



Hiten Techno Products  
Corporation

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Specialists in Spectroscopy



Hiten Techno Products Corporation

**Hiten Techno Products Corporation** is India's leading supplier of specialty lamps with an unrivalled product portfolio. The company was founded in 1981 by the late **Mr.Pravin Jhaveri**, a Gold Medallist from the Massachusetts Institute of Technology (MIT) in Boston, USA at a time when specialty lamps were difficult to source & importing was not common.

Today, our lamps are used in virtually every major industry including the pharmaceutical, environmental, forensic, life sciences, food, water, air, biotechnology, academic, diamond, printing, packaging & medical industry. The company is currently run by **Mr.Hiten Jhaveri**, a chemical engineer from the Institute of Chemical Technology (UDCT) with 4 years of post-graduate management education from the Jamnalal Bajaj Institute of Management Studies (JBIMS) & **Mr.Hemang Jhaveri**, a Masters in International Business from Aston University in the UK, making it a 3rd generation family business.

Hiten Techno is proud to be associated with some of the top manufacturers in the world, many of whom we've represented for over a decade. It's no wonder then Hiten Techno is the first name that comes to mind when one thinks of speciality lamps.

Our **vision** is to become a one-stop shop for virtually every major type of specialty lamp.

Our **mission** is to supply specialty lamps from the world's leading manufactures at competitive prices.



# Deuterium Lamps

We are pleased to inform you that we represent Heraeus Noblelight GmbH (Germany) for their Deuterium lamps. Heraeus supplies lamps to most of the OEMs/instrument manufacturers. Therefore, in most cases, we supply the same lamps as the OEMs but at a substantially lower price.

Heraeus has developed the next generation of Deuterium Lamps called D2plus. D2plus lamps provide up to 50% more initial intensity and greater than 2x residual intensity compared to conventional Deuterium lamps. Customers benefit from faster and higher accuracy measurements even at the end of lamp-life.



Deuterium lamp with UV glass envelope



Deuterium lamp with quartz envelope

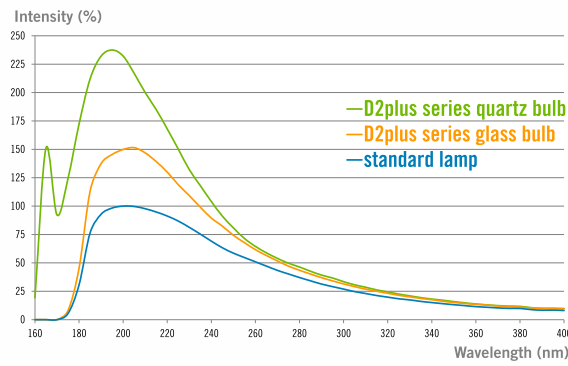
## Features of our D2plus Deuterium lamps:

- Up to 50 % higher initial intensity
- Lower noise (STN)
- Highest stability for minimum 2000 hours
- Available with 0.5 and 1.0 mm apertures
- Deep UV version D2plus Quartz envelope with ELP technology
- UV version D2plus with UV glass envelope
- Highest precision analytical results in UV-Vis Spectrophotometers, HPLCs and the more demanding UHPLC instruments

## Benefits of our D2plus Deuterium lamps:

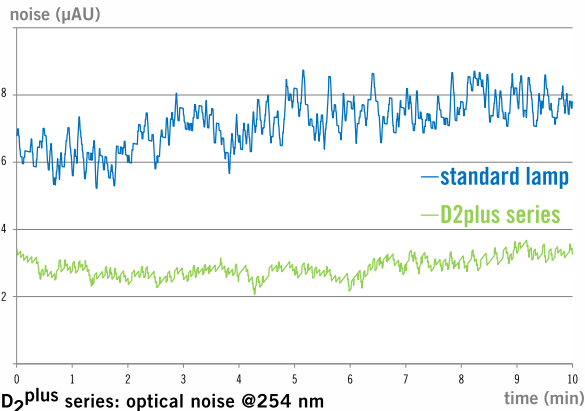
- Less instrument recalibration due to improved intensity maintenance over lifetime
- Better signal to noise ratio
- Shorter sampling time
- Higher throughput
- Highest precision analytical results
- Best price/performance ratio and lowest cost of ownership

## Spectral Comparison D<sub>2</sub><sup>plus</sup> Deuterium Lamp



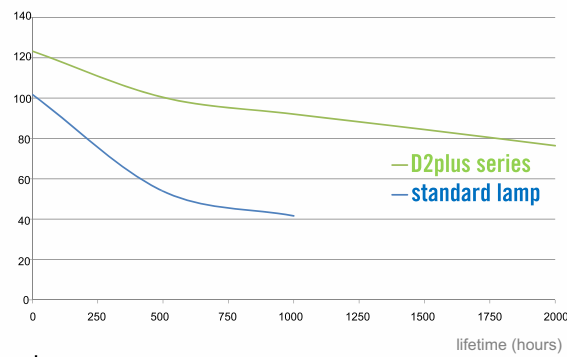
D<sub>2</sub><sup>plus</sup> series: spectral comparison of radiance

## Optical Stability at 254 nm



D<sub>2</sub><sup>plus</sup> series: optical noise @254 nm

## Lifetime Performance D<sub>2</sub><sup>plus</sup> Deuterium Lamp



D<sub>2</sub><sup>plus</sup> series: intensity @210nm

The following are some of the instruments for which we supply lamps:

- |                 |                  |
|-----------------|------------------|
| • Agilent       | • Perkin Elmer   |
| • Analytik Jena | • Shimadzu       |
| • Chemito       | • Systronics     |
| • Dionex        | • Thermo Fischer |
| • Elico         | • Unicam         |
| • Hitachi       | • Varian         |
| • Jasco         | • Waters         |
| • Knauer        | • Younglin       |
| • Labindia      |                  |

Heraeus' lamps come with the same warranty as the original lamps and therefore, customers are guaranteed the same performance.

Our lamps are used by most of the OEMs/instrument manufacturers and virtually every major pharmaceutical company in India.

## Hollow Cathode Lamps

We are pleased to inform you that we represent Heraeus Noblelight GmbH (Germany) for their Hollow Cathode lamps. Heraeus supplies lamps to most of the OEMs/ instrument manufacturers. Therefore, in most cases, we supply the same lamps as the OEMs but at a substantially lower price.

Heraeus' Hollow Cathode lamps are designed for optimal performance and characterised by good chemical sensitivity and spectral response, combined with stable light output and low noise. All cathode materials are selected from the highest purity available – usually 99.99% or better – to ensure high spectral line intensity, stability and low noise with good analytical sensitivity. The window material is selected to achieve the optimum transmission of the primary spectral lines of the cathode element. Borosilicate glass is used for wavelengths over 350nm, and high quality Quartz for shorter wavelengths.

Heraeus' Hollow Cathode lamps are available in a variety of base designs.



37 mm Thermo Coded



37 mm Varian Coded



37 mm Standard, 37 mm Self Reversal



50 mm PE coded Analyst

The Heraeus Hollow Cathode lamp range includes:

- 70 single-element lamps
- More than 120 multi-element lamps with up to seven combined elements
- 1.5" (37 mm) and 2" (50 mm) diameters
- Standard and coded lamps
- Self-Reversal lamps

Heraeus' lamps are compatible with all major Atomic Absorption Spectrophotometers including:

- |                 |                  |
|-----------------|------------------|
| • Agilent       | • Perkin Elmer   |
| • Analytik Jena | • Shimadzu       |
| • Elico         | • Thermo Fischer |
| • GBC           | • Unicam         |
| • Hitachi       | • Varian         |

Heraeus Hollow Cathode lamps have a larger internal gas volume than other lamps. All our lamps have a guaranteed service life of 5000 mA hours.

Our lamps are used by most of the NABL accredited laboratories in India.

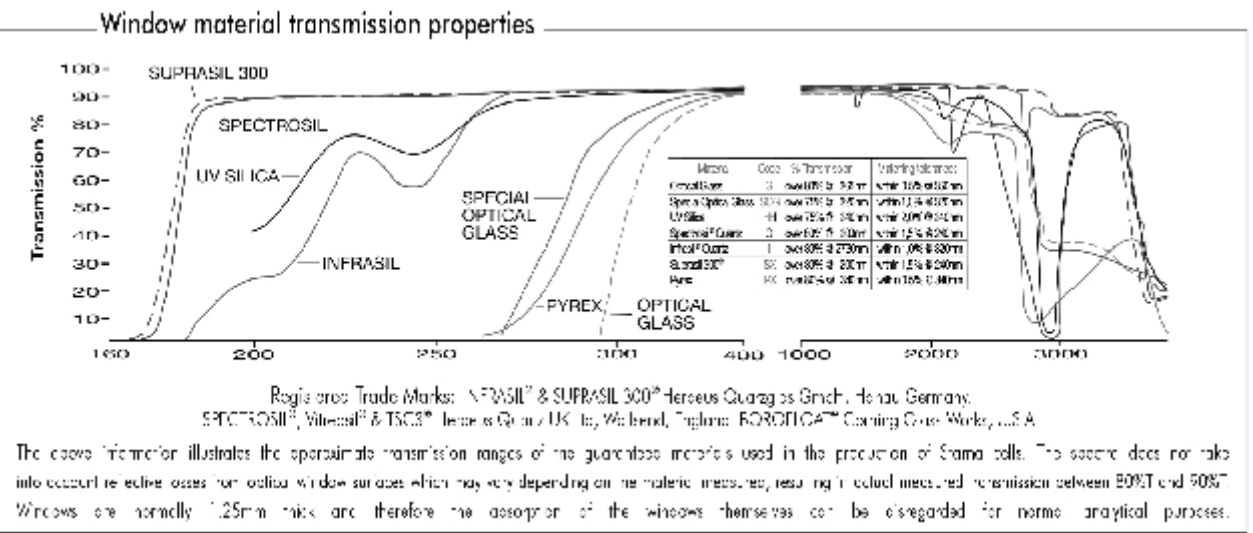
# Spectroscopy Cuvettes

We are pleased to inform you that we represent Starna Scientific Ltd. (UK) for their spectroscopy cuvettes.

All of Starna's cuvettes are manufactured using a fully fused method of construction. This ensures that the cells are fused into a single homogenous entity using heat alone, without intermediate bonding materials.

We offer the following window materials:

- Optical Glass (G), Special Optical Glass (SOG), & Borofloat® (PX) for the Visible range;
- UV Silica Quartz (HH) for UV;
- Spectrosil® Quartz (Q) for Far UV & Visible, Infrasil® Quartz (I) for UV through Near Infra-red (IR);
- Suprasil 300® Quartz (SX) for Far UV through Near IR



Material		UR From	>80% From Nm	Window Material	Matching Tolerance	Measured at Wavelength
Optical Glass	G	334 nm	360 through 2500 nm	Optical Glass	0.5%	350nm
Special Optical Glass	SOG	320 nm	320 through 2500 nm	Special Optical Glass	1.0%	320nm
Borofloat	PX	325 nm	330 through 2500 nm	Borofloat	1.0%	320nm
UV Silica	HH	220 nm	260 through 2500 nm	UV Silica	1.5%	240nm
Spectrosil® Quartz	Q	190 nm	200 through 2500 nm	Spectrosil® Quartz	1.5%	200nm
Infrasil® Quartz	I	220 nm	220 through 3800 nm	Infrasil® Quartz	1.5%	240nm
Suprasil 300® Quartz	SX	190 nm	200 through 3500 nm	Suprasil 300®	1.5%	240nm

The following are some of the cuvettes that Starna manufacture:

- Macro/Standard Rectangular Cuvettes with Lid/Stopper
- Semi-Micro Cuvettes with Lid/Stopper
- Micro Cuvettes with Lid /Stopper
- Sub-Micro Cuvettes with Lid /Stopper
- Ultra-Micro Cuvettes with Lid /Stopper
- Circular Dichroism (CD) Cuvettes
- Fluorimeter/Fluorescence Cuvettes
- Polarimeter Cuvettes
- Short Path Length Cuvettes
- Flow Cells for Tablet Dissolution & Biochemistry Analysers
- Disposable Cuvettes
- Cylindrical Cuvettes
- HPLC Cuvettes
- Ultra-High Vacuum (UHV) Cuvettes





# Certified Reference Materials

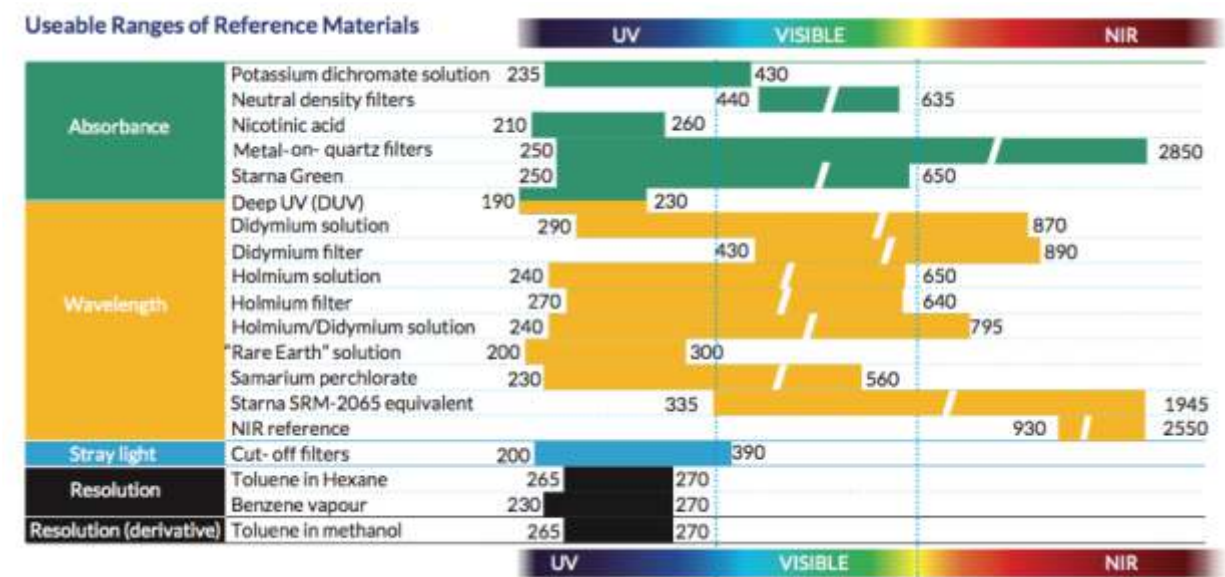
We are pleased to inform you that we represent Starna Scientific Ltd. (UK) for their Certified Reference Materials for spectroscopy.

Ultraviolet, visible and NIR spectrophotometers are fundamentally accurate. However, place any equipment in the environment of choice, and immediately the chosen environment will begin to act on that equipment causing change and ultimately degradation in performance. This so called drift, causes your results to become unreliable and no longer “fit for their intended purpose”. Whilst drift cannot be eliminated it can be detected and contained through the process of calibration. In the pharmaceutical industry, a system where drift has occurred to an unacceptable level is deemed to be “out of control”. It is therefore vital to check instrument performance on a regular basis to ensure it operates within acceptable parameters.



To qualify the performance of an analytical instrument, it is necessary to test (qualify) its performance against standards having known properties. Virtually all quality protocols require that any standards used can be shown to be traceable to nationally or internationally recognised primary references.

Such standards are referred to as Certified Reference Materials or CRMs. Starna's Certified Reference materials are traceable to NIST (National Institute for Standards and Technology) unless otherwise indicated.



## Features of Starna's Certified Reference Materials:

- References for all wavelengths, from Deep UV to Mid Infrared
- References for Fluorescence, Life Science and Microvolume applications
- Liquid and vapour references permanently heat sealed into Starna cuvettes for stability, safety and durability
- Lifetime guarantee on all CRMs
- Fast recalibration service
- Technical support and advice



## Benefits of Starna's Certified Reference Materials:

- Using sealed references eliminates several variables such as contamination, cuvettes etc. that can all have an effect on the readings when making up solutions or using vials
- Fully traceable to NIST
- UKAS ISO 17025 & ISO Guide 34 accreditation - highest level for these references
- Can use the same reference as often as you wish
- Can use the same reference to compare readings of an instrument over time
- Can use the same reference to compare reading of multiple instruments

Starna's CRMs comply with the requirements for instrument qualification of UV and visible spectrophotometers recommended by national and international regulatory authorities worldwide including:

- United States Pharmacopeia USP
- American Society for Testing and Materials ASTM
- European Pharmacopoeia EP (Ph. Eur)
- Deutsches Arzneibuch (German Pharmacopoeia) DAB
- Therapeutic Goods Administration (Australia) TGA
- British Pharmacopoeia BP
- Japanese Pharmacopoeia JP
- Pharmacopoeia of the People's Republic of China PPRC

## Tungsten Halogen Lamps

We are pleased to inform you that we represent Heraeus Noblelight GmbH (Germany) & Fuji (Japan) for their Tungsten Halogen lamps.

These lamps are used in analytical and medical instrumentation such as:

- UV-Vis Spectrophotometers
- HPLCs
- Biochemistry Analyzers



Lamps supplied by other manufacturers may be UV blocked as they are designed for the commercial market. In our lamps, the UV below 380 nm is not blocked which is important in Spectrophotometer use as it increases the intensity in the 315–380 nm range where the intensity from the Deuterium lamp starts to decline. The extra intensity from combined lamps increases sensitivity resulting in more accurate determinations.



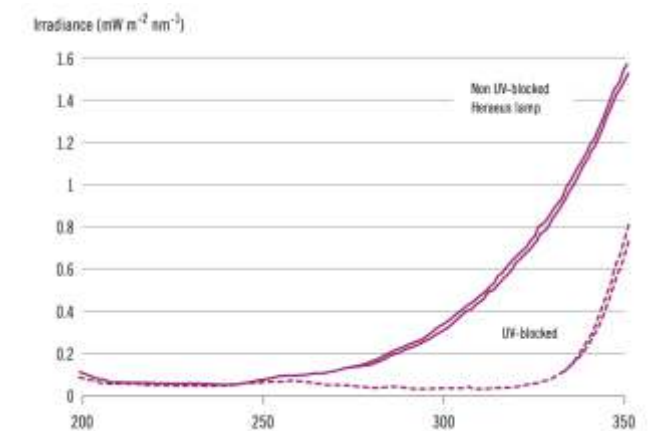
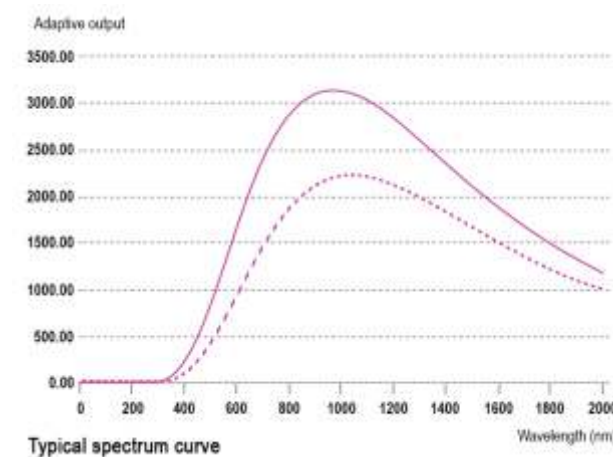
Our Tungsten Halogen lamps generate a continuous spectrum between 300 – 3000 nm. Used in conjunction with Deuterium lamps, they provide the wide-ranging output required in UV-Vis Spectrophotometers and HPLCs. Alone, they are suitable light sources for simple visible Spectrophotometers used in the analytical and medical market and offer high colour temperature, luminous efficacy and long life.

### Features:

- Non UV blocked quartz envelope
- Good transmission below 380 nm
- Output in 315-380 nm supplements D2 output
- Accurate positioning of filament
- Good alignment with instrument aperture
- Enables maximum light intensity into acceptance aperture
- Individual filament design
- Optimized optical and electrical properties
- Increased performance and life

### Benefits:

- Lamps can be designed and built according to OEMs specific requirements, such as colour temperature, wattage, voltage and mechanical tolerances. Each lamp fit for purpose, ready finished to drop into the instrument. No pre-selection required.
- Bundling with Deuterium lamps. Many customers use Tungsten Halogen lamps in combination with Deuterium lamps, why not use the corresponding Tungsten lamp at the same time.





# Polystyrene Films

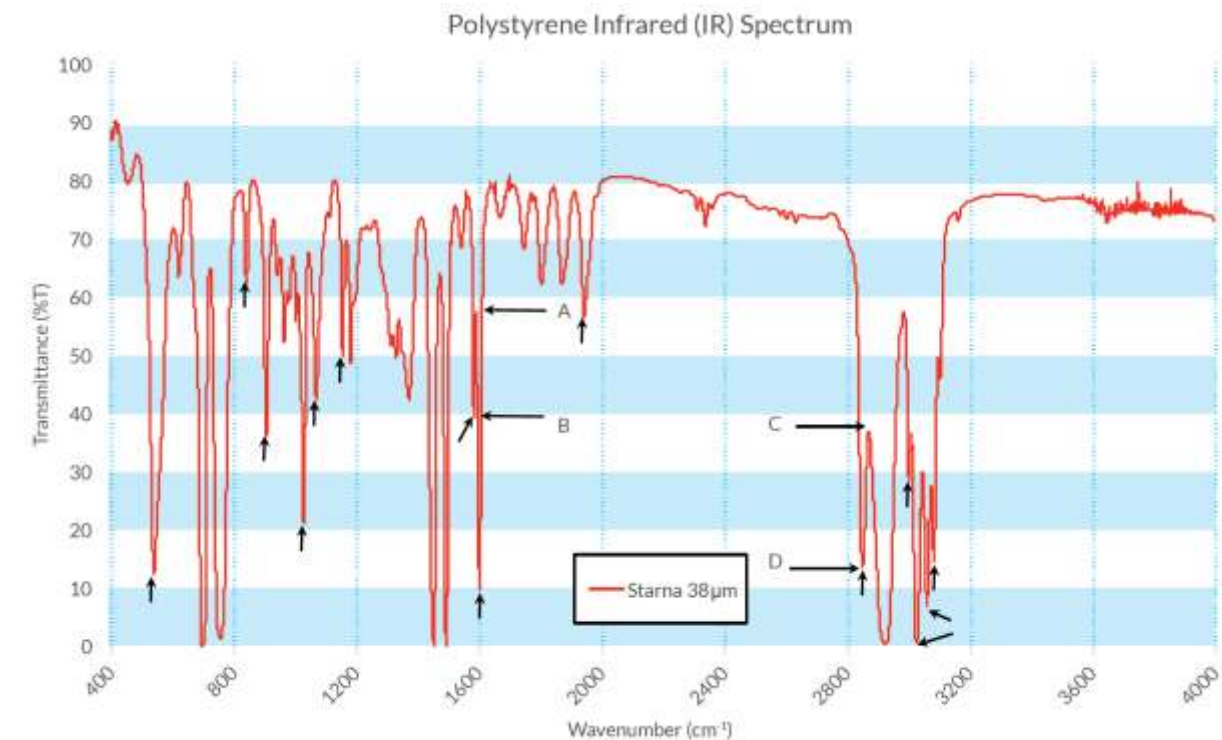
We are pleased to inform you that we represent Starna Scientific Ltd. (UK) for their Polystyrene Films.

Polystyrene films have been a recognised wavelength reference in infrared spectroscopy for many years. The Starna polystyrene references are the only references traceable to NIST, which are also calibrated and supplied with an ISO/IEC 17025 Certificate.



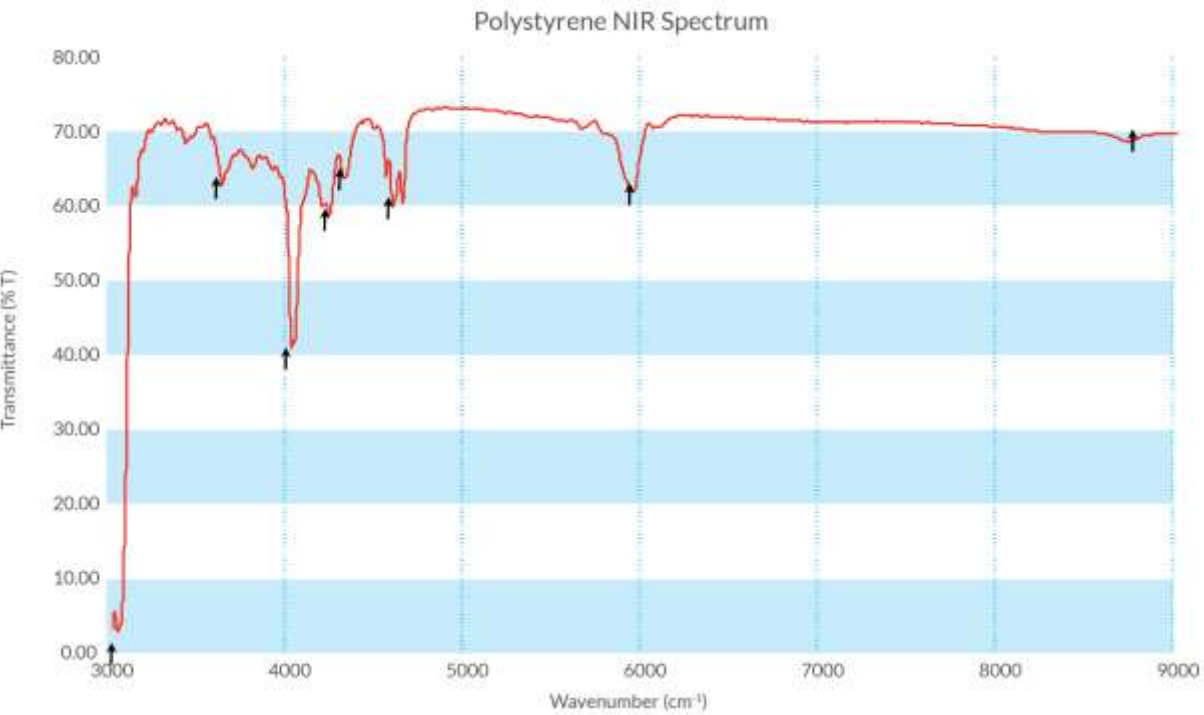
Starna's RM-1921/38 Polystyrene film consists of a 38µm polystyrene film mounted in a card holder. 14 certified peaks are available for wavelength qualification purposes. The calibration values are traceable to NIST SRM 1921b.

Approximate peak wavelength values (in cm-1) are: 539, 842, 907, 1028, 1069, 1155, 1583,1601, 1943, 2849, 3001, 3026, 3060, and 3082.



The absorption minima and maxima at A and B, C and D can be used to qualify instrument resolution according to pharmacopoeia requirements (EP/JP/USP).

An alternative version, RM-1921/65 has a film thickness of 65µm and in addition to the NIST-traceable peaks in the Mid-Infrared, also has useful peaks in the Near-Infrared covering wavelengths from 3000 nm to 900 nm (3000 cm-1 to 11111 cm-1).





## FiberLight<sup>®</sup> Miniature UV-Vis Light Source

FiberLight is a compact UV-Vis light source designed for mobile spectroscopy applications and all types of handheld devices that require a low power consumption UV-Vis light source. FiberLight has a continuous spectrum covering the whole range from vacuum UV to near Infrared.

The FiberLight System is a complete UV-Vis light source with a shine-through design Deuterium lamp, a 0.25 Watt Tungsten lamp, shutter, optical system and SMA 905 connector. All elements are mounted on a printed circuit board driven by an external 12 Vdc/600 mA power supply. Both lamps and the shutter can be separately controlled by a TTL signal.



FiberLight is powered from an external supply; this makes it an ideal light source for applications with limited space in the instrument, portable instruments or battery-operated equipment. Its small dimensions and ease of operation open up new possibilities for instrument designers.

The features of this light source open the way for new solutions in small spectroscopy equipment and UV optics:

- Compact size
- Low heat dissipation
- Cyclic operation
- Shutter function
- Easy coupling to optical fibers, measuring cells and capillaries
- Low power consumption (6 Watt)
- Instant lamp ignition
- Extended service life of up to 3 years
- External control

### Applications:

- Laboratory: UV-Vis Spectroscopy
- Environment: water quality monitoring, waste water analysis, marine chemistry, biological measurements
- Process control
- Stand-alone light source
- Calibration

### Spectral Distribution of FiberLight

The spectral emission covers the entire range from 200 nm to 1,100 nm; optional extended range from 185 nm to 1,100 nm.



### Lifetime and Cyclic operation

The guaranteed continuous operating life of a FiberLight deuterium lamp is more than 1000 hours. As the lamp is an Electrodeless Discharge Lamp (EDL) with high frequency excitation, it can be switched ON and OFF on demand and can be operated in cycles. The cyclic lamp operation results in an extended service life of up to three years. As an EDL, the number of ignitions does not reduce lifetime. In addition, pulse-to-pulse repeatability is extremely consistent to within 0.1 %.

### Instant ON and Instant Stability

FiberLight EDL is the only deuterium lamp that can be switched instantly ON and instantly deliver a stable light output. This feature makes it unique among UV light sources. FiberLight is therefore the ideal light source in analytical instruments for pollution monitoring, where light absorption is measured for only a few seconds and repeated after long intervals. In such monitoring, FiberLight is switched ON only for the short measurement time, while it is OFF for most of the time. Nevertheless, measurement consistency is extremely good because of its pulse-to-pulse repeatability.

### Application Example

Our FiberLight modules are used in Buchi (Grace) Flash Chromatography Systems.