

Automated 3-D Chemical Imaging Combined with AFM

WITec introduces the alpha500 and alpha700 series for automated Confocal Raman Imaging and Atomic Force Microscopy

WITec, specialist in high resolution optical and scanning probe microscopy, introduces the alpha500 and alpha700 microscopy series for automated Confocal Raman Imaging and Atomic Force Microscopy (AFM) on large samples. The alpha500 and alpha700 are the first instruments on the market to combine Confocal Raman Microscopy for 3-D Chemical Imaging and AFM for high resolution structural imaging in an automated system. A motorized sample stage with a travel range of 150x100 mm for the alpha500 and 350x300 mm for the alpha700 allows multi-area/multi-point measurements or overview scans on an arbitrary, user-defined number of measurement points. Specific automated functions such as an integrated auto-focus and an automatic AFM-tip approach guarantee that standardized routine measurement procedures or manually defined sequences can be performed without any ongoing process control by an operator. The instruments significantly reduce the overall experiment duration and deliver a greater amount of data in a given time for resource-minimized routine research or high-level quality control, bringing results to market or publication even faster.

"Analyzing the samples automatically significantly accelerates the measurement cycles in routine experiments, guaranteeing rapid problem solving and an efficient return on investment" says Dr. Klaus Weishaupt, Managing Director of Marketing and Sales at WITec. "The combination of Confocal Raman Imaging and Atomic Force Microscopy in an automated system for large samples is unique worldwide. For the first time it is possible to not only chemically but also structurally characterize large samples automatically for the most comprehensive and rapid surface inspection on the sub-micron and nanometer scale."

Imaging applications involving systematic procedures and routine operations as well as large sample analysis benefit from the new automated design of the alpha500 and alpha700 series. Wafer inspection, pharmaceutical screening, standardized coating and thin film analysis along with forensics or tissue screening are just a few examples of a wide variety of applications.

For high resolution Confocal Raman Imaging and AFM measurements, a piezo-driven scan stage with capacitive feedback-control and dynamic position control (TrueScan™) is

incorporated. In the Raman imaging mode, a complete spectrum is acquired in as little as 760 microseconds at each image pixel, resulting in images consisting of tens of thousands of Raman spectra being collected in less than a minute. Differences in chemical composition will be apparent in the Raman image and can be analyzed with a spatial resolution down to 200 nm. By simply rotating the objective turret, AFM capabilities are accessible, supporting all standard AFM modes and ensuing high flexibility throughout the full range of AFM applications.

About WITec

WITec is a manufacturer of high performance optical and scanning probe microscopy systems. A modular product line allows the combination of different microscopy techniques such as Raman, NSOM or AFM in one single instrument for flexible analysis of the optical, chemical and structural properties of a sample. The instruments are distributed worldwide and are used primarily in materials science, life sciences and nanotechnology. WITec is based in Ulm, Germany and Savoy, IL, USA. For more information, please refer to <http://www.witec.de>.

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