

## Mapping Carbon Nanotubes in Tissue

Manufacturers and scientists are rapidly expanding the use of nanomaterials in their products and research projects. With the CytoViva Hyperspectral Microscope System, researchers can optically observe, spectrally characterize and map different types of nanomaterials, including carbon nanotubes (CNTs). CNTs have multiple configurations, which allow them to have a wide range of potential uses in material science and medicinal applications. As a result, scientists in the field of nanotoxicology are interested in learning how CNTs can affect cells and tissue when they enter the body through inhalation or other means.

These images illustrate how the CytoViva Hyperspectral Microscope System can confirm the presence and location of the CNTs in lung tissue.

Figure 1 represents a hyperspectral image of aggregated CNTs on a microscope slide. Figure 2 illustrates a spectral library built from the aggregated CNT's using CytoViva's spectral analysis features. Figure 3 is a hyperspectral image of lung tissue exposed to CNTs. Using the CytoViva Hyperspectral Microscope System, the spectral library from Figure 2 is used to identify CNT's in the tissue. In Figure 4, red illustrates pixels where a match from the CNT spectral reference library is present. Using the CytoViva Hyperspectral Microscope System to spectrally characterize the presence and location of CNTs in tissue, cells and other materials is providing researchers with significant and important information.

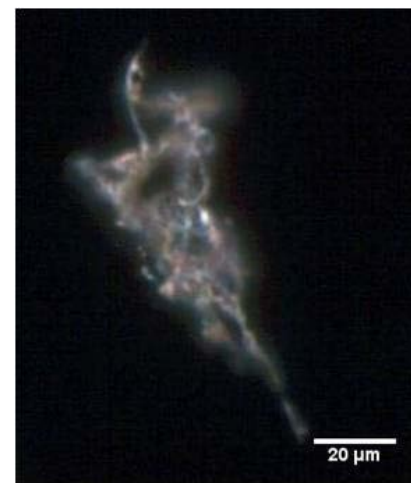


Figure 1. Aggregated CNTs

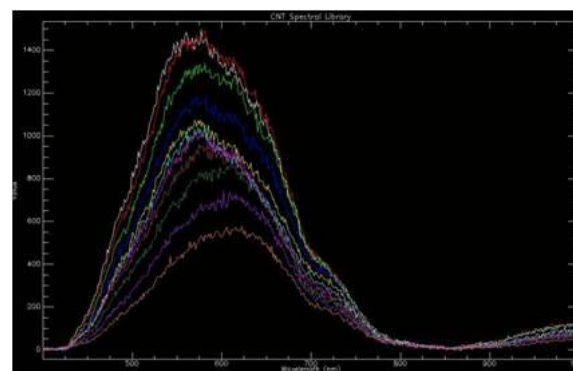


Figure 2. Spectral library created from aggregated CNT

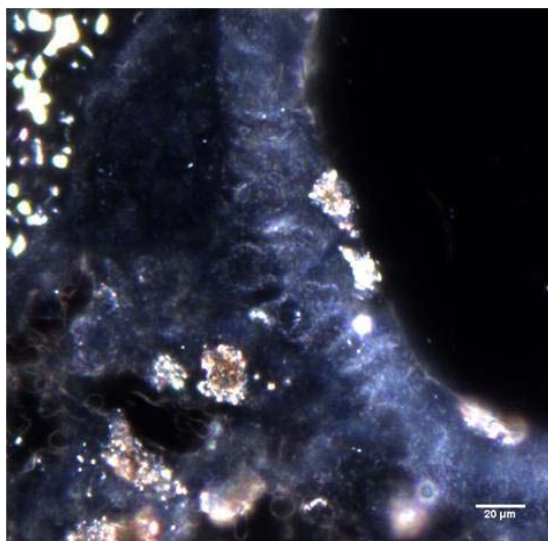


Figure 3. CNT's in lung tissue

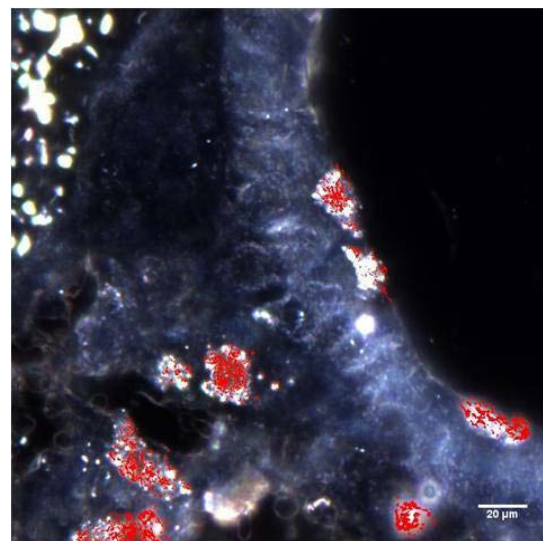


Figure 4. CNT's in lung tissue mapped in red