

# FLUORESCENCE FILTERS FOR LIFE SCIENCES APPLICATIONS

Coherent is a leading photonics designer and vertically integrated manufacturer of optical, laser, and thermal components and subassemblies for the Life Sciences. Coherent offers high-quality precision optics, optical subassemblies, design and engineering services, as well as prototype-to-volume manufacturing across the optical spectrum ranging from UV to VIS to NIR to IR. Coherent has a diversified footprint comprising over 100 coating machines around the globe, allowing for rapid manufacturing response, when and where you need it.



## SOLUTIONS FOR LIFE SCIENCES

From Components to Subassemblies and Systems

- Biotechnology
- Medical
- Scientific

# FLUORESCENCE FILTERS FOR LIFE SCIENCES APPLICATIONS

## Coating Technology

Coherent has a variety of versatile coating technologies, including magnetron sputtering (MS) and ion beam sputtering (IBS), as well as our in-house-developed proprietary coating chambers. Our hard filter coatings are extremely durable and reliable for the high-performance demands of life sciences instrumentation.

## Coating Machines

- Extensive coating tech: magnetron sputtering (MS), ion beam sputtering (IBS), ion-assisted deposition (IAD), and electron beam evaporation (EB)
- Over 100+ coating chambers worldwide

## Engineering Support and Design Expertise

- Experienced coating engineering teams for application specific design optimization
- Custom designs for uniformity and precision wavelength control
- Custom prototyping support



## Understanding Your Application

Life science applications are demanding, and Coherent precision thin films are up to the task. With industry-leading reliability, high transmission and sensitivity, steep edges, and exceptional blocking ranges, here are a few of the applications we currently support:



### BIOTECHNOLOGY

- Sequencing
- PCR
- Microarrays
- Nucleic Acid Prep
- Cell Separation
- Electrophoresis
- In Vivo Animal Imaging
- Flow Cytometry
- Cell Counters
- High Content Screening
- Diagnostics
- Immunoassays
- Analyzers



### MEDICAL

#### Medical Laser

- Cosmetic & Dermatology
- Ophthalmic
- Surgical
- Dental

#### Medical Imaging

- Endoscopy
- OCT

#### Point of Care

- Diabetes Testing
- Wearables

#### Thermal

- Hospital Bedding
- Hypertension Reduction

#### Therapy

- Migraine Relief
- Joint, Limb, Muscle



### SCIENTIFIC

#### Environmental Testing

- Air
- Water
- Food/Beverage
- Pharmaceuticals
- Agriculture

#### Molecular Spectroscopy

- NMR
- UV-Vis
- IR
- NIR
- Color Measurement
- Raman

#### Scientific Imaging

# FLUORESCENCE FILTERS FOR LIFE SCIENCES APPLICATIONS

## Filter Types

### Coating/Filter Types

- Bandpass filters
- Shortpass and longpass filters
- Dichroic and polychroic filters
- Notch filters
- Multiband filters
- Narrow laser line filters



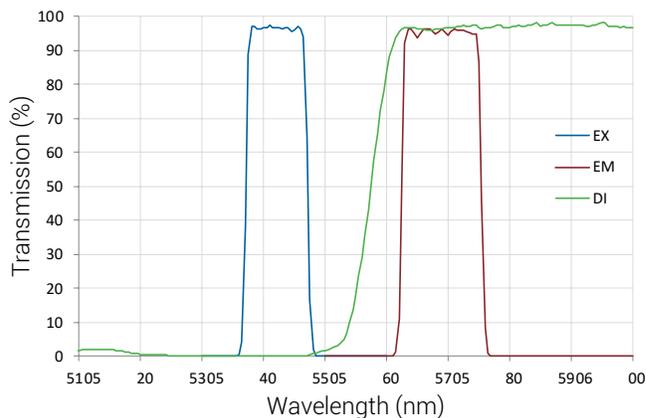
## Filter Design and Capability

### Coating Capability

Size	2-250 mm
Substrate Material	All Glass Types
Spectral Range	340nm-10um
Edge Steepness (T 50%-OD>4)	<0.5%
Spectral Edge Tolerance	<0.5% Deviation, <0.15% Special Case
Blocking	>OD6, Measured Limit: OD7
Neutral Density Tolerance	OD +/-5%
CWL	+/- 2nm, +/-0.5nm for ideal case life science filters
Bandwidth	Down to 2 nm
Transmission	Typical>95%
Reflection	0.1-99.95%
Polarization Ratio (S:P)	10000:1
LDT	Up to 20 J/cm <sup>2</sup> @ 20ns Pulse Rate, 30 J/cm <sup>2</sup> @10ns Pulse Rate in ideal case
Durability	MIL-STD-810:10 Day Humidity, MIL-C-48497A

## Fluorescence Filter Set Design

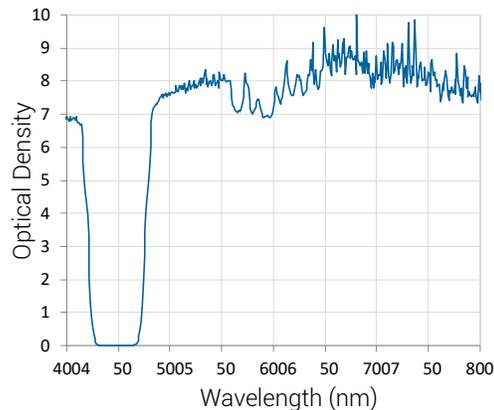
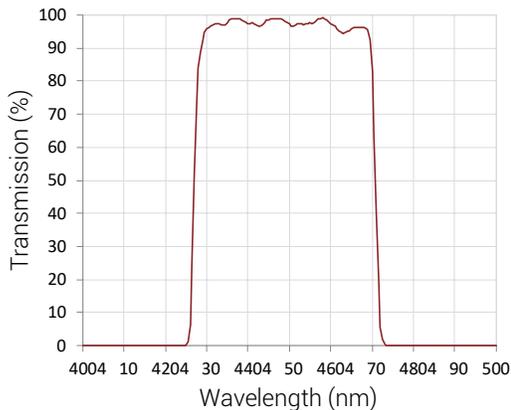
Optimized for your specific application and fluorophore, Coherent will work with your team to design a perfectly matched filter set. All excitation, emission, and dichroic filters are hard coated to provide precise wavelength control, industry leading transmission, extremely steep edges and exceptional blocking. Our blocking and transmission pairs are engineered to provide excellent contrast, even in very low light applications. Also, if you need an exact size, ring mount, or edge treatment, we are happy to provide a custom solution.



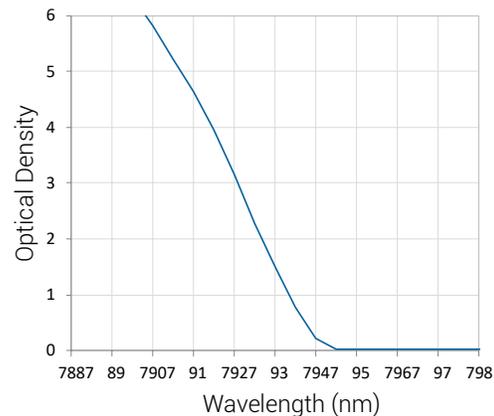
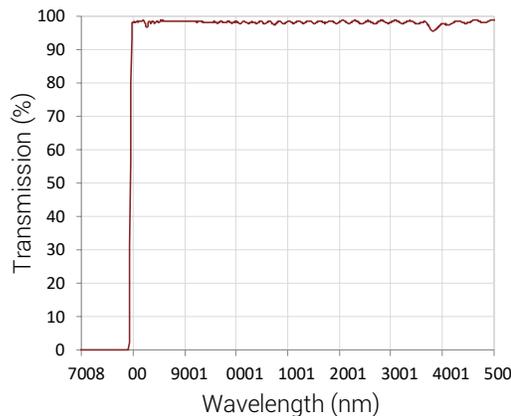
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## Coherent Filter Performance

### Bandpass Filters

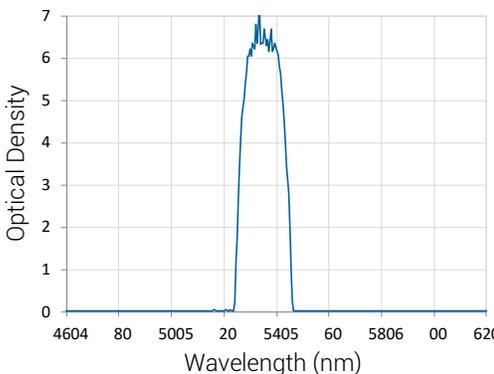
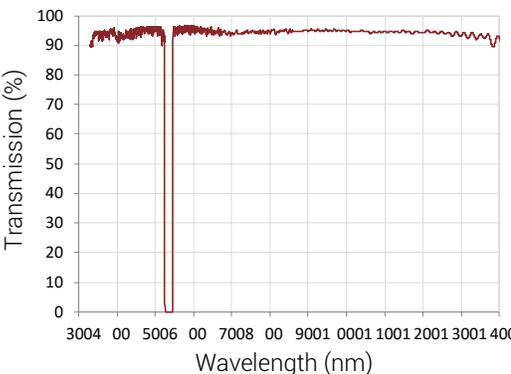


### Shortpass and Longpass Filters



Low ripple passband  
Steep transition edge

### Notch Filters

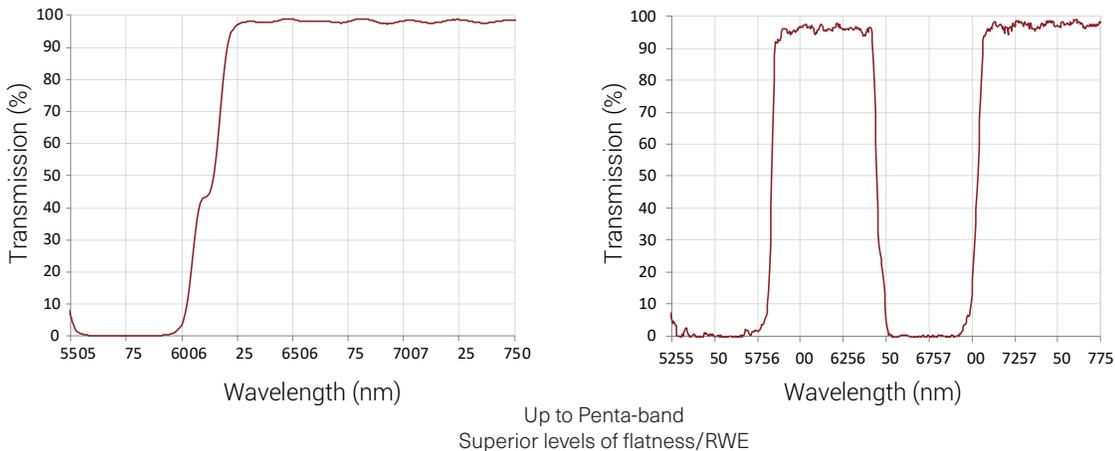


Low angular shift design  
Single and Multi-notch filters are available

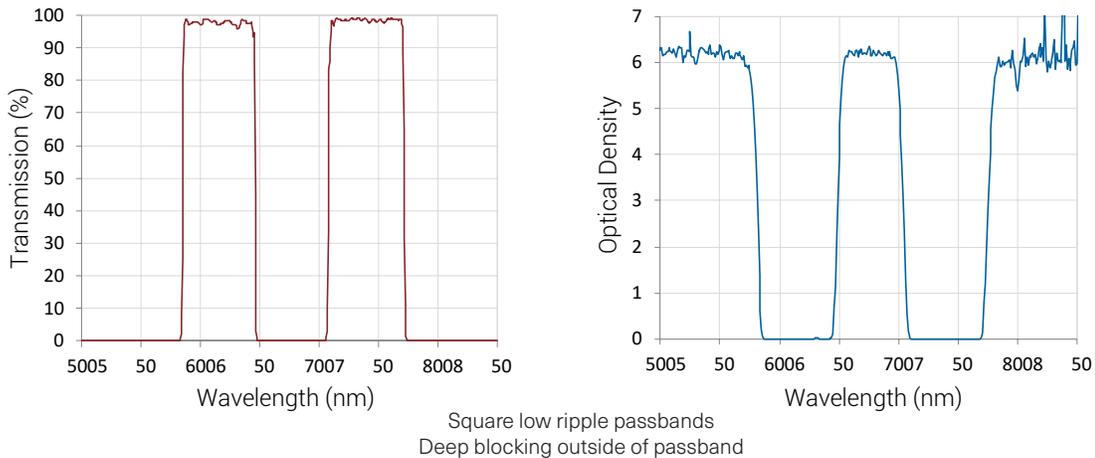
All curves shown above are from actual measured data.

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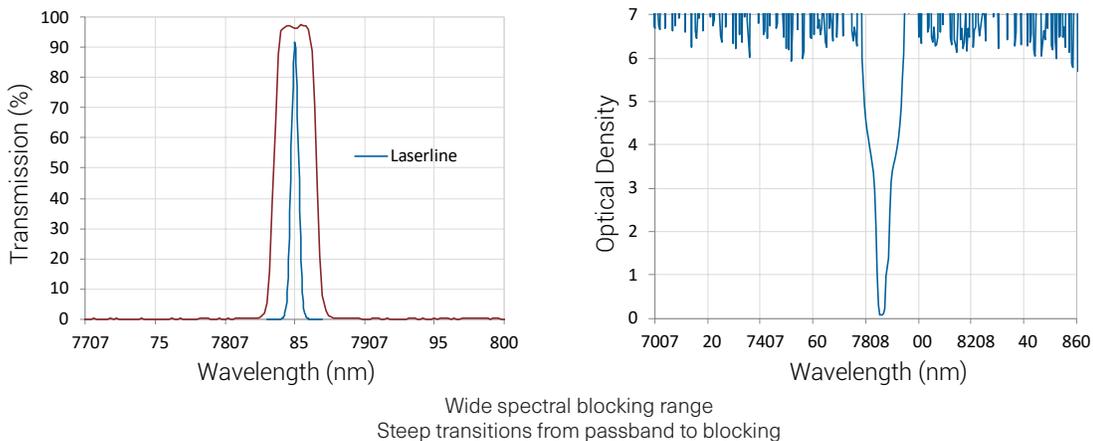
## Dichroic and Polychroic Filters



## Multi-Band Filters



## Narrow Laser Line Filters



All curves shown above are from actual measured data.

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## Committed to Perfecting Your Solution

**Custom Coating Design:** At Coherent, we pride ourselves on our reputation for excellent service and partnership with our customers. Our engineers will work directly with your team so that all of the filters we provide are analyzed and engineered specifically with your needs in mind.

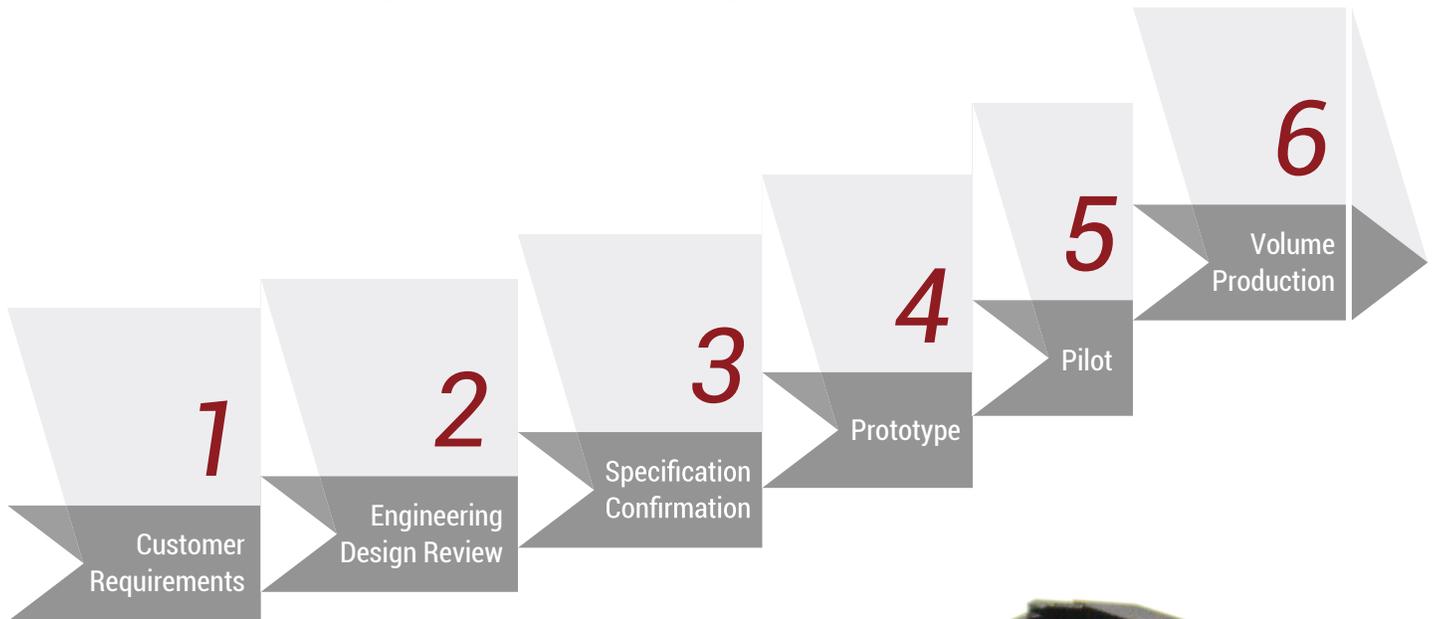
**Rapid Prototyping:** We understand that ideas evolve, and timing is everything. Our team is able to quickly respond and provide fast turnaround for critical projects with small volume needs, while maintaining competitive pricing.

**Volume Production:** Once you are ready to scale up, our volume manufacturing teams will be there to ensure high repeatability over multiple chambers and coating runs, every time if needed.

**Easy Customization, Subassembly, and Optical System Design Optimization:** Coherent is a leading photonics designer and vertically integrated manufacturer of optical components, subassemblies, and systems. We are eager to collaboratively help you optimize the optical and mechanical design for your system. With long-standing support in life sciences instrumentation, Coherent has an expert understanding in providing the flexibility that you need.

## Services We Readily Offer Include

- **Custom filter sets**
- **Semi-custom:** Custom sizing, mounting, beveling, ring mounting, laser marking
- **Filter wheels and filter cubes:** Design and assembly of filters into value-added subassemblies
- **Custom lens assemblies:** Integrated capabilities for optical systems



# FLUORESCENCE FILTERS FOR LIFE SCIENCES APPLICATIONS

## Total Quality Management

In the demanding world of life sciences instrumentation, we understand that failure is not an option, and our filters are up to the challenge.

- On-site Reliability Test Center, TL9000
- ISO9001:2015 certified by SGS since January 2000
- ISO14001:2004 certified by SGS since December 2006
- OHSAS18001:2007 certified by SGS since October 2006
- RoHS/REACH/Conflict Mineral/GDPR Compliance
- ISO13485, IATF16949 certified in Jan. 2019



## As Your Life Sciences Filter Partner

We pride ourselves on our reputation for excellent customer service, and our commitment to becoming your partner. Our technical sales support is ready to help make your project a success. Reach out today and we are here to help!