

Raman Spectroscopy System UHTS 300

Lise-Meitner-Straße 6, D-89081 Ulm, Germany
Tel. +49 (0) 731 140 700, Fax. +49 (0) 731 140 70200
www.witec.de, info@witec.de

WITec
focus innovations

Ultrahigh throughput spectrometer designed specifically for Raman Microscopy and applications with low light intensities

In Raman Microscopy, a high-throughput optical system is crucial in order to detect the low light intensities usually encountered with Raman spectroscopy.

The ultrahigh throughput of the UHTS 300 spectroscopy system enables up to 70 % transmission and is limited only by the efficiency of the grating. With this spectrometer, the acquisition time for a single Raman spectrum can be below one millisecond per spectrum, which is crucial in Raman microscopy where thousands of Raman spectra are acquired in only a few minutes.

The UHTS 300 features an extremely high sensitivity detector for the acquisition of the spectra. The thermoelectric cooled, back-illuminated CCD detector chip is optimized for low Raman intensities (also

available with deep depletion technology for enhanced NIR sensitivity or as Electron Multiplying-CCD). For data acquisition and evaluation, the powerful WITec Control and WITec Project software package is integrated and enables various spectral characteristics to be analyzed easily and comprehensively.

The UHTS 300 delivers exceptional spectral and image quality with the WITec Confocal Raman Microscopy System alpha300 R. Chemical information with resolution down to 200 nm laterally, and 0,02 wavenumbers spectrally, can be easily obtained with this highly-sensitive instrumentation. Additionally, the unique Raman Spectral Imaging mode allows the investigation of stress and defect density distribution in materials.

Technical Data

Lense-based Spectrometer:

Transmission: 70 %

Focal Length: 300 mm

One or two grating option,
type of grating customizable

Aperture Ratio: f/4, microscope optimized
(@532 nm excitation & 600/1800 l/mm
grating)

fiber entrance

Size: 575 mm long, 345 mm wide, 140 mm
high

CCD detector:

Active Pixels 1024x127

Pixel Size 26µm

Thermo-electric cooling (down to -70°C)

Peak QE of 95%

Dynamic Range 16-bit

Spectroscopic EMCCD detector optional for
Ultrafast Confocal Raman Imaging



Fig. 1: UHTS 300 spectrometer equipped with spectroscopic EMCCD

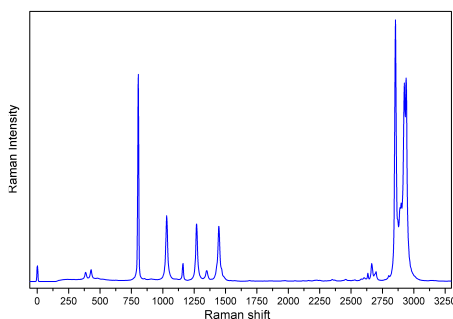


Fig. 2a: Raman Spectrum of Cyclohexane acquired with the UHTS 300

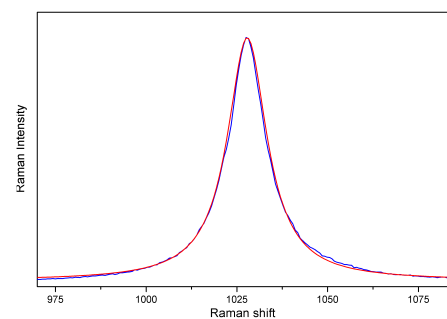


Fig. 2b: Zoom in at the 1020 1/cm peak region. In addition to the measured spectra (blue) a Lorentzian-fitted curve is displayed (red). Please note the perfect match of the measured spectra with the theoretically expected curve.