

## ORAL PRESENTATION

### AUTOMATIC DETECTION, IDENTIFICATION, AND CLASSIFICATION OF PLANKTON USING A CONTINUOUS IMAGING PARTICLE ANALYZER (FLOWCAM)

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The past decade has seen a significant increase in the development of plankton imaging systems. This development has been driven by the need and desire to reduce the sample processing time required to process plankton samples for the purpose of identification and enumeration. The Video Plankton Recorder, ZOOSCAN, and FlowCAM are the only three imaging instruments commercially available to scientists (Benfield, et al, 2007) that automate this process. Of these instruments, only the FlowCAM is capable for use in the laboratory for microplankton (20  $\mu\text{m}$  – 200  $\mu\text{m}$ ) and mesoplankton (200  $\mu\text{m}$  – 2 mm).

Here we present data from a continuous imaging particle analyzer (FlowCAM<sup>®</sup>) that uses proprietary VisualSpreadsheet<sup>™</sup> software to automatically detect, image, enumerate and now automatically classify plankton in real-time. Once the FlowCAM has analyzed a sample or batch of samples, the software has the ability to process digital images for automatic classification using user generated libraries or image training sets. These libraries can identify and quantify specific taxonomic groups (e.g., genus or species) or size classes of plankton automatically. An overview of the technology will be given, including a review of the algorithm that is used for image analysis, along with how the software interacts with the user when developing filters and training sets.

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