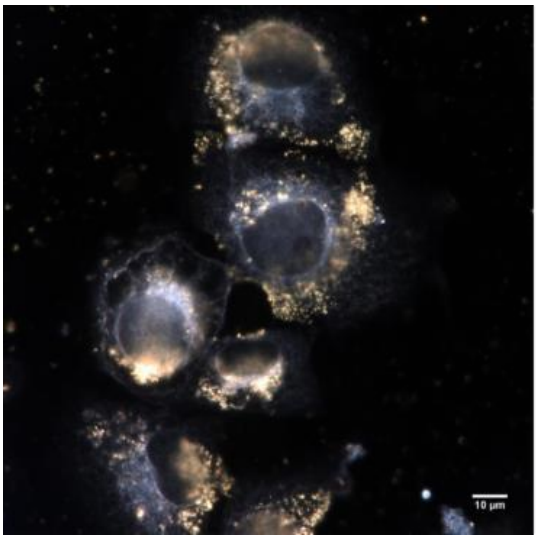
Optical Observation + Hyperspectral Characterization of Nanomaterials *in-situ*

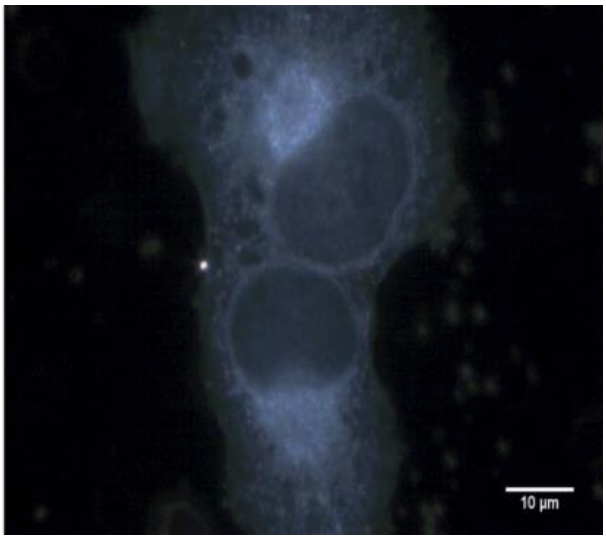
How Optical Microscopy is Changing Nanotechnology Research

A simple optical microscope sitting right on the benchtop is providing major advantages for hundreds of nanotechnology research labs. These labs are using this microscope system to rapidly observe nanomaterials with no sample prep to see how these nanomaterials interact with cells, tissue and other matrixes. Nanomaterials that can be observed include metal, metal oxide, CNTs, polymeric and lipid based materials.

These research groups are using **CytoViva's patented enhanced darkfield microscopy.** Now without having to walk across the campus to the core imaging facility, one can quickly observe nanoparticle concentration, aggregation and consistency. Also, it is easy to see these same nanomaterials interacting with cells, tissue or other matrixes A simply wet mounting on a glass slide allows one to observe his or her sample, with no fluorescent labeling or other sample prep required. The images below demonstrate the ability to observe Au nanoparticles internalized by cancer cells (image on the left) versus a control cancer cell with no exposure to Au nanoparticles on the right.



AuNPs in Cancer Cells

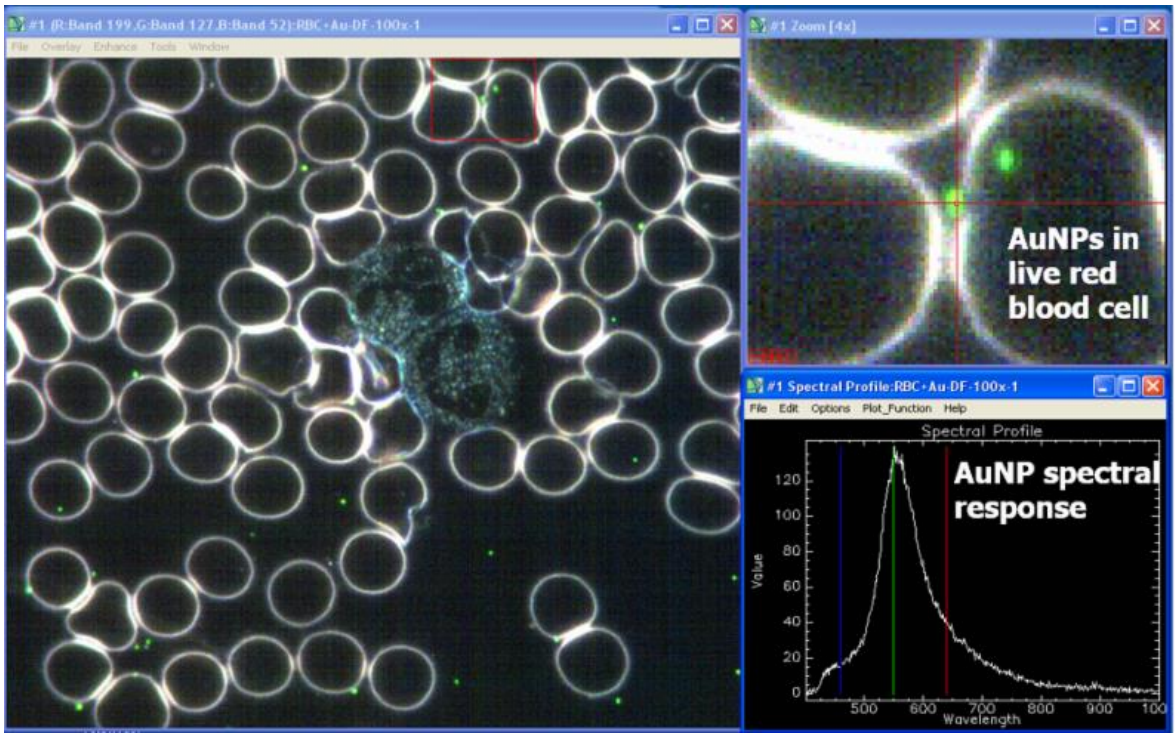


Control Cancer Cells

Recent publications demonstrate how CytoViva's patented, enhanced darkfield optics provide a significant improvement in signal-to-noise ratio over standard darkfield microscopy, by as much as 10:1. See the link below to one of these papers.http://onlinelibrary.wiley.com/doi/10.1002/bkcs.10219/epdf

CytoViva's darkfield optics create oblique angle illumination and manages this illumination in a highly effective manner. This allows one to observe the scatter from the sample with no extraneous noise from the light source. With CytoViva's optics, imaging at the nanoscale is fast, easy and repeatable.

By adding CytoViva's Hyperspectral Imaging technology to the enhanced darkfield microscope, you can spectrally characterize a drug load or other functional group on individual nanoparticles. Further, one can also spectrally confirm the presence and location of nanoparticles in cells, tissue or other environment. See below an example illustrating 50nm AuNPs in a live red blood cell culture. This example illustrates CytoViva's Hyperspectral Imaging and the ability to measure the single pixel spectral response of the AuNP in a live cell culture. In this example, the 50nm AuNPs appear green due to the plasmon resonance associated with the particles.



To see how hundreds of your peers are already using CytoViva's technology to their advantage, please review recent publications from the Google Scholar link below.http://scholar.google.com/scholar?q=cytoviva&hl=en&as_sdt=0,1

More Information

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