Identifying Functional Groups on Nanoparticles Used as Drug Delivery Agents

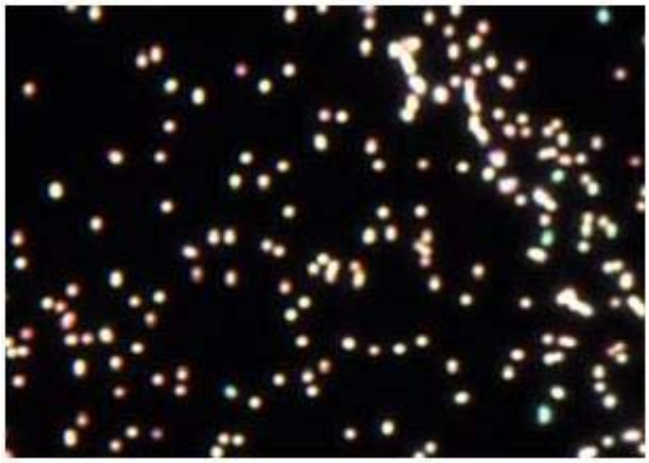

Figure 1. 200nm uncoated Au silica NP (Au1)

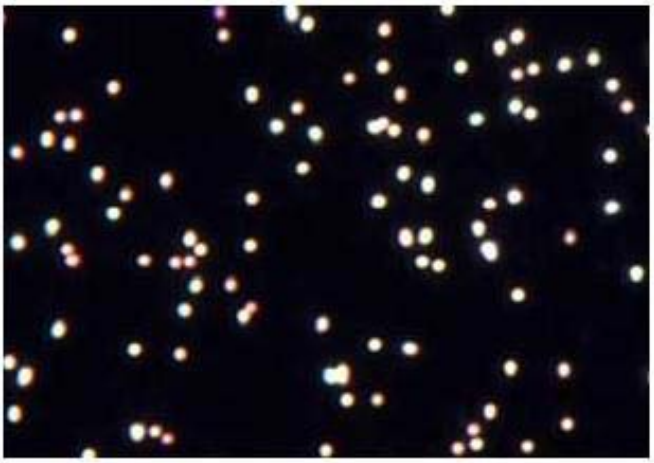

Figure 2. 200nm uncoated Au silica NP (Au2)

Figure 3. 200nm PEG-coated silica NP

Using the CytoViva Hyperspectral Microscope System, researchers can characterize and confirm the presence of biocompatible coatings or other functionalized modifications applied to nanoparticle surfaces. Figures 1 and 2 represent hyperspectral scans of two virtually identically prepared 200nm Au silica nanoparticles. Figure 3 represents the hyperspectral scan of the same 200nm Au silica nanoparticles with a biocompatible PEG surface coating. Figure 4 illustrates the mean spectral curves of the two virtually identical Au shell silica nanoparticles and the PEG coated Au shell silica nanoparticles.

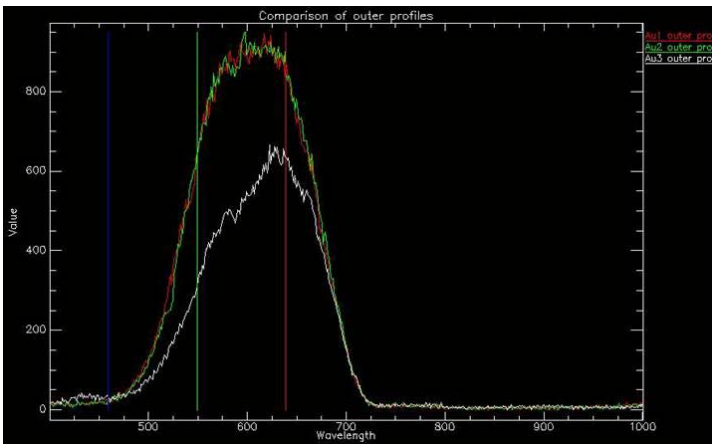

Figure 4. Mean spectral comparisons of uncoated Au silica NP (red and green) versus PEG-coated Au silica NP (white)

This analytical approach is important for researchers developing coated nanoparticles designed to transport drug loads into targeted cells. The hyperspectral system provides a method to characterize both the nanoparticles and the drug loaded coatings intended for nano-medical and targeted drug delivery research. This imaging technique is also suitable for confirming and quantifying the presence of those coated nanoparticles inside cells, tissues or tumor slices.

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