

The combination of light and electron microscopy enables the correlation of high resolution EM analysis with molecular identification and chemical specificity. The field of correlative light and electron microscopy (CLEM) is further advanced with the development of integrated optical and electron microscopes. Integrated systems further improve the image correlation and enable new workflow strategies. In this work a commercial Raman microscope (company HybriScan) is integrated a dualbeam Focused Ion Beam – Scanning Electron Microscope (FIB – SEM).

Raman microscopy is a label free technique enabling chemical specific micro-spectroscopic sample analysis. This makes it a fully complementary technique for electron microscopy that provides high resolution, but limited chemical information. The combination of Raman with FIB enables further analysis after material processing, where material deformations, and structural or lattice defects are detected.

The system capabilities, specifications and its application on different samples will be presented. Of immediate interest is research to the correlative analysis of nanoparticles and nanostructures. Specifically gold nanoparticles are of interest for their use as a multimodal labels, suitable for both SEM and Raman imaging. The SEM is used to locate and identify particles of different sizes, shapes, composition, or particle clusters. Subsequent Raman analysis is used to investigate the effect of these particle properties on the Raman signal.