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

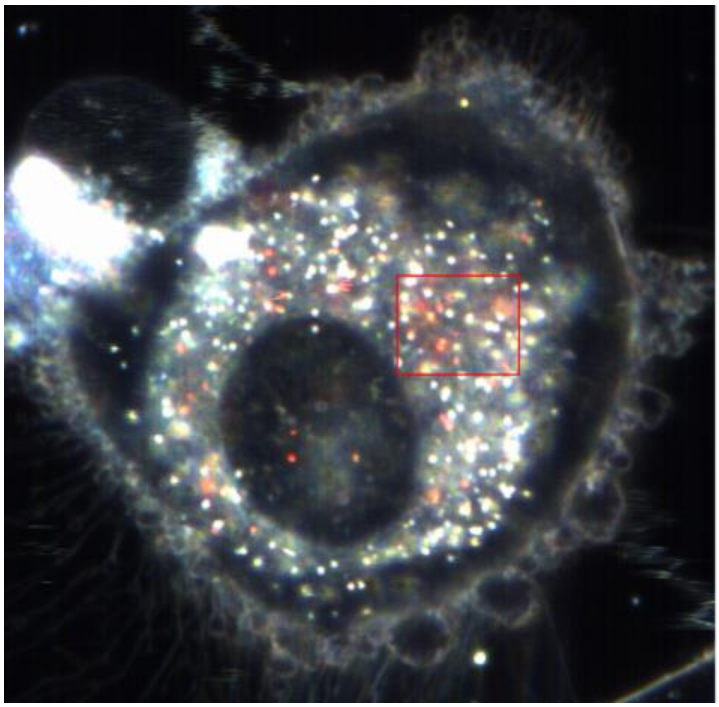
Observing Nanoparticle Interactions in Real Time

As our smart phones and social media have proven, a simple and effective method for capturing and sharing images can quickly change how we share and validate all the interactions occurring in our daily lives.

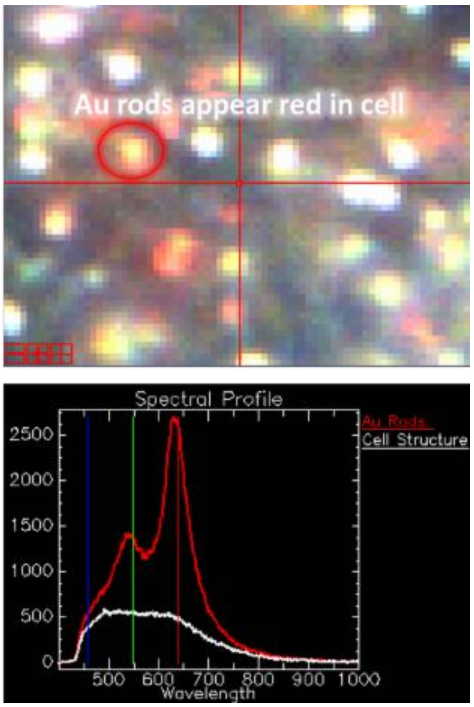
A similar change has also occurred at the nanoscale.

Enhanced darkfield optical and hyperspectral microscopy is providing a simple and highly effective method for observing and validating real time interactions occurring at the nanoscale. This imaging modality requires no sample prep such as fluorescent labeling or fixation. By simply plating your samples on a glass slide as a wet or dry mount, you can instantly and directly observe your sample in the microscope eyepiece and see real time interaction of the nanomaterials in other matrices.

Today over 300 nano research labs use CytoViva's patented enhanced darkfield optical and hyperspectral technology. The images captured by these groups not only provide spatial information illustrating how nanoscale samples interact with other materials, they also serve to cross validate data from other instruments, providing information such as nanomaterial size and chemical composition.

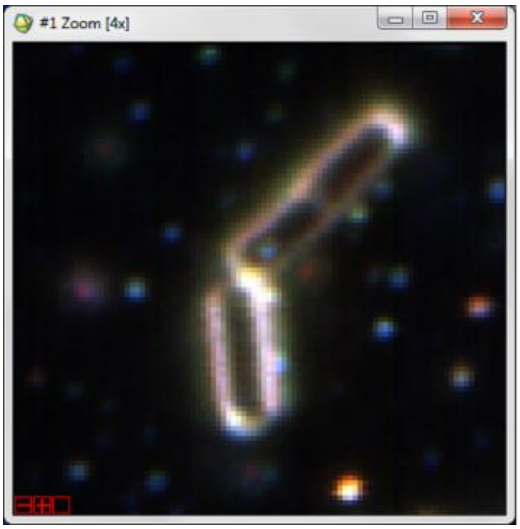


Live neuron with internalized Au rods

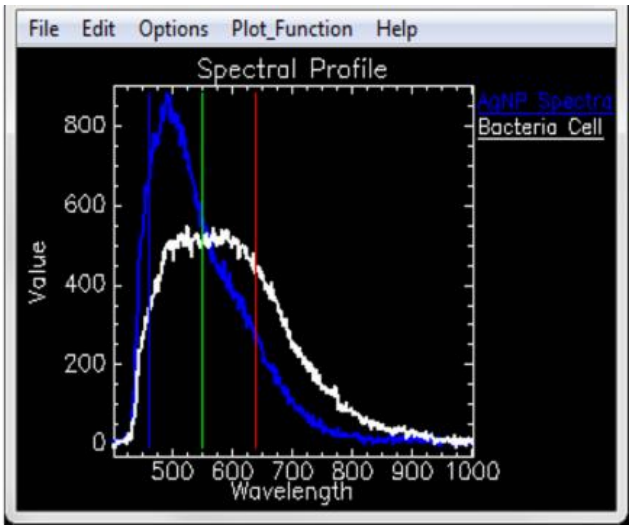


Top: Zoom Image
Bottom: Spectra of Au rods and cell structure

This capability has already contributed to hundreds of peer-reviewed papers. The images above are an example illustrating images and data typically included in these publications. One very notable recent methods paper regarding nanoparticle live cell interactions was published in Nature Scientific Reports. This paper demonstrated the uptake and tracking of a single 30nm x 10nm Au rod in a live cell. See the link to this open source methods paper at: http://www.nature.com/articles/srep05948?WT.ec_id=SREP-631-20140812



30nm AgNPs (blue) interacting with bacteria



Single pixel spectra of AgNP (blue) and bacteria (white)

Another example above shows the interaction of AgNPs with bacterial pathogens and the potential anti-microbial effects of the AgNPs. Researchers studying these interactions are able to see how the AgNPs interact with this pathogen and are able to record any physical effect of the AgNP on the pathogen after exposure. See the link below to a number of recent abstracts illustrating this capability.
https://scholar.google.com/scholar?q=agnp+pathogens+cytoviva&btnG=&hl=en&as_sdt=0%2C5&as_ylo=2014

If your research could be advanced by the ability to observe and understand the dynamic interaction of nanomaterials with biological or other materials based matrices, see the link below to learn more about CytoViva technology or contact us at info@cytoviva.com.

More Information

More Information at www.cytoviva.com, , or
Contact Us at info@cytoviva.com