

Bachelor project (15 ECTS): Can microplastics affect swimming and feeding in aquatic filtrators?

Plastic littering is a problem worldwide. When plastic debris degrades, it forms microscopic fragments, the so-called microplastics. Today, microplastic pollution is perceived as an environmental threat in many aquatic environments, mainly because the ingestion of larger plastic debris has been observed to cause gastrointestinal damage in larger animals, such as fish, birds, and turtles. Concerns have been raised that microplastics can impact small aquatic organisms feeding on phytoplankton and bacteria by filtration, so-called suspension-feeders. However, little is understood about the mechanisms of the adverse effects in suspension-feeders, because these animals interact with a high variety of particles, both edible and non-edible on a regular basis. Therefore, it is relevant to ask: *In what way microplastic particles are different* from a myriad of other particles, mineral and organic, that are ubiquitous in natural waters.

This project aims to identify whether microplastics differ in their effects on swimming behavior and food intake in the planktonic filtrator *Daphnia magna*. The work is experimental and involves conducting exposure experiment, collecting samples and analyzing the data. The main objectives are:

1. Compare swimming and food intake of daphnids exposed to microplastics and cellulose;
2. Determine whether feeding and swimming responses are interrelated;
3. Synthesize the information from the experiment and make conclusions regarding the severity of microplastics effects on the test animals.

The bachelor candidates should have a background in biology or environmental science. Basic knowledge in ecotoxicology is an advantage. An introduction to the analysis of swimming and feeding in the test animals will be provided as well as the basic training in the data analysis.

Supervisor: Elena Gorokhova

elena.gorokhova@aces.su.se, tel. 674 7341

Department of Environmental Science and Analytical Chemistry (ACES),
Stockholm University