

Summary Stage I

In Stage I, following the update with the latest results published in the literature, the first part of the design of the conceptual model of the laser-based experimental system for the detection of microplastic in water was performed, namely the Raman spectroscopy subsystem. The critical parameters and quality attributes to be followed in the development of the Raman spectroscopy subsystem were also determined. The types of polymers to be analyzed were selected as a model using the experimental laser-based system for the detection of microplastic in water, to be performed. The configuration of the Raman spectroscopy subsystem includes: a computer-controlled adjustable Nd: YAG laser system, a computer-controlled droplet generator, various optical and mechanical components to direct, focus, and collimate the laser radiation on the microdroplet, and a detection and analysis system consisting of a spectrograph coupled with an iCCD camera.