Agilent Technologies New AFM/Raman Spectroscopy System Provides Nanoscale Material Identification and Analysis

Agilent Technologies

Santa Clara, CA – Agilent Technologies Inc. [1] [NYSE: A [2]] has announced the availability of a high-performance AFM/Raman system for life science and materials science applications. The system seamlessly integrates the Agilent 6000ILM AFM (atomic force microscope) and a HORIBA XploRA INV (inverted Raman microscope). The combination enables researchers to go beyond the optical diffraction limit to achieve nanoscale resolution as they perform Raman spectroscopy.

"Key capabilities of this new high-precision system include AFM/Raman co-localization, tip-enhanced Raman spectroscopy for transparent samples, and AFM force-volume spectroscopy," said Jeff Jones, general manager for Agilent's nanoinstrumentation facility in Chandler, Ariz. "It's an ideal solution for advanced life science research, including studies of cell membranes, the surface structure of cells, individual proteins, single molecules, and biopolymers, as well as for investigating novel materials such as graphene."

AFM/Raman co-localization can be performed either sequentially, using the new system's Raman laser scanning option, or simultaneously, using Agilent PicoView software to control the system. Raman mapping is achieved by acquiring a complete Raman spectrum at each pixel of a 2-D image to create a detailed chemical image of the sample. This image is generated by plotting the peak intensity (material concentration), peak position (molecular structure or material stress), or peak width (crystallinity). The system precisely overlays the detailed chemical image with a 3-D AFM topography image.

The system's XY piezo stage affords both Raman and AFM measurements. The 6000ILM AFM provides a wide range of direct sample property measurements (elasticity, for example) that can be correlated via Raman with chemical composition. Tip-enhanced Raman spectroscopy is also possible.

Agilent's new AFM/Raman system provides an extensive range of AFM force-volume spectroscopy capabilities. Results are fast and reliable. Researchers can use their own algorithms and plug-ins, select their own data points on the fly, acquire force-curve measurements on any data point, and change experimental parameters in real time.

Additional advantages include unrivaled in-liquid AFM imaging via Agilent's patented MAC Mode, an incubator perfusion cell sample plate to facilitate dynamic studies in liquids and gases, and a top-view video optics package that offers the ability to see opaque samples while scanning.

For more information visit www.agilent.com [1].

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