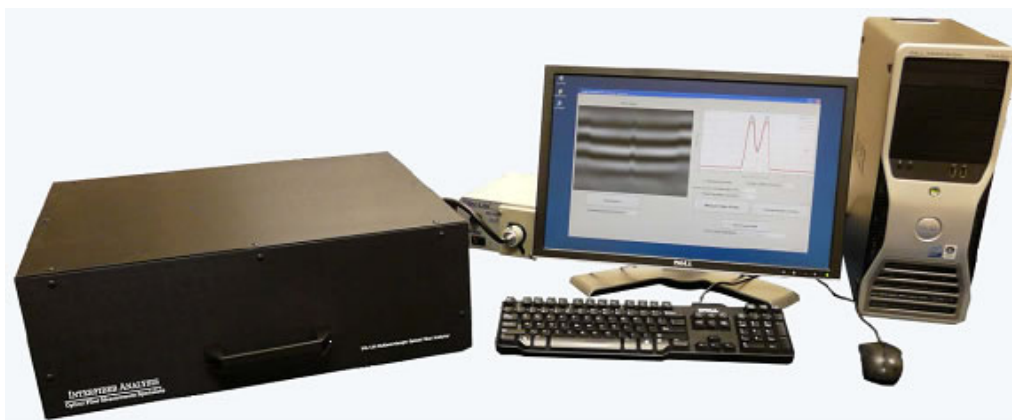# Sintec Optronics

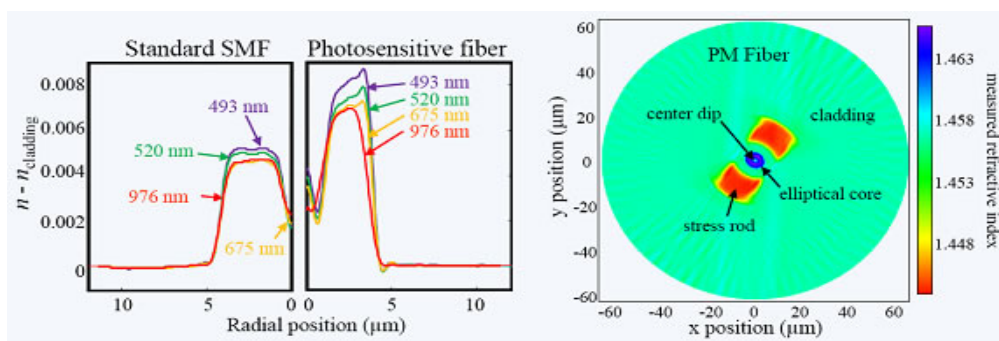# IFA-100 Optical Fiber Refractive Index Analyzer

We specialize in Transverse Interferometry, the *most sensitive* fiber measurement technology available.

Our exclusive patent-pending Multi-Wavelength Optical Fiber Refractive Index Profiling Technology was first presented as Postdeadline Paper PDP A2 at OFC/NFOEC 2009 and has since been the subject of peer reviewed conference and journal publications. Since the measurement is performed transversely (through the side of the fiber), it is essentially non-destructive. Although the fiber's polymer coating or buffer must be removed, the fiber itself can continue to carry an optical signal during the measurement, and if necessary the polymer coating can be restored to the fiber after the measurement is completed.

Features:
- Multiwavelength
- No cleave required
- Sub-μm spatial resolution
- Applicable to any fiber type
- Fast measurement time
- Measure splices, tapers, couplers

Specifications:

Refractive index accuracy	+/− 0.0001
Spatial resolution	~ 500 nm
Measurement wavelength	500 nm to 1 μm
Fiber diameter	40 μm to 400 μm
Fiber material	Silica glass, non-silica glass, plastic
Concentricity error measurement	+/− 200 nm
Core non-circularity error measurement	+/− 0.4 %
Fiber type	singlemode, multimode, microstructured (PCF), PM, multicore, rare-earth, cladding-pumped, large mode area, low bend loss, high-Δ, etc.

![Sintec Optronics logo]

STAR-nPA-600 Refractive Index Profiler
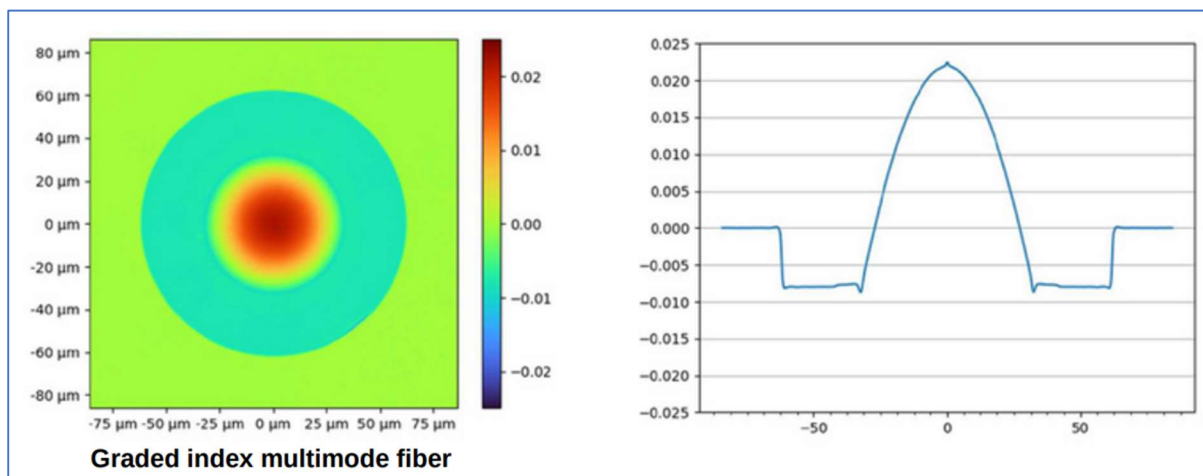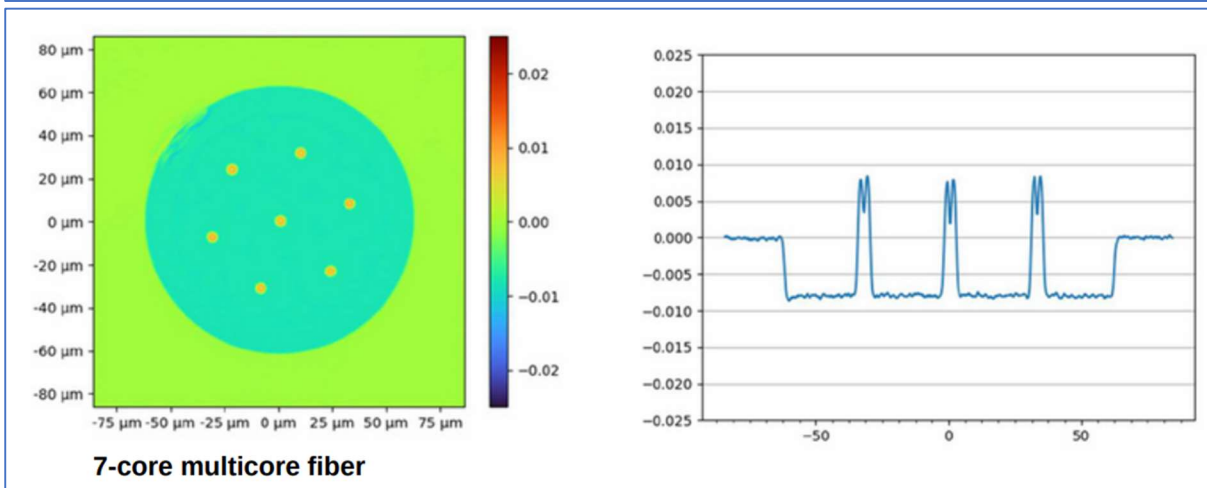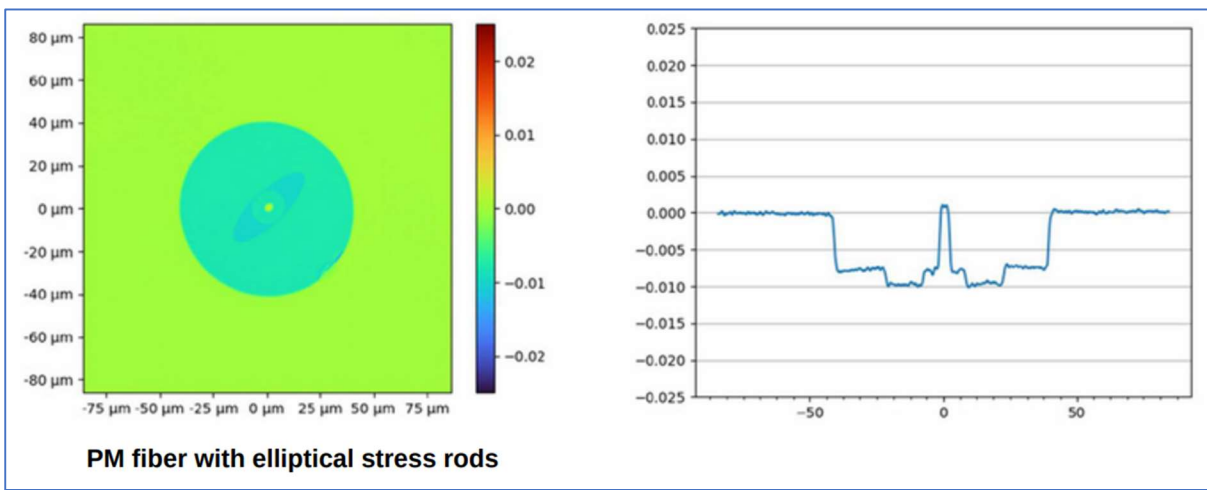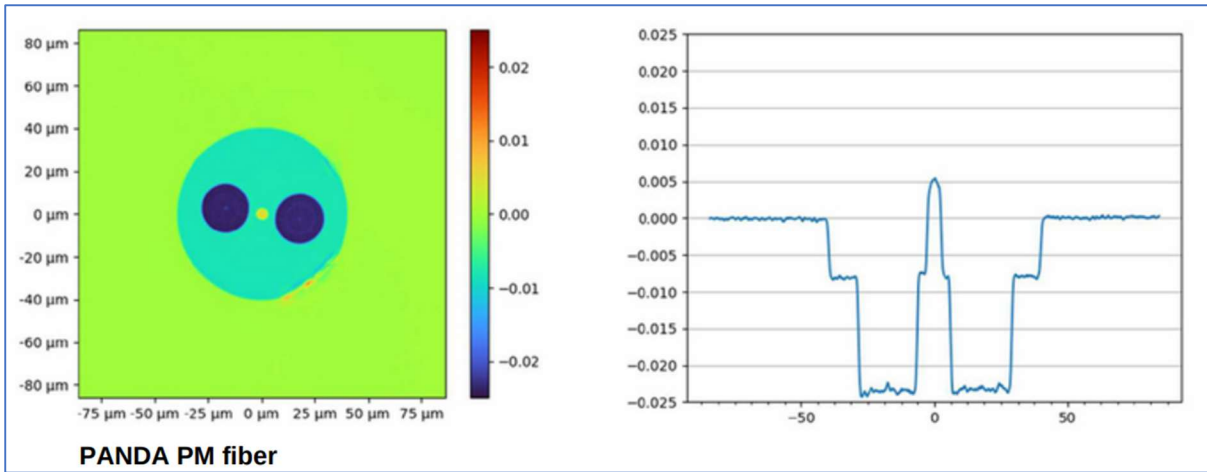

Measure fibers up to 600 µm

Our refractive index profiler uses a modified refracted near-field technique to analyse a fiber end-face to determine the full 2D refractive index distribution. The STAR-nPA-600 is the quick and easy way to get the refractive index data you need to verify your specialty fiber design and manufacturing processes. The instrument comes with the v2.0 software which boosts system performance and improves user experience, and the API allows the STAR-nPA-600 to integrate to other system seamlessly.
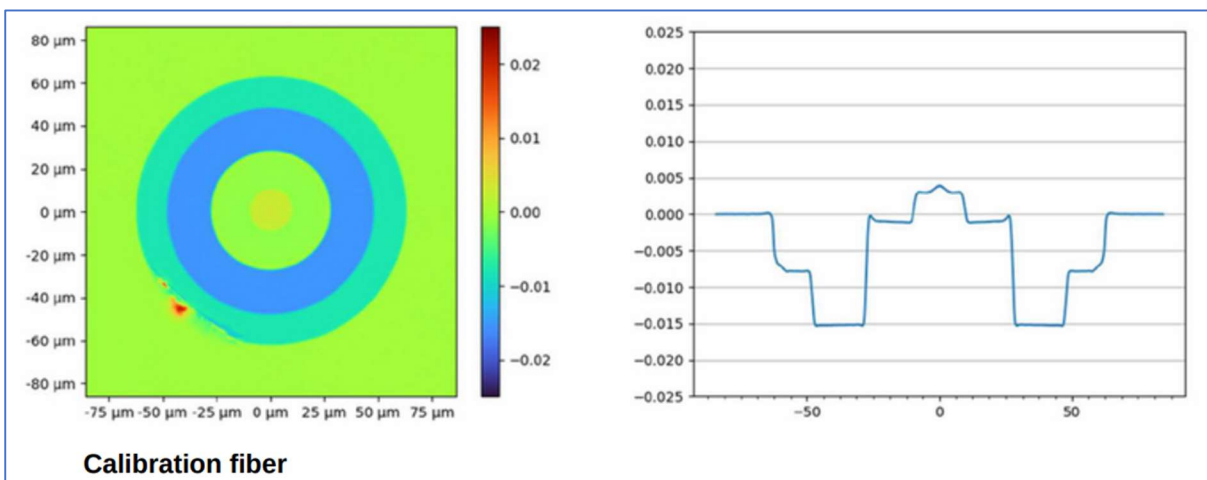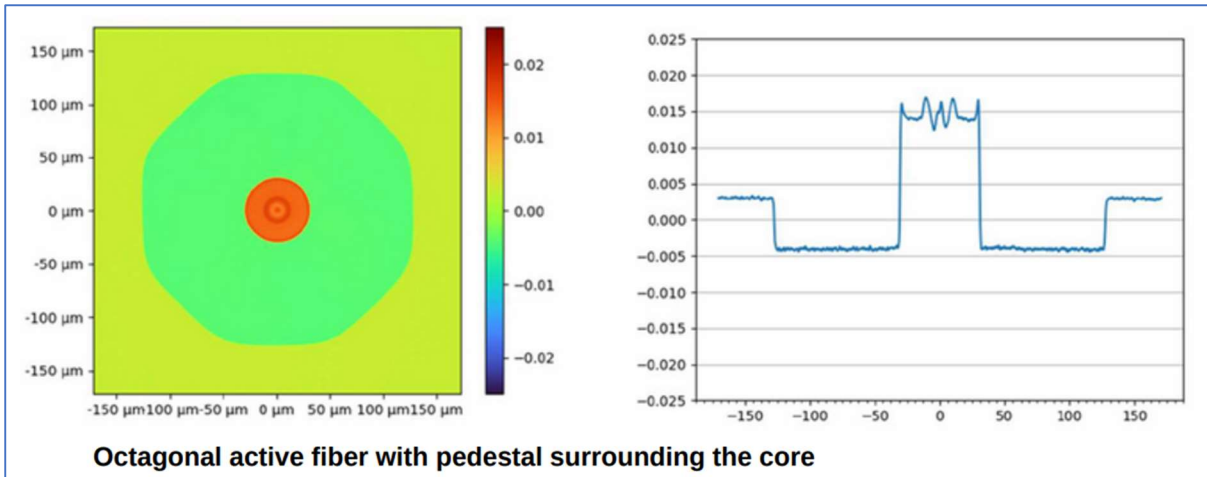
Features:
- Measure fibers up to 600µm in diameter.
- Prepare and measure a fiber sample in under 2 minutes (2D measurement in seconds)
- Measure non-circularly symmetric fibers – good for PM, octagonal, multi-core fibers.
- Preinstalled with production-ready v2.0 software
  - ✓ Region cursor markers give an average of the refractive index of the marked region
  - ✓ Option to display target refractive index template alongside with actual fiber profile
  - ✓ API facilities users customisation and integration with other systems
  - ✓ Various measurement and output options for better system performance and user experience
- Traceable calibration and new calibration tools

The STAR-nPA-600 measures most fiber types:

Graded index multimode fiber

PANDA PM fiber

PM fiber with elliptical stress rods

7-core multicore fiber

Octagonal active fiber with pedestal surrounding the core

Calibration fiber

Technical Specifications:

Refractive index repeatability*	0.0002
Fiber diameter	40 to 600 µm
Fiber material	Silica glass
2D measurement time **	< 10 second
measurement range ***	+/- 0.025
Measurement wavelength	630nm
Maximum field of view	830 µm
Image sensor	APS-C CMOS, 6480x4860 pixels resolution
Dynamic range	73dB
Weight	6kg
Size	0.5m x 0.16m x 0.13m
Operating temperature	15 - 30°C
Performance specification	validated at 22°C
Computer requirements	All systems are supplied with a computer running up-to-date Windows operating system
Data interface	1 x USB 3.0 (USB A to USB B: 1m cable supplied)

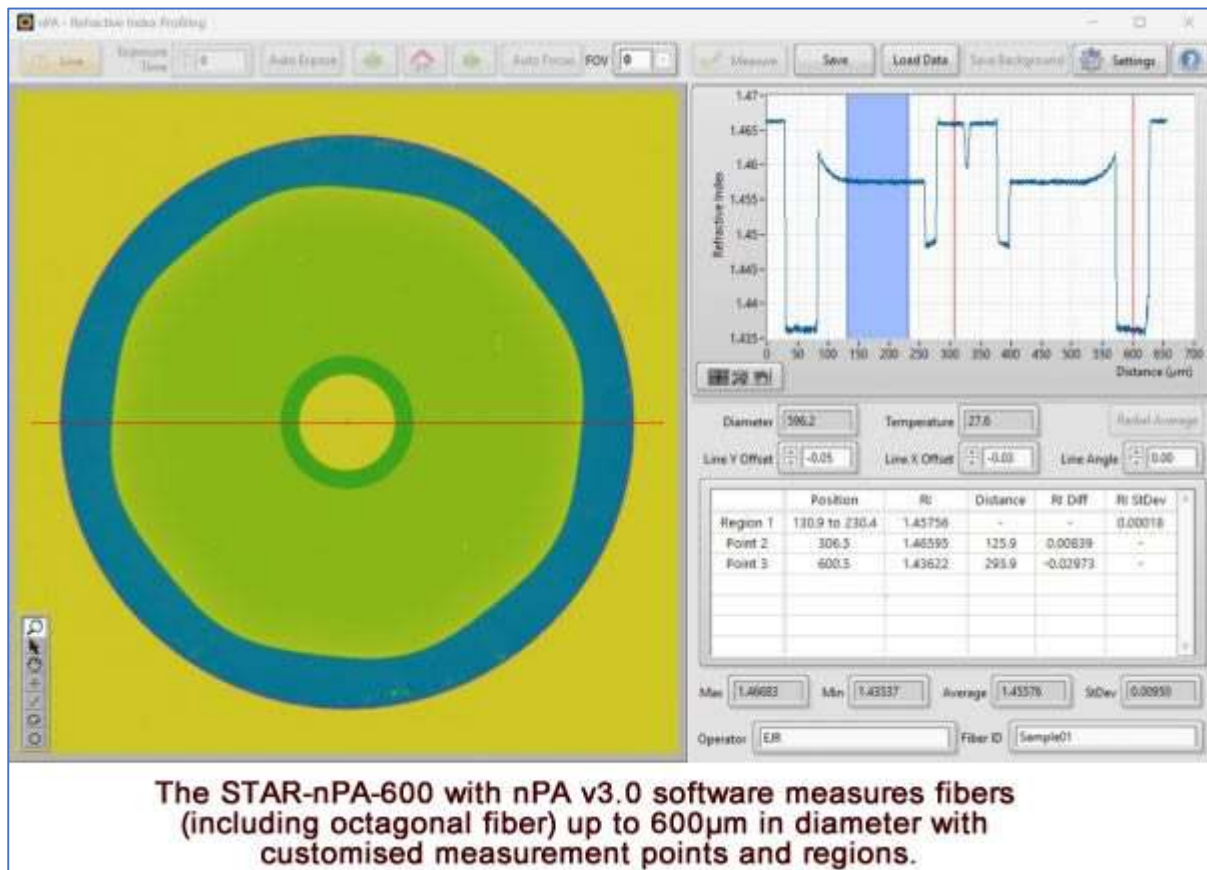* Repeatability is measured on a 125 µm MM fiber sample without removing from the measurement cell
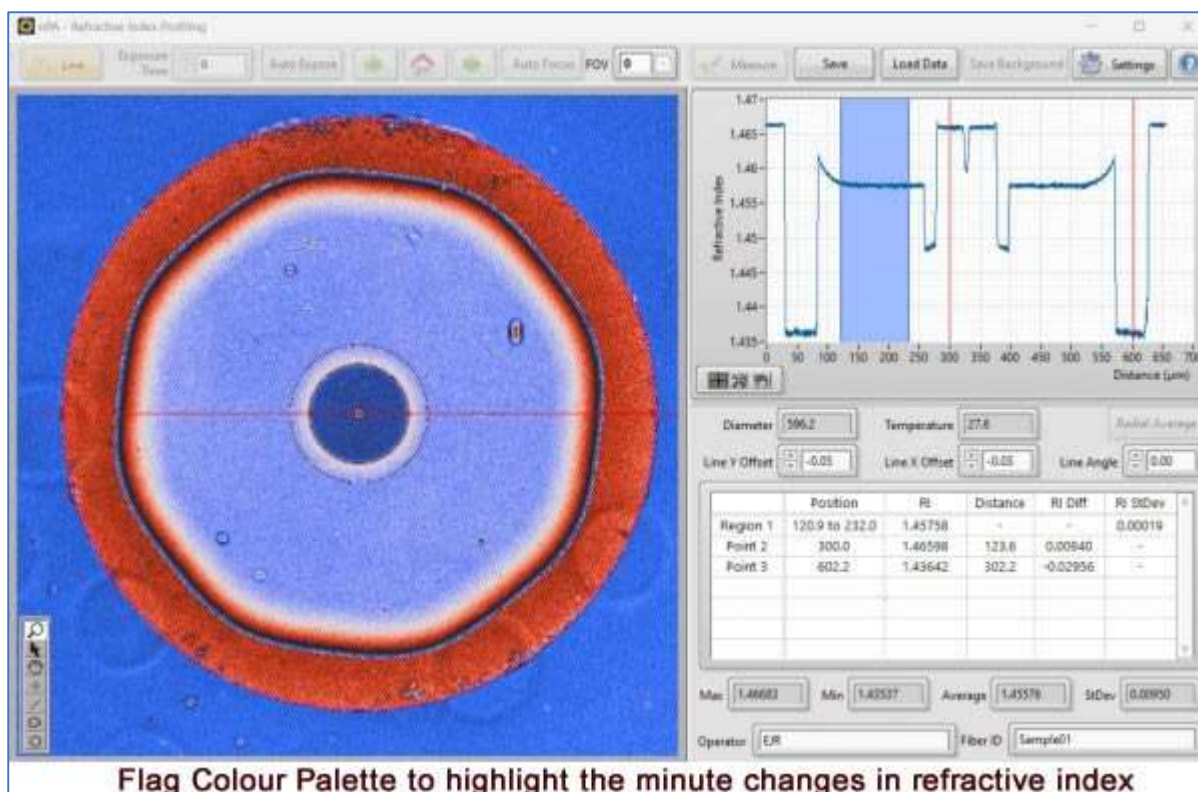
** averaging 5 images

*** around reference fluid index

Software:

The latest release nPA v3.0 software improves user experience and boost system performance.

Feature	Benifit
Target refractive index template alongside the actual fiber profile	Enable users to view the fibers refractive index against the target profile.
More viewing and output options	Improve user experience and enable easy reporting and documentation for production
"Region Cursors" measurement	Obtain an average of the refractive index of the marked region
"Flag" colour palette	Highlight the minute changes in refractive index
New API	Enables users customisation and integration with other systems
New calibration tools	Enables measurement accuracy over time
Optional plug-ins	Extend the functionalities of nPA-600. Two optional plug-ins are available for measuring the fiber geometry of Panda-style PM fibers and single-mode fibers.

The STAR-nPA-600 with nPA v3.0 software measures fibers (including octagonal fiber) up to 600μm in diameter with customised measurement points and regions.

Flag Colour Palette to highlight the minute changes in refractive index

Ordering Information

Part number	Description
STAR-nPA-600	Optical Fiber Refractive Index Profiler for full 2D measurement of optical fibers with diameters between 40 µm and 600 µm. Including optical unit, measurement cell, nPA-SOC oil cell, nPA-IL-1.4680 refractive index liquid kit, nPA-CS100 set of cover slips, nPA-FTK-600 fiber test kit, nPA-CC rigid carrying case, nPA-F0270 and nPA-F0620 ferrule pins, cables, software package, APL-DC desktop computer, keyboard and mouse.
Ferrule Pins	
STAR-nPA-F0125	nPA-600 Fiber guide assembly for optical fiber with outer diameter of up to 125 µm
STAR-nPA-F0230	nPA-600 Fiber guide assembly for optical fiber with outer diameter of 125 – 230 µm
STAR-nPA-F0270	nPA-600 Fiber guide assembly for optical fiber with outer diameter of 230 – 270 µm
STAR-nPA-F0440	nPA-600 Fiber guide assembly for optical fiber with outer diameter of 270 – 440 µm
STAR-nPA-F0520	nPA-600 Fiber guide assembly for optical fiber with outer diameter of 440 – 520 µm
STAR-nPA-F0570	nPA-600 Fiber guide assembly for optical fiber with outer diameter of 520 – 570 µm
STAR-nPA-F0620	nPA-600 Fiber guide assembly for optical fiber with outer diameter of 570 – 620 µm
Optional Accessories	
STAR-nPA-IL-1.4680	Bottle of Immersion liquid, 10 ml, (Refractive Index = 1.4680, measured at 589 nm and 25°C) for refilling nPA measurement cell assembly, including syringes and nozzles
STAR-nPA-SOC	Replacement oil cell for nPA-600
STAR-nPA-CS100	Set of 100 replacement cover slips for use with nPA-600 oil cell
STAR-nPA-CC	nPA-600 rigid carrying case

STAR-nPA-600EW3	nPA-600 Refractive Index Profiler extended warranty covering parts and labour for 3 years from purchase, return to base. Cover excludes camera
STAR-nPA-600EW5	nPA-600 Refractive Index Profiler extended warranty covering parts and labour for 5 years from purchase, return to base. Cover excludes camera