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# Correlative Microscopy and Data Analysis for Semiconductor Technology Applications

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The increasingly complex structures and large variety of materials used in modern nano and optoelectronic devices drives the need to develop new approaches for their characterization. To obtain the desired information it is often necessary to combine several techniques to acquire reliable information or to obtain different types of information from exactly the same spot on a specimen. This can be challenging both in terms of measurement protocols, but also in the data treatment required to correlate data sets from different techniques and/or modalities. In an applied research or industrial environment, the ability to give fast feedback is a great advantage in materials and process development. It is thus important to have access to a wide range instruments and techniques that are complementary in their capabilities. This presentation will address developments in TOF-SIMS and tandem MS analysis for applications from semiconductor technology to display technology and the importance of using several techniques such as scanning probe microscopy, X-ray tomography, TEM-EDX, XPS and plasma profiling time-of-flight mass spectrometry. The importance of sample preparation to enable multi-technique studies is also critical and several examples will be given involving focused ion beam milling, wedge crater preparation and transfer between instruments under a protected environment (vacuum or inert gas).

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