

Particle + Fluid Tracking



4Deep *inwater imaging*

Holographic microscopes. Deeper insights.

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Tracking particles in the microscopic world, especially particles in the submicron range, is challenging and time consuming. Particle movement in this size range is highly determined by the viscosity of the surrounding fluid and the mechanisms for movement are very different from the large-scale, inertia-dominated world. 4Deep's microscope and custom software provide researchers with a novel approach to discover particle mechanisms at the micron level.

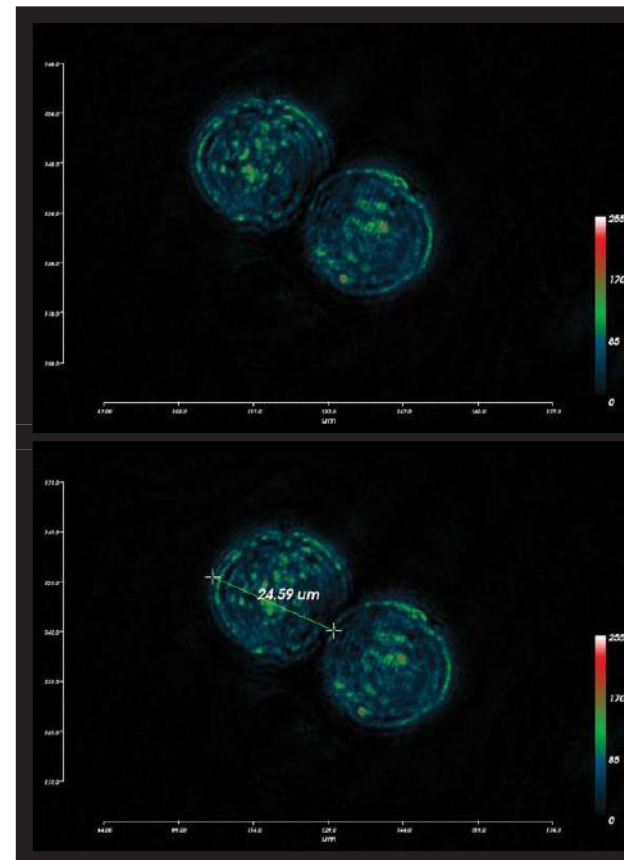
Benefits

Offers more functionality outside of particle tracking such as morphological characterization

No need to collect sample. 4Deep's system has real-time in situ monitoring

No need to incubate or dye sample

No need to focus



Measuring the distance of a particle from one hologram to the next gives velocity values

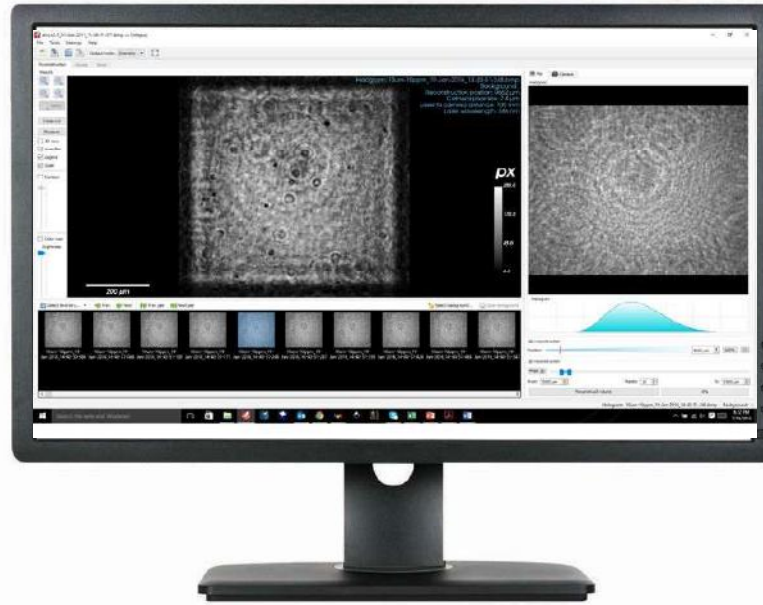
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Submersible Microscope

The Submersible microscope and flow through chamber can be used to track particles or fluid.



Octopus Software

Octopus captures and saves holograms, which allows the user to analyze the data as many times as necessary. Octopus can be used to trace a particle through time and space, and give velocity measurements. For more quantitative data, such as particle size distribution, Swordfish can be used.

Desktop Microscope

The Desktop microscope is ideal in laboratory settings and has a minimal space requirement



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Microorganism Swimming

Both 4Deep's Desktop microscope and the Submersible microscope (plus flow through chamber) can be used to track the swimming patterns of microscopic organisms. Swimming mechanisms at this scale are not always well defined, as viscosity plays a bigger role in the movement than inertial forces. Velocity data can also be calculated using only the data generated from a hologram, with 4Deep's Octopus software.

Microfluidics

Using a 4Deep microscope, and the Octopus software makes it possible to track the actual fluid itself through time and the user can study the characteristics of the flow and fluid.

Particle Tracking

Tracking non-swimming particles, such as algae or dead cells may be of interest to researchers to understand how particles flow within a fluid. Again, using the Desktop microscope, or the Submersible microscope, with the flow chamber, can allow users to identify and trace particles through time in a sample.

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