TECHNOLOGY OFFER

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Holographic Phase Contrast Microscopy

REFERENCE:
2018-02

AVAILABLE FOR:
R&D cooperation
License agreement

KEYWORDS/ APPLICATION:
Cytometry
Population based analysis
(3D) Microscopy
Holography
Tracking Analysis
User Interface

DEVELOPMENT STATUS:
Prototype

IPR:
Prio filed in May 2018

INVENTORS:
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BACKGROUND

Phase contrast microscopy is a much used label free technique to visualize individual cells in microbiological samples but the depth of focus and throughput are limited. On the other hand flow cytometric analysis of populations is often used to get more statistical information on characteristics that are unfortunately less tangible. This limits the available information on bacterium populations and other (bio-)colloids.

TECHNOLOGY

We developed a technique that combines the best of both. We record the interference between light scattered by e.g. bacteria in a flow cell and the illuminating light. Using the principles from holography we then calculate the full light field which allows us to quantify throughout the sample how much light was scattered. This allows us to locate individual organisms, quantify the amount of scattering related to their dry mass as well as their shape and orientation.
Since all this information is obtained from a single snapshot, we can further track the individuals to characterize dynamic properties such as diffusion, sedimentation and propulsion. By considering the positions during accelerations we can moreover measure interactions with different substrates or between individuals. By analyzing recorded movies we can obtain population wide statistics on these meaningful properties.

OUR OFFER

We seek partners to develop applications in medicine, biotechnology or other fields of 3D Phase Contrast Flow Cytometry.

BENEFITS

- Label free, full volume, full population analysis
- Simple optics
- Continuous flow analysis possible
- Possible information includes speed, size, diffusivity, shape, orientation, rotation

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