

## PhD thesis topic

# Study of the behavior of model plastic micro-particles in urban water management systems in rainy weather – storm overflows

## Context & objectives

Many end-of-life plastic products escape treatment and recycling channels, ending up in the biosphere's various compartments, whether voluntarily or not.

The objective of the PhD is to study the behavior of plastic micro-particles in experimental devices representative of urban hydrosystems, such as Combined Storm Overflows (CSOs). A methodology combining the **development and characterization of rare metal-doped model microplastics (MPs)** will be developed. In this context, **physico-chemical interactions between MPs and urban water constituents will be studied using multi-scale experiments.**

The research will be carried out both at IMP and DEEP (<https://deep.insa-lyon.fr/>) laboratories within the framework of the TRANSPLAST program (AAP ANR 2023) whose objectives are to characterize the flows of MPs and their transport through CSOs, taking into account interactions with particulate matter, as well as the development of remediation solutions. *The data collected will be used to design and evaluate 3D transport models based on computational fluid mechanics, with the aim of capturing MPs before they are released into the environment.*

Partners :

- ANR: [TRANSPLAST](#) Project (2023), involving five Lyon public laboratories ([DEEP](#), [IMP](#), [LMFA](#), [LEHNA](#), and [LMI](#)). The results will allow operational staff to better manage CSOs releases, using MPs interception technologies;
- Rhône-Mediterranean-Corsica Water Agency (under discussion);
- EUR – H<sub>2</sub>O.

## Required profile

**The expected profile favors basic training in polymer materials science, a pronounced taste for experimental work, team spirit, good level of English and, if possible, skills in environmental chemistry.**

## Desired start date & Work location

February - March 2024 at [INSA de Lyon](#)

## Application

Please send CV and cover letter to [remy.bayard@insa-lyon.fr](mailto:remy.bayard@insa-lyon.fr) & [valerie.massardier@insa-lyon.fr](mailto:valerie.massardier@insa-lyon.fr)