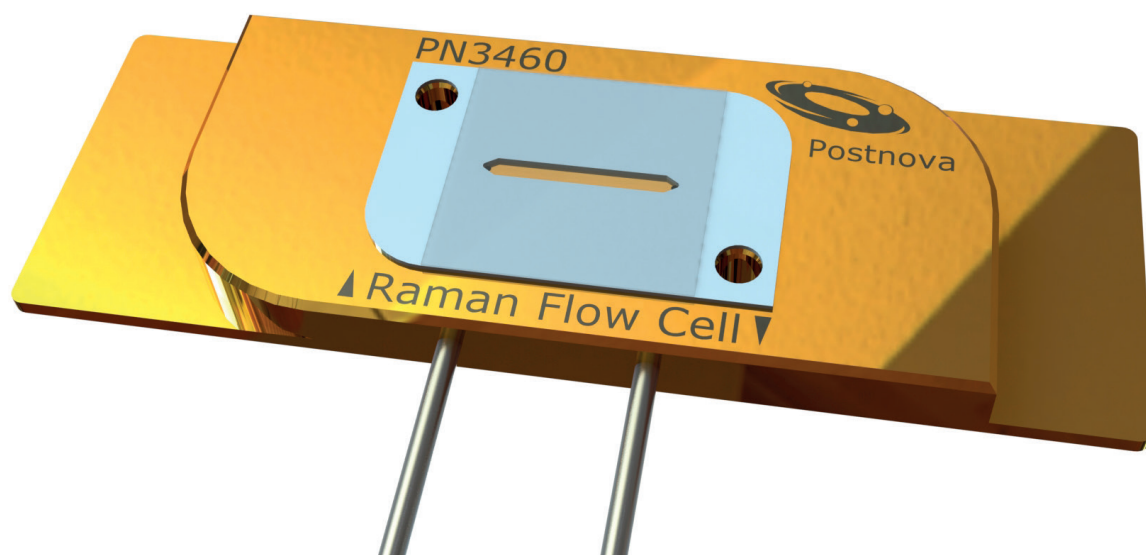


PN3460 Raman Detection

Advanced FFF Interface for Raman Microscopy



PN3460 Raman Detection

Features

Raman Scattering has become more and more popular as an information rich spectroscopy method additional to RI, UV and Fluorescence based techniques. Also in nano, bio and polymer science it has proved its applicability to a wide range of applications. Raman microscope as a laser-powered microscopic device is a very efficient way to perform Raman spectroscopy.

Typical Raman microscopes begin with a standard optical microscope by adding a specific excitation laser, laser rejection filters, either a spectrometer or a monochromator and optical sensitive CCD or PMT detectors.

One way to use Raman microscopy is by measuring the Raman spectrum of a single point. However, recently the technique has been extended to apply Raman spectroscopy for direct chemical imaging over the whole field of view on a 2D/3D sample. Raman microscopy can reach down to sub-micrometer lateral spatial resolution and when used with a Postnova flow cell, allows detection and characterization of nano and micro particles separated by the Postnova FFF platform beforehand.

The Postnova PN3460 Raman Flow Cell enables the online hyphenation of all liquid sample systems and especially Field-Flow Fractionation combined with Raman microscopy for high-resolution separation and chemical identification of particles in the size range of 200 nm up to 50 μm . It is particularly useful for the analysis of micro- and nanoplastic particles.

The Postnova PN3460 Raman Flow Cell has been validated with the WITec alpha300 access confocal Raman microscope.

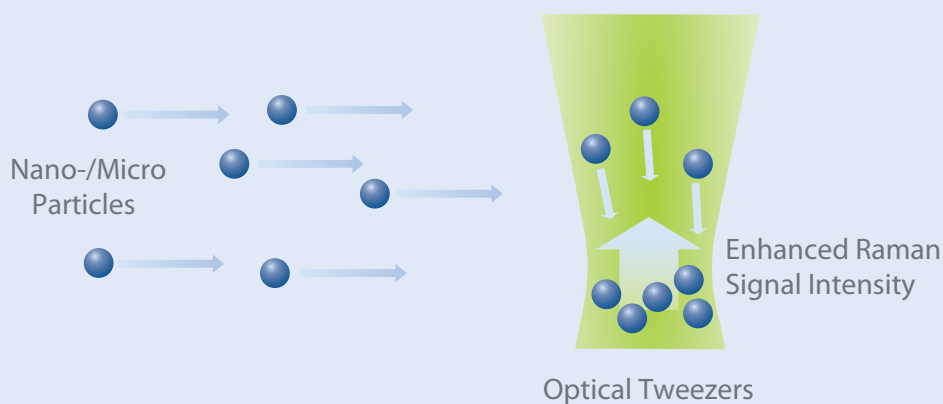
Recommended Objective:

Olympus Water Immersions Objective LUMPLFN40XW (W.D. 3.3, Mag 40, OFN 26.5, NA 0.8, IM water).

Any other comparable lens would also be usable.

Field-Flow Fractionation Raman Spectroscopy

- Size Separation
- Size Information
- Chemical Information



Operating Principle

By trapping the particles in the focus of the Laser of the Raman microscope after eluting from the FFF-channel, the PN3460 Raman Flow Cell takes advantage of the remarkable physical principle behind "Optical Tweezers" (2018 Nobel Prize in Physics).

This powerful feature leads to an accumulation of the particles in a narrow area within the Raman Flow Cell thereby significantly enhancing signal intensity and thus the sensitivity of the Raman analysis.

Ordering Information

Z-DET-3460-001

PN3460 Raman Flow Cell

Technical specifications are subject to change without further notice.

Rev.2025-1

Specifications

- Maximum Particle Size: 50 μm
- Minimum Particle Size: 200 nm polystyrene (depending on conditions and material)
- Solvent Compatibility: In principle any kind of liquid phase can be used within typical viscosity levels.
- Flow Channel Dimensions (LxWxH): 13 mm x 1.5 mm x 0.35mm
- Flow Cell Dimensions: 76 mm x 26 mm x 1 mm fully compatible with standard microscope in compliance with DIN ISO 8037-1
- Flow Channel Volume: approx. 6.75 μL
- Flow Rates: 0.1 mL/min up to 1.0 mL/min max.
- Wetted Parts: Gold 999, Titanium, Stainless Steel 316, PET, Glas, Peek/SS
- Connections: 2 x 10-32 UNF high pressure fittings for 1/16 tubes
- Maximum Pressure: 50 kPa (0.5 bar, 7.25 PSI)
- Total Weight: approx. 75 g

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