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Spheryx Spotlight

October 16, 2025 **Edition 1**

In this edition of Spheryx Spotlight:

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- -> *Label-Free Cell Viability Assays*
- -> *Multi-component Analysis for Water Quality Assessment*

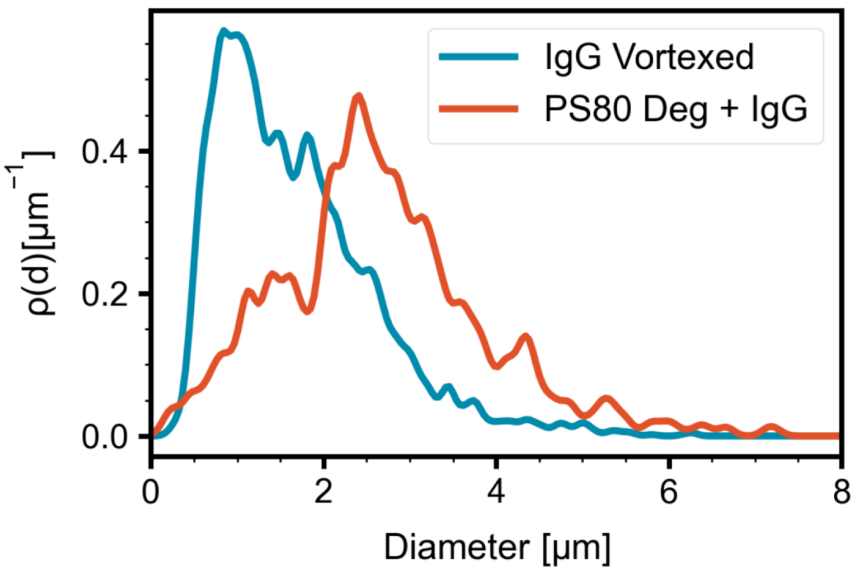
Polysorbate Degradation Early Warning Signs using xSight

Aging surfactants produce free fatty acids that can induce the formation of dangerous protein aggregates. Protein aggregates, however, can form as a result of other conditions, including handling and thermal or pH changes. xSight using Total Holographic Characterization® detects a unique peak at the index of refraction characteristic of protein aggregates in the size range of 1-3 µm only when polysorbate degradation products are present. The distribution of protein aggregates exhibits standard aggregation behavior when other stresses such as shaking, heating or freezing are applied. This unique feature is induced in the presence of degradation products of both PS80 and PS20.

To learn more about polysorbate degradation:

Click here to see our poster

Polysorbate Degradation Early Warning Signs using xSight



- Shown above are two different size distributions of protein aggregates caused by two different kinds of stress.
- The blue curve shows typical protein aggregation behavior under thermal or mechanical stresses: as size goes down, concentration goes up.
- The orange curve is a new pattern of protein aggregate size distribution, that peaks at 1 - 3 μm, observed when protein formulations were exposed to polysorbate degradants.
- The unmatched sensitivity of xSight for hard to detect particles in the size range of 1 - 3 μm distinguishes the two patterns of protein aggregation behavior.

To learn more about how xSight can help you monitor polysorbate degradation in your products, contact:

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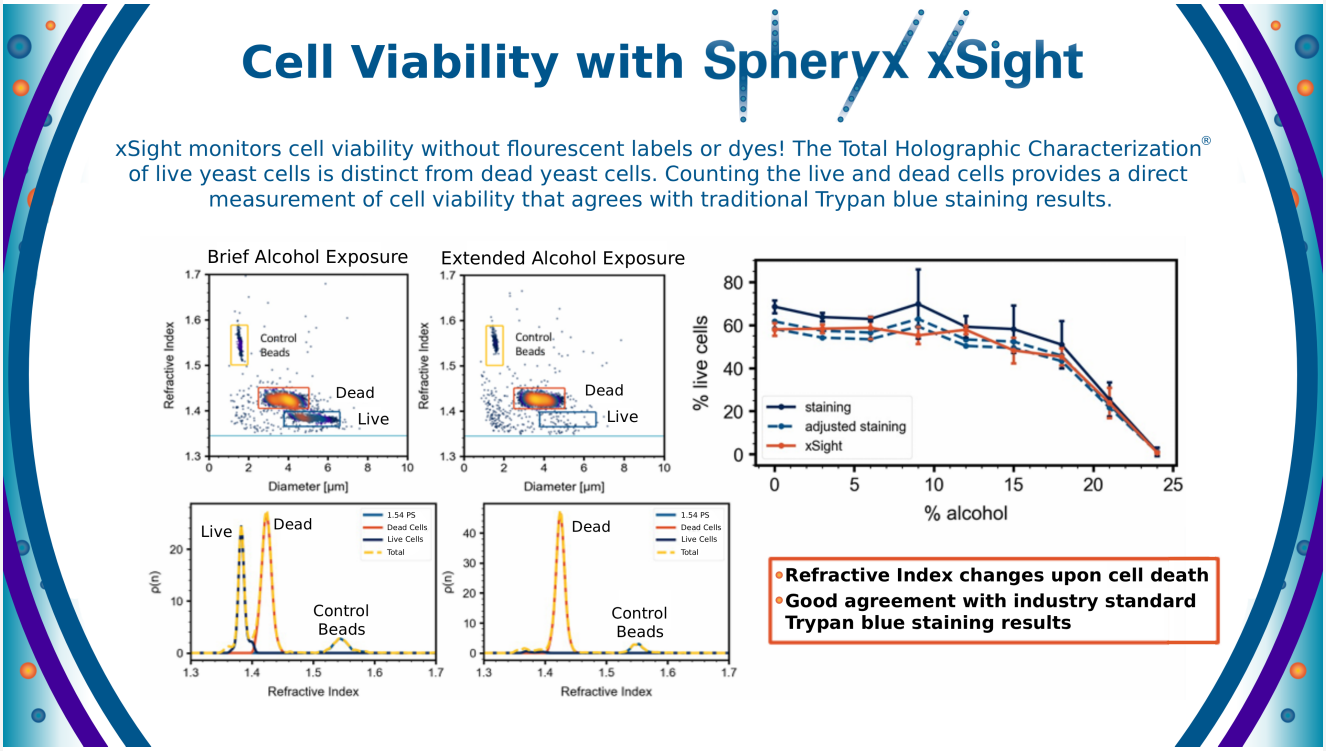
Cell Viability with Spheryx xSight

xSight using Total Holographic Characterization® is an efficient, automated and label-free method of accurately identifying cell viability. xSight detects single-particles and determines the size and index of refraction of individual particles using the Lorenz-Mie theory of light scattering. In the figure below are results from yeast cells analyzed by xSight in the presence of various concentrations of isopropanol as a function of time. All measurements were performed in the native environment of the sample with no dilution or addition of labels or

dyes. We compared our results to manual counting of living and dead cells as distinguished with trypan blue dye to demonstrate that xSight can effectively distinguish living and dead yeast cells without the need for labels or special sample preparation.

To learn more about Cell Viability with xSight:

Click here to see our paper in "Scientific Reports"



xSight Identifies Multiple Contaminants in One Measurement

An individual particle's hologram is a fingerprint that offers simultaneous insight into the particle's size and composition. xSight uses Total Holographic Characterization® to distinguish multiple components in complex colloidal mixtures without special sample preparation, separation techniques or application of multiple technologies. xSight is used to characterize heterogeneous suspensions containing different types of microplastics in water in the size range from 500nm to 10µm. Shown below is a model suspension, characterized by xSight, consisting of combinations of different

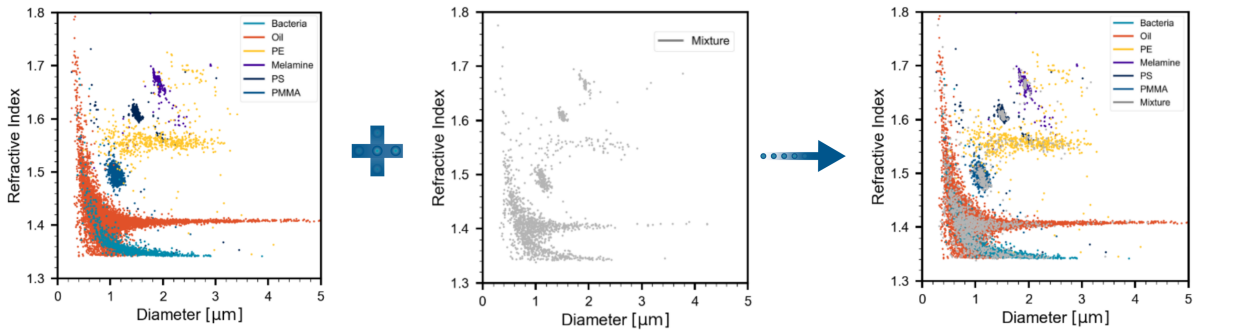
particles (silica, polymethyl methacrylate (PMMA), polystyrene (PS), and melamine) varying in size from 1 µm to 10 µm. Particle composition is identified even when they are the same size and shape.

To learn more about holographic characterization of contaminants:

Click here to see our paper in "Water Research"

xSight identifies 6 different contaminants at once

Particles in a complex suspension of plastic microbeads, oil and bacteria can be detected, distinguished, identified, and quantified using Spheryx xSight



- Six different control samples are measured individually. (**bacteria**, **silicone oil (Oil)**, **polyethylene (PE)**, **melamine**, **polystyrene (PS)**, and **PMMA**)
- The six samples are combined into one mixture.
- Controls and mixture are overlayed. **xSight** identifies each element of the mixture by comparison with the controls!

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About Spheryx, Inc.

Spheryx, Inc. is a privately held analytical services and instruments company providing Total Holographic Characterization® of colloidal materials. Spheryx's proprietary technology uses holographic video microscopy to characterize each particle in colloidal dispersions and multi-component colloidal mixtures, offering unprecedented insights into these materials' characteristics. Applications include R&D, quality assurance and manufacturing process control across a broad spectrum of industries, where characterization of colloids can enhance innovation, improve safety and reduce costs. For more information: https://www.spheryx.solutions/

Note: This news release contains forward-looking statements regarding future events. These statements are just predictions and are subject to risks and uncertainties that could cause the actual events or result to differ materially.

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