

Mapping Carbon Nanotubes in 5µm Thick Lung Tissue

Nanomaterials are employed as drug delivery vehicles and bio-markers and are increasingly the subject of clinical studies. Evaluation of thin tissue sections can show the presence and distribution of nanomaterials in multiple tissues types after they are introduced into the body. The CytoViva Hyperspectral Microscope System is a powerful tool for these studies. It combines spectroscopic analysis for identification of exogenous nanomaterial with high resolution imaging for determining the material distribution and aggregation status *in-situ*.



Figure 1: CNTs in Solution

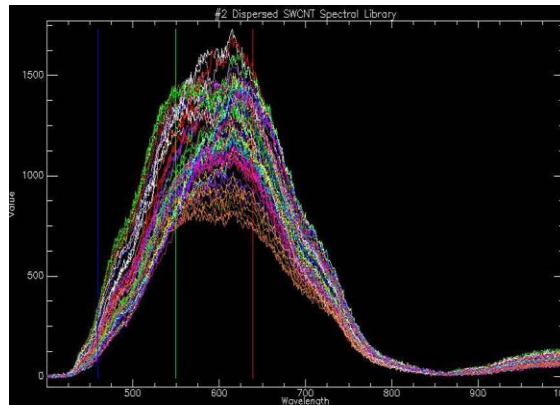


Figure 2: CNT Spectral Library

In this example, clusters of aggregated carbon nanotubes (CNT) were identified and mapped in 5µm fixed mouse lung tissue sections. Figure 1 is a hyperspectral image of CNTs in solution. Figure 2 shows a spectral library created from the data contained in the image of CNTs in solution. Tissue sections containing CNTs were imaged with the CytoViva Hyperspectral Microscope System (Figure 3). The spectral library shown in figure 2 was used to confirm the presence and location of CNTs in the tissue. Figure 4 shows (in red) the locations where the CNTs are located in the tissue. Using the CytoViva Hyperspectral Microscope System allows researchers to spatially detect and spectrally characterize nanomaterials in tissues.

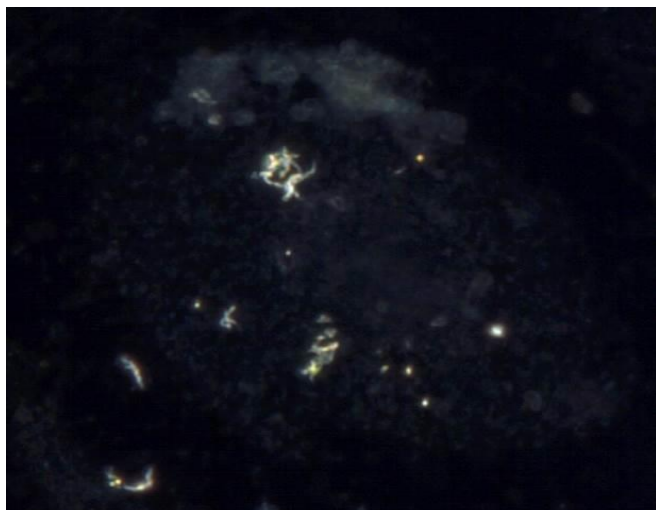


Figure 3: CNTs in tissue

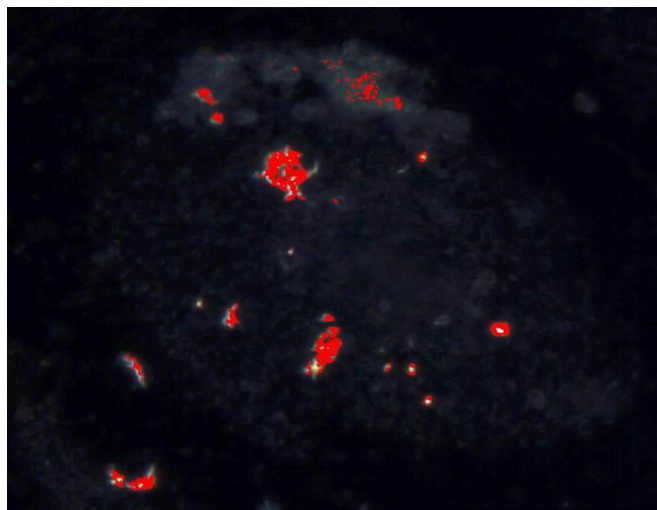


Figure 4: CNTs mapped in tissue