

Materials List for:

# Sampling, Sorting, and Characterizing Microplastics in Aquatic Environments with High Suspended Sediment Loads and Large Floating Debris

Katherine M. Martin<sup>1</sup>, Elizabeth A. Hasenmueller<sup>2</sup>, John R. White<sup>3</sup>, Lisa G. Chambers<sup>4</sup>, Jeremy L. Conkle<sup>1</sup>

<sup>1</sup>Department of Physical and Environmental Sciences, Texas A&M University-Corpus Christi

<sup>2</sup>Department of Earth and Atmospheric Sciences, Saint Louis University

<sup>3</sup>Department of Oceanography and Coastal Sciences, Louisiana State University

<sup>4</sup>Department of Biology, University of Central Florida

Correspondence to: Jeremy L. Conkle at [jeremy.conkle@tamucc.edu](mailto:jeremy.conkle@tamucc.edu)

URL: <https://www.jove.com/video/57969>

DOI: [doi:10.3791/57969](https://doi.org/10.3791/57969)

## Materials

Name	Company	Catalog Number	Comments
1L Cubitainer Containers, Low-Density Polyethylene	VWR	89094-140	Containers used to collect and store samples.
2-1/2" Clear Schedule 40 Rigid PVC Pipe	United States Plastic Corporation	34138	The PVC pipe used to make the device comes as an 2.43 m pipe. The pipe was then cut to the desired lengths for each section separated by union joints. Section lengths were decided by predicting smaller pore sizes would clogg the device quicker. Longer sections were placed above the smaller pore sizes to collect and hold water to prevent needing to disassemble the device to change a filter while a sample remained in the device. For one filtration device one 18 in, one 12 in, and two 6 in peices are needed.
2-1/2" PVC SCH 40 Socket Union	Supply House	457-025	Union joints were glued to PVC pipe to house nylon sieves and mixed cellulose membranes.
Nylon 6 Woven Mesh Sheet, Opaque Off-White, 12" Width, 12" Length, 500 microns Mesh Size, 38% Open Area (Pack of 5)	Small Parts via Amazon	CMN-0500-C/5PK-05	Mesh sheets were cut into circles to match the diameter of the outer diameter of the PVC pipe. The edges were glued to esure no fraying would occur. The glue 's diamter should not extend into the inner diameter of the PVC so that it will not be affected during filtration.
Nylon 6 Woven Mesh Sheet, Opaque White, 12" Width, 12" Length, 100 microns Mesh Size, 44% Open Area (Pack of 5)	Small Parts via Amazon	B0043D1TB4	Mesh sheets were cut into circles to match the diameter of the outer diameter of the PVC pipe. The edges were glued to esure no fraying would occur. The glue 's diamter should not extend into the inner diameter of the PVC so that it will not be affected during filtration.
Nylon 6 Woven Mesh Sheet, Opaque White, 12" Width, 12" Length, 50 microns Mesh Size, 37% Open Area (Pack of 5)	Small Parts via Amazon	B0043D1SGA	Mesh sheets were cut into circles to match the diameter of the outer diameter of the PVC pipe. The edges were glued to esure no fraying would occur. The glue 's diamter should not extend into the inner diameter of the PVC so that it will not be affected during filtration.

Mixed Cellulose Ester Membrane, 0.45um, 142mm, 25/pk	VWR	10034-914	Mixed cellulose membrane filter with 0.45 um was used as the last filter. A large diameter was used to allow the filter to be folded into a cone to increase surface area of the filter to prevent clogging.
Metal Mesh Basket Tea Leaves Strainer Teapot Filter 76mm Dia 3pcs	Uxcell via Amazon	a15071600ux0260	The mesh basket used to provide extra support for the membrane filter to prevent tearing when pressure was applied by a vacuum pump.
1/2" PVC Barbed Insert Male Adapter	Supply House	1436-005	A vacuum adapter was added to allow vacuum filtration in the case of slow filtration due to high sediment concentration.
1/2 in. O.D. x 3/8 in. I.D. x 10 ft. PVC Clear Vinyl Tube	Home Depot	702229	Tubing used to connect the vacuum pump to the filtration device.
YSI Professional Plus Multiparameter Instrument with Quatro Cable	YSI	6050000	Handheld meter used to measure additional water quality parameters parameters (e.g., turbidity, temperature, conductivity, pH, and dissolved oxygen (DO)).
2100P Portable Turbidimeter	Hach	4650000	Handheld meter used to measure turbidity.
FEP-lined PE tubing	Geotech	87050529	Tubing used with peristaltic pump to collect water samples from desired depths.
Geopump Peristaltic Pump Series II	Geotech	91350123	Pump used to collected water samples.
MeiJi Techno EMZ-8TR Microscope	Microscope.com	EMZ8TR-PLS2	Microscope used analyze mesh sieves and membrane filters to quantify suspect microplastics.
Nicolet iS10 FTIR Spectrometer	Thermo Electron North America	912A0607	FTIR used to analyze suspect microplastics.
Nicolet iN5 FTIR microscope	Thermo Electron North America	912A0895	FTIR microscope used to analyze suspect microplastics.
Germanium (Ge) ATR	Thermo Electron North America	869-174400	Germanium ATR accessory used along with the Nicolet iN5 FTIR microscope to analyze suspect microplastic.
Aluminum EZ-Spot Micro Mounts (Pkg of 5)	Thermo Electron North America	0042-545	Microscope slides used along with the Nicolet iN5 FTIR microscope to analyze suspect microplastic.
Aluminum Coated Glass Sample Slides	Thermo Electron North America	0042-544	Microscope slides used along with the Nicolet iN5 FTIR microscope to analyze suspect microplastic.