

Ultra-micro balance for weighing micro rubber in environmental samples

COWIfonden has donated funds to purchase a so-called ultra-micro balance for the chemical test laboratory at the Institute for Construction at Aalborg University. The device will be used for ongoing examination of emission and spreading of micro plastics and micro rubber into the environment.

Background

For the last couple of years there has been much focus on plastic pollution in particular from micro plastics. Micro plastics are plastic sized less than 5 mm, but the largest focus is on the very small particles as these probably have the largest environmental effects. The size and the consequences of the problem are not yet entirely mapped and today there are large gaps in the existing knowledge about how much micro plastic is actually emitted from different sources. However, we know from surveys of e.g. fish, that micro plastics are present in our nature to a very large extent.

Existing knowledge about the problem

The major part of micro plastics emitted to the environment is so-called secondary micro plastic created by usage of large products containing plastic. Micro rubber which derives from usage of car tires are considered to cause more than half of the total environmental impact. The calculation is however very uncertain as there are no concrete measurements of micro rubber. The most important reason for this is that no suitable measuring methods have been developed yet. The methods that are typically used for measuring micro plastics are not able also to measure micro rubber.

Purpose of the granted equipment

The ultra-micro balance will be used in connection with development of new chemical analysis methods that can determine the content of both micro rubber and micro plastics in e.g. water samples from a stream or in contaminated sediments from a lake. The balance will be used for weighing small amounts of rubber, which subsequently can be analyzed with a sample containing an unknown content of rubber. By comparing the two results, the researchers can calculate how much rubber there have been in the original sample. The balance is very precise and can read with an accuracy of 0.0000001 g. In other words; it would be the same if you take a rubber particle being 1 mm on each side and split it into 10,000 equal parts.

Perspective of the research

By contributing to the development of new analysis method for micro rubber, COWIfonden contributes to expand existing knowledge about the extent of the problem. During 2018, the research group expects to have developed a useful analysis method which subsequently will be tested at different environmental samples.