

Detection of Microplastics on HKUST Boulder Shore



Marine litter and microplastics found along the upper shore area on the HKUST boulder shore.

Sample collection and preparation:

1. Collect around 10 g of litter sample from the HKUST boulder shore using trowel provided.
2. Remove large non-plastic items using a 2 mm metal sieve in the laboratory.
3. Place the sample on a petri dish and identify the microplastics at low magnification under the stereomicroscope.
4. Record the number and shape of microplastics under the stereomicroscope on the data record sheet.

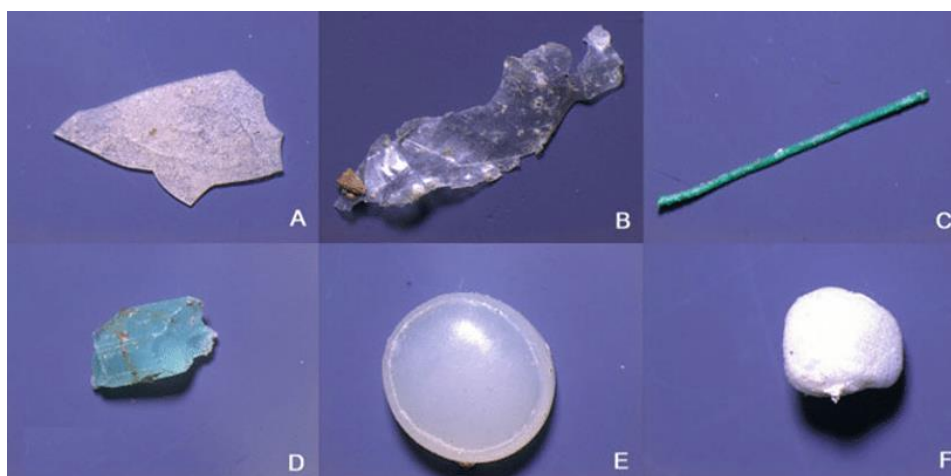
Density separation of sediment samples:

1. Transfer around 10 g of sample onto the filter funnel of the density separation setup (see photo on the right).
2. Fill the filter funnel with concentrated sugar solution and cover the density separation setup with aluminium foil. Allow the samples to settle for at least 1 hour. Remove the settled substances and only collect the floating portion (the upper part). Rinse the funnel with water several times to ensure the procedure is complete.



Visualization of microplastics under fluorescent microscope:

1. Filter the sample collected after density separation with 50 μm mesh.
2. Transfer the residue into the filtration setup.
3. Filter the solution with 0.2 μm polycarbonate membrane.
4. Incubate the sample with 10 mL of Nile Red working solution (1 mg/ L in MeOH) for 20 minutes.
5. Remove the dye and visualize the microplastics on the membrane at wavelength of 365 nm under UV illumination box. Take a photo of your sample using your mobile phone.
6. Record the number and shape of microplastics found on the data record sheet below.



Shapes of typical microplastics found in the environment.

Data Record Sheet

Number of microplastics (under stereomicroscope)						
Type	Film	Fiber	Fragment	Pellet	Foam	Total
Number						

Number of microplastics (under fluorescent microscope)						
Type	Film	Fiber	Fragment	Pellet	Foam	Total
Number						

Follow-up questions:

1. Have you encountered any difficulties when identifying microplastics under the stereomicroscope?
2. What are the occurrence and ecological impacts of microplastics in the marine ecosystem?
3. Suggest an effective way to remove microplastics in the marine environment.

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