NIRaman Combi Probe

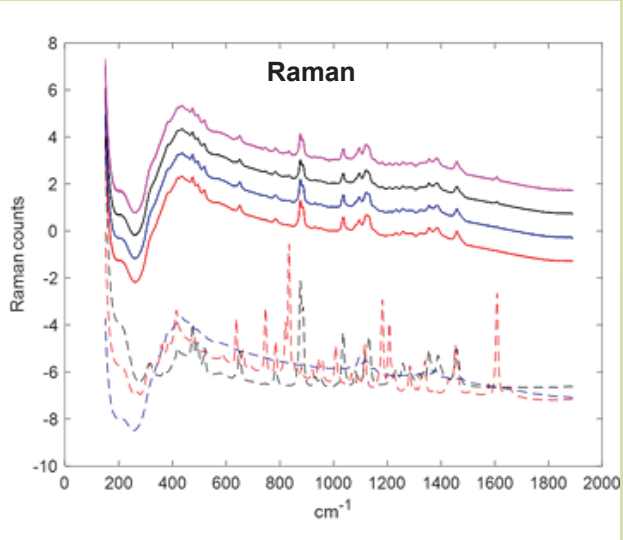
art photonics
MEMBER OF THE NYNOMIC GROUP

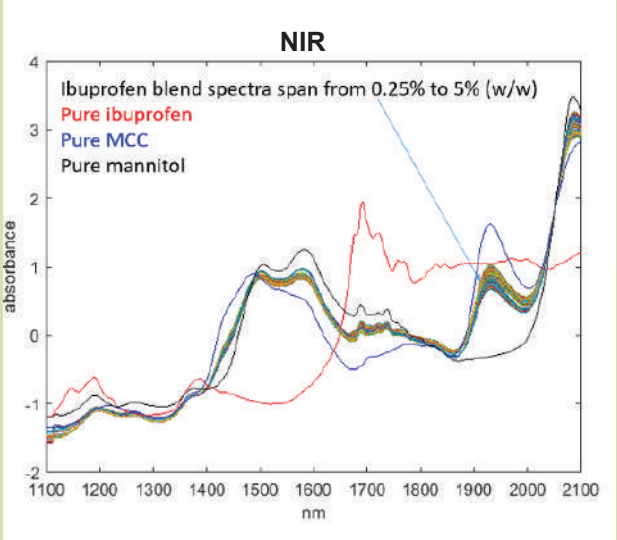
„In modern pharmaceutical manufacturing, the control of critical quality attributes such as API solid-state form requires robust in-process analytics. As shown at the 2026 TTC PAT-Connect conference, art photonics and Bayer have demonstrated that the combination of Raman and NIR spectroscopy enables simultaneous monitoring of polymorphic form and moisture during key steps such as drying. This integrated PAT approach allows early detection of undesired transformations and supports efficient process development from laboratory to production scale. Innovative solutions - such as combined Raman/NIR probes - are essential to overcome practical implementation challenges and ensure reliable real-time process control."

Dr. Matthias Balsam,
PAT Application Senior Expert of Bayer AG

Applications:

- Reaction Monitoring in real time
- Process Analytical Technologies (PAT)
- Raw Material Identification (RMID)
- In-process Blend Potency Verification
- API crystallization & drying: simultaneous control of moisture (NIR) and polymorphic form (Raman)
- Analytical characterization for the pharmaceutical, food, and chemical Industries





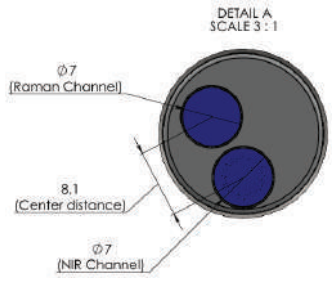
NIRaman Probe from art photonics is the first multichannel fiber optic probe that combines NIR diffuse - reflectance channel and a 785 nm Raman channel within a single probe shaft, enabling synchronized in situ spectral acquisition from solids, powders and liquids. Measurements are fast, non-destructive and require no sample preparation, even when only a single process port is available.

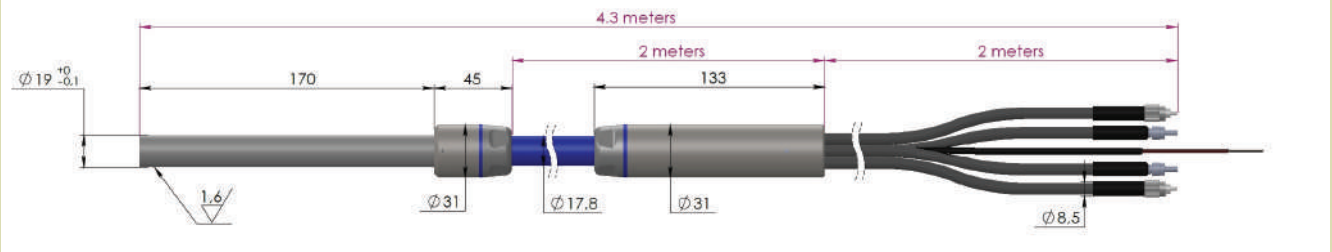
Specification of NIRaman Combi Probes FlexiSpec®

	NIR Diffuse Reflectance Channel	Raman Channel
Excitation Fiber	bundle 19 x NIR400/440, NA=0.22 ± 0.02	1 x NIR105/125, NA=0.22 ± 0.02
Detection Fiber	1 x NIR400/440, NA=0.22 ± 0.02	1 x NIR200/220, NA=0.22 ± 0.02
Terminations	SMA 905	FC/PC, SMA 905
Operating spectral range	1000 - 2500nm (other – on request)	Cut-off Wavelength 130cm -¹ (other – on request)
Laser wavelength	785 nm	
Stray Light	less then 0,2%	
Temperature range	0 - +150°C	
Pressure	0 - 10 Bar	

Common Parameters of NIRaman Combi Probes FlexiSpec®

Window	Sapphire
Channels	separate NIR and Raman channels
Total Length	3 ± 0.05 m
Shaft Length	170 mm
Shaft Diameter	19 mm (3/4″)
Shaft Material	Stainless steel 316L, optional Hastelloy C22
Sealing material	Epoxy, Gold soldering (optional: KALREZ)





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