

Characterization of Airborne Microplastics in Forest Air and their Atmosphere – Forest

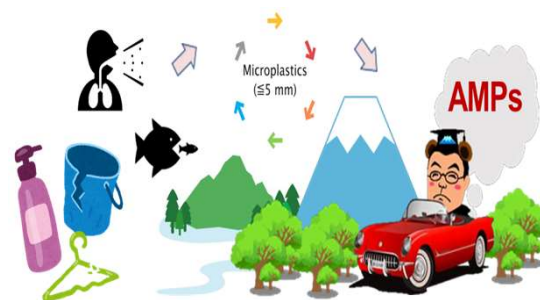
Objectives



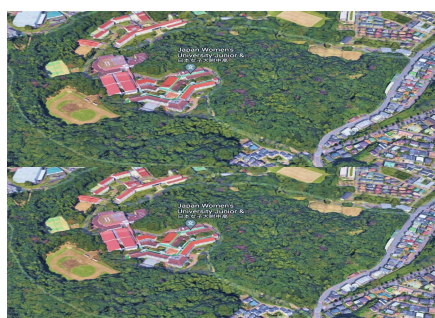
- ✓ A piece of plastic **less than 5mm** in size is called a microplastic (MPs).
- ✓ In terms of the route of intake into the body, inhalation of air is more common than ingestion through food and drink !

Airborne microplastics (AMPs)

- The transportation from cities to forest areas?
- Can forest capture the AMPs?
- Leaves forest selectively capture some AMPs from the atmosphere?



Sampling



Sampling site: Ikuta

Studying Period:

2023/4/24-2023/4/29

**Nishi-Ikuta Campus,
Japan Women's University**

Altitude: 85 - 115 m a.s.l.

Main vegetation: Konara

Sampling equipment

MCI Sampler

We collected by the MCI sampler with three aerodynamic diameters.

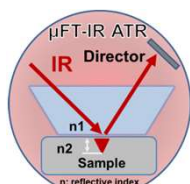
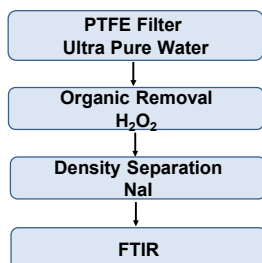
① PM_{10<}: greater than 10 μm

② PM_{2.5-10}: 2.5 – 10 μm

③ PM_{<2.5}: below 2.5 μm



Methods



PerkinElmer Spectrum3 + Spotlight400

Resolution: 8 cm⁻¹ Measurement area: 17.9 %

Scan time: 1 time

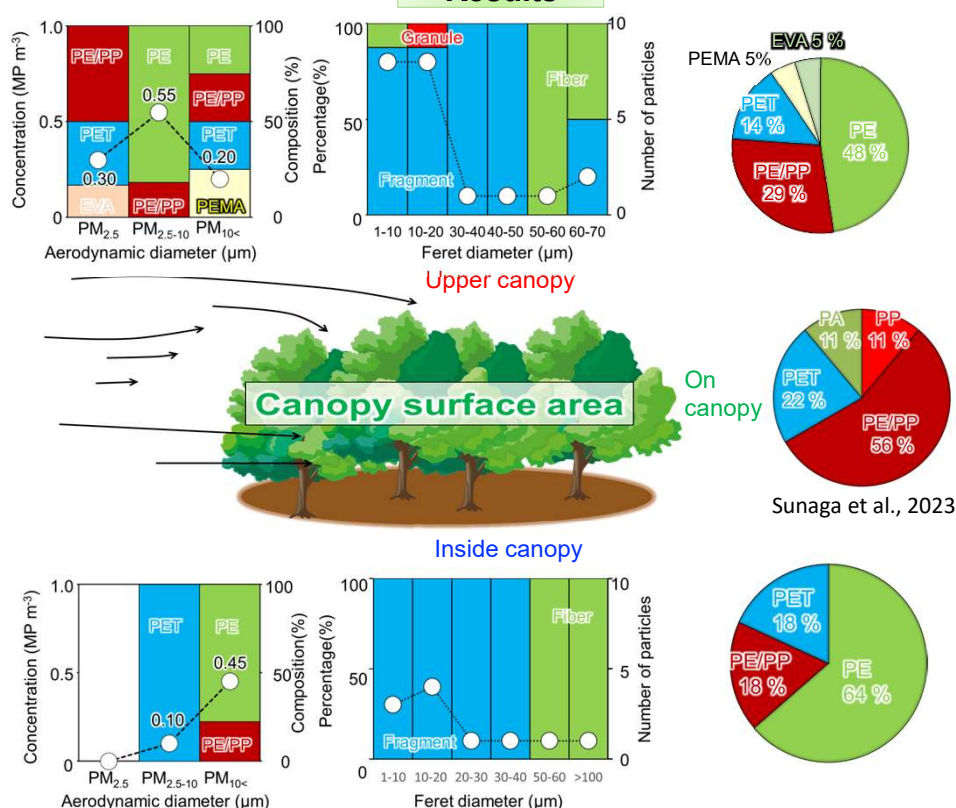
Scan speed: 2.2 cm/s

Pixel size: 1.56 μm x 1.56 μm

Wavenumber range: 4000 – 680 cm⁻¹

Screening: 3000 – 2700 cm⁻¹, 1740 – 1710 cm⁻¹

Results



Summary

- ✓ AMPs in urban forest air were mainly **less than 20 μm** in Feret diameter and the main shape was **fragment**.
- ✓ Leaves in Ikuta forest **selectively capture some AMPs** from the atmosphere
- ✓ PE/PP is selectively captured by cuticle wax due to its hydrophobicity?

