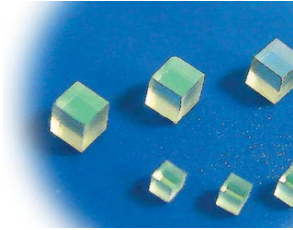


# Optical Coatings



## Telecom Filters

- DWDM
- CWDM
- GFF
- Edge
- Grin Lens
- Fibre tip

## Features

- Low insertion loss
- Small ripples
- High transmission isolation
- High reflection isolation
- Low polarisation dependent loss (PDL)
- Low temperature dependent wavelength shift
- Telcordia compliant
- Dielectric hard coating and excellent environmental stability and reliability

## Applications

- Fibre optic components
- Optical filters

## Data sheet

Manufacturer: Lightwaves2020

Product Code: OCS-T

Product SKU: 53839000006096184

Product SKU: Optical Coating, telecom filter



## Raman Filters

- Using high purity optical substrates with low Raman effect (data available upon request)
- High OD laser-line blocking for maximum laser rejection (>6OD)
- Steep slopes to enable measuring the small Raman shifts (5OD slope: BPF: <4nm; LPF <10nm; 45deg dichroic: <10nm)
- High transmittance in the pass band (>90%)
- Typical 6OD Blocking Range:  $0.85\lambda_0 \sim 1.15\lambda_0$

- High laser damage threshold (>20J/cm<sup>2</sup> @ 532nm)
- Superior environmental reliability

### Features

- Using high purity optical substrates with low Raman effect ( data available upon request )
- High OD laser-line blocking for maximum laser rejection ( > 6 OD )
- Steep slopes to enable measuring the small Raman shifts ( 5 OD slope: BPF: < 4nm; LPF < 10nm; 45 deg dichroic: < 10nm )
- High transmittance in the pass band ( > 90% )
- Typical 6 OD Blocking Range:  $0.85\lambda_0 \sim 1.15\lambda_0$
- High laser damage threshold ( > 20J/cm<sup>2</sup> @ 532nm )
- Superior environmental reliability

### Applications

- Spectroscopy
- Microscopy
- Sensin

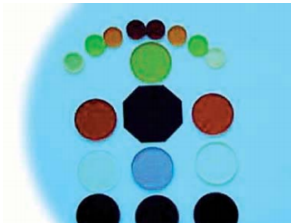
### Data sheet

Manufacturer: Lightwaves2020

Product Code: OCS-R

Product SKU: 53839000006096202

Product SKU: Optical Coating, Raman filter



### Fluorescence Filters

Our fluorescence filters have high transmission, with transmittance higher than 85 % in UV, and larger than 90% in visible. (See spectra at the right, measured at wafer level before AR is applied on the back). As shown in the data sheet, we are able to make those fluorescence filters with very good uniformity. For instance, the centre wavelength variation over a 3" x 3" wafer is less than 0.5nm. This will result in much better image, especially in a system with large NA an large beam size

### Features

- High transmission: >90%
- High reflection (dichroic beam splitter): >98%
- Steep slope
- Hard dielectric coating with superior environmental reliability and durability

### Applications

- Microscopy

### Data sheet

Manufacturer: Lightwaves2020

Product Code: OCS-F

Product SKU: 53839000006096212

Product SKU: Optical Coating, fluorescence filter



### Laser Line Filters

- High transmission: >90%
- Steep slope (roll-off to 5OD): <1% of laser wavelength
- Wide blocking range (customer application specific)
- Negligible temperature dependence of laser wavelength
- Hard dielectric coating with superior environmental reliability and durability (for telecom application, meeting Telecordia standards)

### Features

- High transmission: >90%
- Steep slope (roll-off to 5OD): <1% of laser wavelength
- Wide blocking range (customer application specific)
- Negligible temperature dependence of laser wavelength
- Hard dielectric coating with superior environmental reliability and durability (for telecom application, meeting Telecordia standards)

### Applications

- Research
- Telecom

### Data sheet

Manufacturer: Lightwaves2020

Product Code: OCS-L

Product SKU: 53839000006096222

Product SKU: Optical Coating, laser line filter



### Custom Coating Service

Lightwaves2020's optical coating division develops optical thin film filters and related optical components for various high end applications, from medical imaging, spectroscopic instrumentation, Raman lasers, high power lasers, optical sensing, aerospace, and military & defence as well as telecommunications.

Equipped with state-of-the-art optical coating systems and its industry-leading and proprietary optical thin film technology, Lightwaves2020 manufactures and supplies cutting edge optical thin film products for demanding applications in wavelength range from 200nm to 2500nm. Lightwaves2020 always works closely with its customers in the design-in for new product development.

In conjunction with Lightwaves2020's other technologies in liquid crystal, fibre optics, test and measurement, system integration, and automation, we are able to provide a complete and cost effective optical solution for various applications.

## Features

- High quality
- Accurate performance

## Applications

- Aerospace
- Biomedical optics
- Displays
- Fibre optics (telecommunications)
- High power lasers
- Military and defence
- Optical sensing
- Optical spectroscopic instrumentation
- Raman lasers
- Scientific instrumentation
- UV optics

## [Data sheet](#)

Manufacturer: Lightwaves2020

Product Code: OCS-C

Product SKU: 53839000006096232

Product SKU: Optical Coating, custom



## CWDM Filters

- Standard CWDM (AOI = 0° or 1.8°)
- High transmission isolation CWDM (>60dB)
- CWDM with extended blocking (1250 - 1650nm)
- 13.5deg AOI CWDM
- 13.5deg AOI CWDM with extended blocking (1250 - 1650nm)
- CWDM 4skip0
- CWDM 8skip0
- CWDM on grin lens
- 850nm CWDM
- Custom CWDM

## Features

- 
- Small insertion loss within pass band
- Small ripple (insertion loss variation) within pass band
- Small insertion loss and ripple in the reflection band
- High transmission isolation
- High reflection isolation within pass band

- Low PDL and TDL
- Low temperature dependent wavelength shift
- High environmental stability and reliability

## Applications

- CWDM modules
- CWDM devices

## Data sheet

Manufacturer: Lightwaves2020

Product Code: OCS-CWDM

Product SKU: 53839000006387224

Product SKU: Optical Coating, CWDM filters



## Bandpass Filters for Spectroscopic Applications

Lightwaves2020 specializes in manufacturing a wide wavelength range and high OD blocking thin film filters for spectroscopic applications.

## Features

- Wide operating wavelength range:
  - 200~1200nm for biomedical
  - 400~1200nm for visible optical sensing
  - 600~1700nm for NIR
  - 400~3200nm for IR spectroscopy
- Typical bandwidth: FWHM 10nm to 40nm
- High OD blocking:
  - >5OD for UV/Vis/NIR
  - >3OD for IR 400~3200nm
- High transmittance: >70% (NIR), >60% (Vis), > 50% (UV)
- Steep slope: <10nm across 50% of T<sub>peak</sub> to 5OD in UV/Vis/NIR
- High laser damage threshold: >2J/cm<sup>2</sup> (532nm)
- Low auto-fluorescence in UV/Vis for fluorescence microscopic imaging
- Superior environmental reliability

## Applications

- Spectroscopic research
- Spectroscopes

## Data sheet

Manufacturer: Lightwaves2020

Product Code: OCS-B

Product SKU: 53839000006387258

Product SKU: Optical Coating, band pass filters



## DWDM Filters

- 50GHz DWDM
- Standard 100GHz DWDM
- Low CD 100GHz DWDM
- 200GHz DWDM
- 100GHz 4skip0
- Other custom DWDM and Band Separators/Channel Splitters

### Features

- Small insertion loss within pass band
- Small ripple (insertion loss variation) within pass band
- High transmission isolation
- High reflection isolation within pass band
- Low PDL and TDL
- Low temperature dependent wavelength shift
- High environmental stability and reliability

### Applications

- DWDM devices

### [Data sheet](#)

Manufacturer: Lightwaves2020

Product Code: OCS-DWDM

Product SKU: 53839000006387240

Product SKU: Optical Coating, DWDM filters