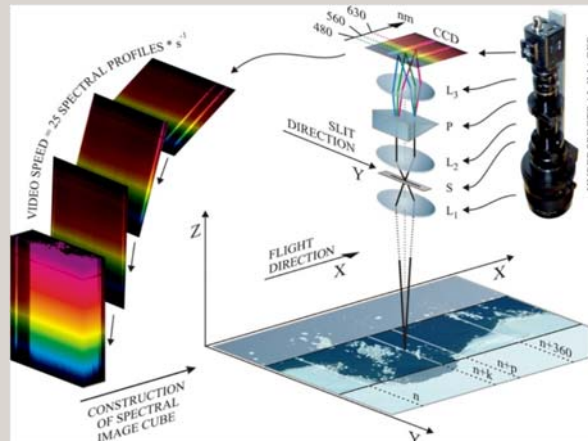


Hypersmolt

Fish welfare is of increasing concern in aquaculture. Fish welfare depends among other things on smolt quality, e.g. the fish's ability to withstand the transition from freshwater to seawater (smoltification). It is known that limitations in current methods for evaluating the smolt status of fish may compromise fish welfare and be a contributing factor to fish mortality in sea. Hypersmolt utilizes hyperspectral imaging - a remote sensing push broom technique - to quantify the spectral characteristic of fish during smoltification. This "optical fingerprint" can likely be used as an additional objective tool to evaluate the smolt status of fish to ensure a robust smolt and safe transfer to sea.



Hyperspectral imager for data collection.
Image: SINTEF Ocean AS



Hyperspectral imaging working principle.
Illustration: Zsolt Volent, SINTEF Ocean AS.

To obtain the spectral characteristic of the fish during smoltification, the following main activities are/have been carried out:

1. Method development:

A sensing solution that can be installed in hatcheries/smolt production sites has been developed. The setup consists of a SPECIM hyperspectral imager complete with lighting and polarizers (see image and working principle illustration above).

2. Data collection:

Data is collected on three different production sites - two

flow through, and one site employing water recirculation (RAS) using the developed sensing solution. Preliminary results indicate that data from flow through production sites are more easily interpreted compared to those collected at the RAS site.

3. Data processing and analysis:

The collected data is processed and analyzed to obtain the difference in spectral characteristic between parr and smolt stages. It is expected that the difference can be identified in a subset of the collected data.

General project information:

Hypersmolt is funded by the Norwegian Seafood Research fund, and has a budget of 4.54 MNOK. The project duration is 09/2017 - 02/2020.