

Purchase of equipment: FlowCam 8400

The microplastics laboratory at Aalborg University, Department of Civil Engineering, received a donation from COWIfonden to purchase a FlowCam 8400 to support our work in microplastics. Microplastics is a growing environmental problem, the scale of which remains practically unknown, as do their impact on the environment and human beings, and the solutions to this problem. In order to get to the stage where we have enough knowledge to assess and explore solutions, it is important to have reliable, quick and reasonable methods for measuring microplastics in the environment. Slowly, a consensus is developing on how to analyse microplastics, but the methods are still time-consuming, costly and not always reliable. Therefore, it is important to develop robust and reliable methods for analysing microplastics in all types of environmental samples (water, wastewater, animal, food, soil, sediment, air etc.).

The FlowCam 8400 will form a key element in our lab, which is one of the largest labs in the world for analysing microplastics in the environment, currently numbering 14 postdocs and PhD students. We conduct research projects across the world and measure microplastics in all systems, from mussels in Trinidad in the Caribbean Ocean to microplastics in the fjords of Greenland. We work closely with ministries, water companies and consulting engineers.

The FlowCam captures ultraquick photos of particles ranging in size from 2 μm to 1 mm, and uses laser light to determine particle properties. These two things combined allow us to work on microplastic samples that include other material that can easily be mistaken for microplastics. The FlowCam will help us do a number of things, e.g., to better understand the breakdown of microplastics in the environment.

With the FlowCam, it will be possible for us to see how microplastics change shape and size when exposed to natural impacts, such as sunlight. The FlowCam will also be used in combination with other equipment – a 'single particle ICP-MS', which identifies metals in individual particles. We will use it to identify particles of car tire rubber, since the heavy metal zinc makes up approx. 1.5 per cent of car tire rubber. The FlowCam will also make our microplastics analyses better and more replicable and ensure a higher quality of our measurement data. In addition to improving our laboratory and increasing analysis quality, FlowCam will enable studies never before carried out. These include new types of studies of breakdown processes and the fate of plastic in the environment, as well as new knowledge about special plastic types.