethyl acrylate copolymer – 18% ethyl acrylate

Ethylene/methacrylic acid copolymer – 12% methacrylic acid

Ethylene/propylene copolymer – 60% ethylene

Ethylene/vinyl acetate copolymer – 14% vinyl acetate

Ethylene/vinyl acetate copolymer – 18% vinyl acetate

Ethylene/vinyl acetate copolymer – 28% vinyl acetate

Ethylene/vinyl acetate copolymer – 33% vinyl acetate

Ethylene/vinyl acetate copolymer – 40% vinyl acetate

Ethylene/vinyl acetate copolymer – 45% vinyl acetate

Ethylene/vinyl alcohol copolymer – 38% ethylene

Hydroxypropyl cellulose

Hydroxypropyl methyl cellulose – 10% hydroxypropyl, 30% methoxyl

Methyl cellulose

Methyl vinyl ether/maleic acid copolymer – 50/50 copolymer

Nylon 6 Poly(caprolactam)

Nylon 6(3)T Poly(trimethylhexamethylene terephthalamide)

Nylon 6/6 Poly(hexamethylene adipamide)

Nylon 6/9 Poly(hexamethylene azelamide)

Nylon 6/12 Poly(hexamethylene dodecanediamide)

Nylon 11 Poly(undecanoamide)

Nylon 12 [Poly(lauryllactam)]

Phenoxy resin

Polyacetal

Polyacrylamide

Polyacrylamide, carboxyl modified, high carboxyl content

Poly(acrylic acid)

Polyamide resin

1,2-Polybutadiene

Poly(1-butene), isotactic

Poly(butylene terephthalate)

Poly(n-butyl methacrylate)

Polycaprolactone

Polycarbonate

Polychloroprene

Poly(diallyl isophthalate)

Poly(2,6-dimethyl-p-phenylene oxide)

Poly(ethyl methacrylate)

Polyethylene, chlorinated – 25% chlorine

Polyethylene, chlorinated – 36% chlorine

Polyethylene, chlorinated – 42% chlorine

Polyethylene, chlorosulfonated

Polyethylene, high density

Polyethylene, low density

Polyethylene, oxidized

Poly(ethylene glycol)

Poly(ethylene oxide)

Poly(ethylene terephthalate)

Poly(2-hydroxyethyl methacrylate)

Poly(isobutyl methacrylate)

Poly(methyl methacrylate)

Poly(4-methyl-1-pentene)

Poly(p-phenylene ether-sulphone)

Polypropylene, isotactic

Polystyrene

Polysulfone

Poly(tetrafluorobutylene)

Poly(vinyl acetate)

Poly(vinyl alcohol), 99.7% hydrolyzed

Poly(vinyl alcohol), 98% hydrolyzed

Poly(vinyl butyral)

Poly(vinyl chloride)

Poly(vinylidene fluoride)

Polyvinylpyrrolidone

Poly(vinyl stearate)

Styrene/acrylonitrile copolymer – 25% acrylonitrile

Styrene/acrylonitrile copolymer – 32% acrylonitrile

Styrene/allyl alcohol copolymer

Styrene/butadiene copolymer, ABA block copolymer – 30% styrene

Styrene/butyl methacrylate copolymer

Styrene/ethylene-butylene copolymer, ABA block – 29% styrene

Styrene/isoprene copolymer, ABA block

Styrene/maleic anhydride copolymer

Styrene/maleic anhydride copolymer – 50/50 copolymer

Vinyl chloride/vinyl acetate copolymer – 10% vinyl acetate

Vinyl chloride/vinyl acetate/hydroxylpropyl acrylate – 80% vinyl chloride, 5% vinyl acetate

Vinylidene chloride/acrylonitrile copolymer – 20% acrylonitrile

n-Vinylpyrrolidone/vinyl acetate copolymer – 60/40 copolymer

Polymer Sample Kit from ResinKit (currently available from the Plastics Group of America, Woonsocket, RI; plasticsgroup.com)

Polystyrene (general purpose)

Polystyrene (medium impact)

Polystyrene (high impact)

Styrene acrylonitrile

Acrylonitrile-butadiene-styrene (transparent)

Acrylonitrile-butadiene-styrene (medium impact)

Acrylonitrile-butadiene-styrene (high impact)

Styrene-butadiene

Acrylic

Modified acrylic

Cellulose acetate

Cellulose acetate butyrate

Cellulose acetate propionate

Nylon (transparent)

Nylon (type 66)

Nylon (type 6)

Thermoplastic (PBT)

Thermoplastic (PETG)

Phenylene oxide

Polycarbonate

Polysulfone

Polybutylene

Ionomer

Polyethylene (low density)

Polyethylene (high density)

Polypropylene (co-polymer)

Polypropylene (homo-polymer)

Polypropylene (barium sulfate reinforced)

Polyvinyl chloride (flexible)

Polyvinyl chloride (rigid)

Acetal resin (homo-polymer)

Acetal resin (co-polymer)

Ethylene vinyl acetate (co-polymer)

Synthetic elastomer (styrene-block co-polymer)

Polypropylene (glass-filled)

Urethane elastomer (polyether)

Polypropylene (flame retardant)

Polyester elastomer

Acrylonitrile-butadiene-styrene (flame retardant)

Polyallomer

Styrenic terpolymer

Polymethylpentene

Polypropylene (calcium carbonate reinforced)

Nylon (type 66, 33% glass reinforced)

Polyethylene (medium density)

Acyrlonitrile-butadiene-styrene (nylon alloy)

Historical Sample Library (plastics.syr.edu; manufacturer, accession #, and color)

Acrylonitrile-butadiene-styrene ABS (Borg-Warner Cycolac, 2010\_010\_231390, gray)

Ethyl cellulose (Dow-Corning Ethocell, 2010\_059\_889, milky)

Poly(methyl methacrylate) PMMA (ICI Perspex, 2010\_077, ­med Opal 020)

Acrylic (Cast Optics Corp. EVR-KLEER, 2003­\_1253, colorless)

Poly(methyl methacrylate) PMMA (Dupont Lucite, 2007\_38, colorless)

Polyamide-11 (Rilsan, 2010\_095, colorless)

Acetal homopolymer POM (Dupont Delrin, 2006\_14, pale gray)

Poly(methyl methacrylate) PMMA (Plexiglas, 2003\_1254, colorless F10)

Poly(methyl methacrylate) PMMA (Plexiglas, 2003\_1251, colorless DP30)

Acrylic (Wasco Products Acrylite, 2003\_1257\_931P, colorless)

Poly(methyl methacrylate) PMMA (Lumasite, Lucite, 2003\_1252, white)

Poly(methyl methacrylate) composite PMMA composite (Dupont Corian, 2003\_1256, cameo white)

Acrylic (Plexi-View Mirror, 2010\_004)

PPO/PS mixture (GE Noryl, 2010\_055\_024, cream)

UHMW polyethylene PE (Hi Moly, 2011\_066\_20)

Melamine (Formica, 2011\_066\_08)

Poly(methyl methacrylate) PMMA (Cyanamid Acrylite, 2003\_1002, colorless)

Acrylonitrile-butadiene-styrene ABS (Cycopac, 2003\_1001, white)

Polycarbonate (SABIC, 2003\_1234\_7)

Styrene-Methyl Methacrylate copolymer (Dow Zerlon 150, 2003\_1003)

Melamine formaldehyde (GE, 2003\_066\_21, white)

Chroma Color Corporation (chromacolors.com; pigments, sample #)

Acrylonitrile-butadiene-styrene terpolymer (25.5% TiO2, AC24030)

Polystyrene (26.5% TiO2 + 13%CaCO3, HC2200B)

Nylon (32% TiO2, NC2667A)

Polycarbonate (23% TiO2, ZC2606B)

Recycled Items

Recycling Code 1 (Tropicana bottle, colorless): Polyethylene terephthalate

Recycling Code 2 (Plastipak tub, white): High-density polyethylene

Recycling Code 5 (EMCO bottle, colorless): Polypropylene