

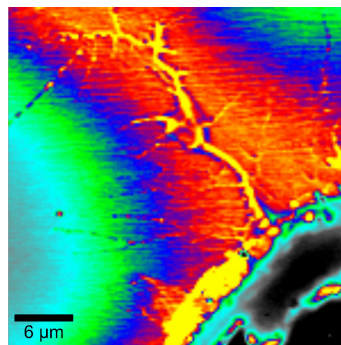
## Confocal Raman & Atomic Force Microscopy for R&D and QA Integrated Chemical 3D and High-resolution Surface Structural Imaging

At booth **4/K8** WITec will highlight its new alpha300 and alpha500 microscope series for Confocal Raman Imaging, Atomic Force Microscopy and SNOM. The microscopes allow comprehensive characterization of various solar cell materials on the nano- and micrometer scale. Raman spectroscopy and imaging are nondestructive techniques delivering information on various material properties such as crystallinity, material stress, stoichiometry, material distribution, homogeneity or clustering. The confocal microscope setup allows to perform depth profiles in order to acquire information on the layering of thin films. In photovoltaics typical fields of applications are found in the investigation of CIS & CIGS thin films, Si-Solar cells, ZNO and Dye Solar Cells. The scanning near-field optical microscope (SNOM) produces images with an optical resolution below the diffraction limit. In Atomic Force Microscopy a very small and sharp tip is scanned over the surface to acquire topographic information. Together with a specific imaging mode, the Pulsed Force Mode, surface properties such as adhesion or stiffness can be imaged on the nanometer scale.

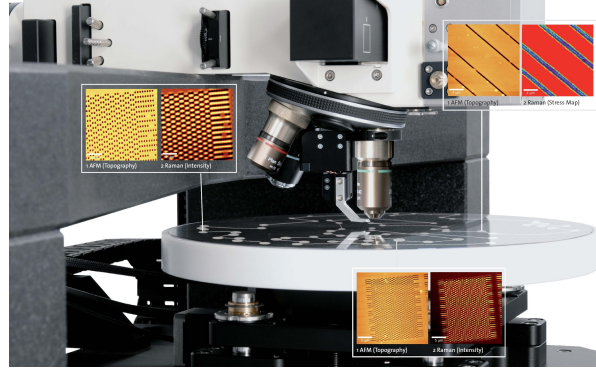
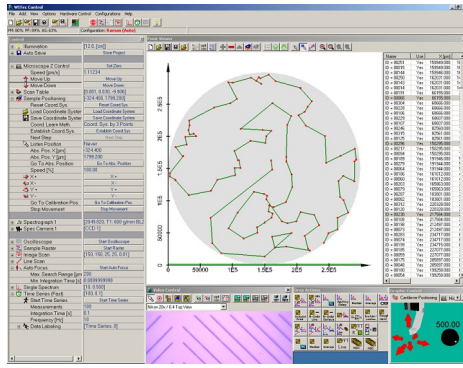
The WITec alpha500 is the first instrument on the market to combine Confocal Raman Microscopy for 3-D chemical imaging and AFM for high resolution structural imaging in an automated system for large samples. A motorized sample stage with a travel range of 150x100 mm (350x300 optional) makes possible 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 standardized routine measurement procedures or individually defined sequences to be performed without any online process control by an operator during the measurement. The modular design even provides upgrade possibilities for the investigation of very large samples such as complete PV modules for on- and/or off-line process control.



*alpha 300 RA*



*Splash around a laser drilled hole on a Si-Solar Cell Device*



*Special software tools allow the sample positions and the measurement tasks to be predefined and then processed automatically.*

## 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, SNOM or AFM in a 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 the fields of Materials Science, Life Science and Nanotechnology. WITec is based in Ulm, Germany and Maryville, TN, USA. For more information, please visit <http://www.witec.de>.

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