



### Project 3

## An interlaboratory comparison on candidate reference materials to support the standardization of nanoplastic analysis

### Objectives

1. Validate method performance for the following targeted techniques to measure size distribution, number concentration and mass fraction of nanoplastic particles: PTA, Light Scattering techniques (DLS, MADLS), hyphenated approaches based on fractionation techniques (FFF-MALS), and thermoanalytical techniques (Py-GC/MS and TED-GC/MS).
2. Support harmonization and pre-standardization by comparing results and assessed repeatability and precision among methods.

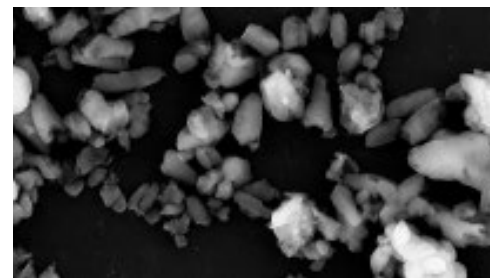
However, standardized measurement protocols and methodologies for the reliable analysis of the physico-chemical properties of nanoplastics are still absent. For the validation of methods, instrumentation and parameters for nanoplastics, an interlaboratory comparison (ILC) will be organized to evaluate the performance of targeted techniques to measure the size distribution, number concentration and mass fraction of nanoplastic particles.

### Standardization needs

- There is a critical need for validated and standardized protocols for nanoplastics characterization.
- Results from this interlaboratory study aim to contribute to new ISO standards for nanoplastic analysis.

### Work Programme

- Surfactant-free aqueous suspensions of nano-polypropylene test materials will be distributed in February 2025.
- A minimum of five measurement replicates is demanded. The time for carrying out the measurements may depend on the technique, but is estimated at roughly 1 week.



**Figure:** Morphology of nano-polypropylene test material captured via electron microscopy imaging (left) and a photograph of the surfactant-free aqueous suspension sample (right).

- Participants will receive SOPs for sample preparation, measurement, and data analysis.
- All participants are asked to return data and other requested information (e.g., quality control details, technical issues encountered, etc.) using the data reporting templates provided by the study organizers.
- Measurement results will be statistically evaluated for repeatability and reproducibility using ISO 5725-2.

### Deliverables and Dissemination

This interlaboratory study will be disseminated at scientific conferences and in a peer-reviewed scientific journal. Data produced in this ILC may contribute to assign the reference values to the test material.

**Funding:** Participants fund their own involvement in the project.

**Status:** The project is due to start in February 2025 for an expected duration of approximately 6 months.

### Background

Several research needs have been identified by International Organizations as the European Food Safety Agency (EFSA), the Science Advice for Policy by European Academies (SAPEA), and the World Health Organization (WHO). Among these is the development of representative reference materials for plastic particles across various size ranges. As part of the EURAMET Plastics Trace Project (<https://plastictrace.eu/>) sub-micron plastic particles and nanoplastics, reflective of common industrial polymers, have been produced and characterized.

### For more information:

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