

Optical Filters and Coatings

**Engineered & Manufactured to the Highest
Industry Standards in the World**



Why choose Andover Corporation?

Andover Corporation was established in 1976 with the purpose of designing and manufacturing high-quality optical filters and coatings. Over the years as the company has grown, the focus has remained on quality and service. Our current facility spans 44,000 square feet on 17 acres of land in Salem, NH.

Our facility is custom-designed and state-of-the-art, and includes automated coating, glass polishing, and fabrication equipment. Our testing capabilities are extensive, including both automated spectrophotometers for broadband spectral measurements and ultra-high resolution spectrophotometers for narrowband measurements. Our optical metrology lab features a custom designed, computer-controlled tunable interferometer to measure transmitted wave fronts beyond the capabilities of a traditional laser interferometer.

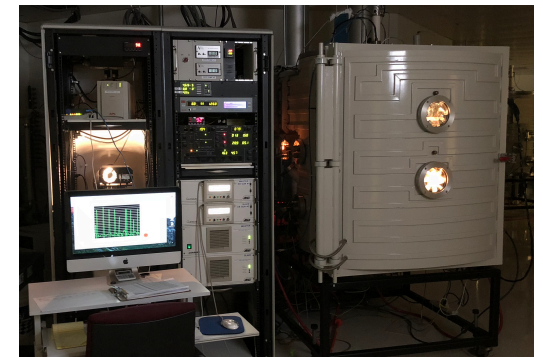
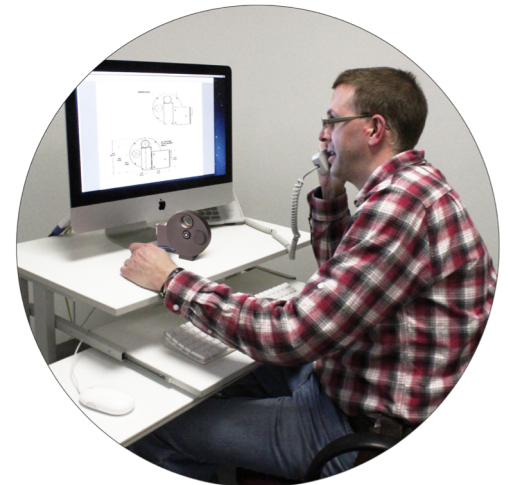
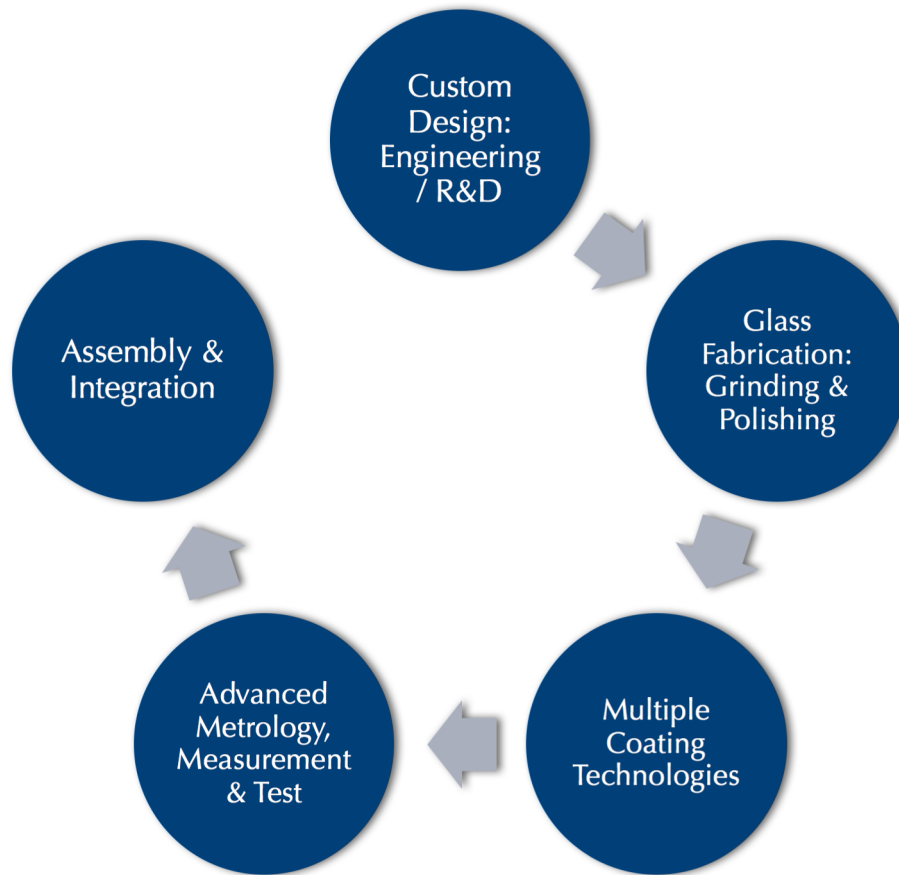
We manufacture filters and coatings for a wide variety of applications, including medical instrumentation, fluorescence studies, machine vision, agricultural imaging, ground-based and space-borne astronomical observation, telecommunications, military and civilian surveillance systems and defense targeting systems.

Our worldwide exposure currently reaches Belgium, Canada, China, Denmark, Finland, France, Germany, Hong Kong, India, Ireland, Italy, Japan, Korea, Netherlands, Norway, Poland, Russia, Spain, Sweden, Switzerland, Taiwan, United Kingdom, and many other countries.

Integrated Capabilities

Andover has developed in-house integrated capabilities from prototype design through fabrication, coating, testing and assembly.

This integrated capability results in shorter lead times than industry averages and better control over quality.



Market Segments & Applications

Markets

- Defense & Aerospace
- Environmental
- Science & Industry
- Instrumentation
- Astronomy
- Semiconductor
- Imaging
- Biotechnology
- Medical Devices
- Universities & National Labs
- Resellers & Representatives

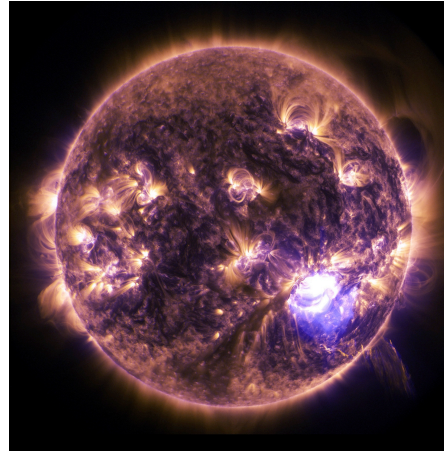


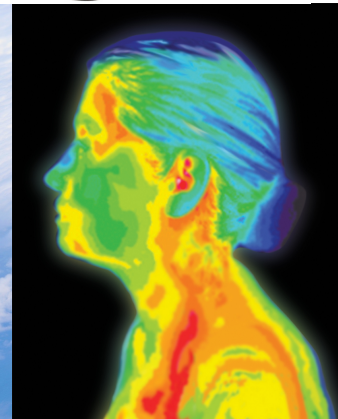
Photo credit:
Lockheed Martin

Applications

- Surveillance and targeting
- Night vision systems
- Environmental monitoring
- Oil/Water/Gas analysis
- Agricultural imaging
- Fluorescence studies
- Spectroscopy
- Thermal imaging
- Astronomy



Photo credit: Lockheed Martin





Optical Coating Capabilities

All coating chambers are proprietary, custom built, and internally-designed. We have multiple chambers for each technology.

Combining these technologies allows us to create unique coating solutions.

Substrate Materials

- BK-7; H2; G-18
- Fused silica; UV & IR grade
- Filter glass
- Sapphire
- Germanium
- Zinc Sulfide
- Zinc Selenide
- Silicon, CZ and FZ grade
- Calcium Fluoride
- Barium Fluoride
- Magnesium Fluoride

1). Magnetron Sputtering

- Extremely stable coatings
- Low water-content coatings

2). E-Beam with Ion Assist

- Low-priced, hard-coated optics
- Chambers can coat up to 14"

3). Resistance Evaporation

- Low cost option
- Various coating types available

4). Hybrid Technologies

- Great for custom applications and prototyping



Magnetron Sputtering

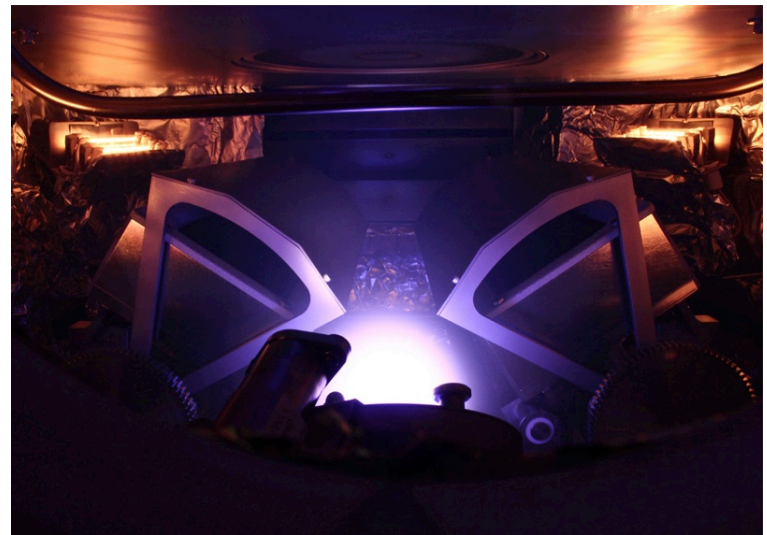
Wavelengths: UV-Mid IR 300nm to 5000nm
Sizes: 2mm to 200mm

Products

- Windows
- Lenses
- Mirrors
- Beamsplitters
- AR and BBAR Coatings
- Prisms
- Laser optics
- Bandpass filters
- Long & shortpass filters
- Dichroic filters
- Multiband AR's

Benefits

- Environmentally stable and extremely durable
- No W/L shift over time
- Consistent production results
- Low water-content coatings
- Complicated requirements



E-Beam with Ion-assist

Wavelengths: UV-Mid IR 240nm to 2500nm
Sizes: 2mm to 355mm

Products

- Windows
- Lenses
- Mirrors
- Beamsplitters
- AR coatings
- Prisms
- Long & shortpass filters
- Dichroic filters
- Image quality filters
- Neutral density filters; UV, VIS, NIR, IR
- Laser coatings

Benefits

- Durable and environmentally stable
- Large usable coated area for large optics
- Stress-free coatings for low-surface distortion
- Parts coated to size for low unit cost
- Improved UV transmission
- High laser damage threshold



Resistance Evaporation

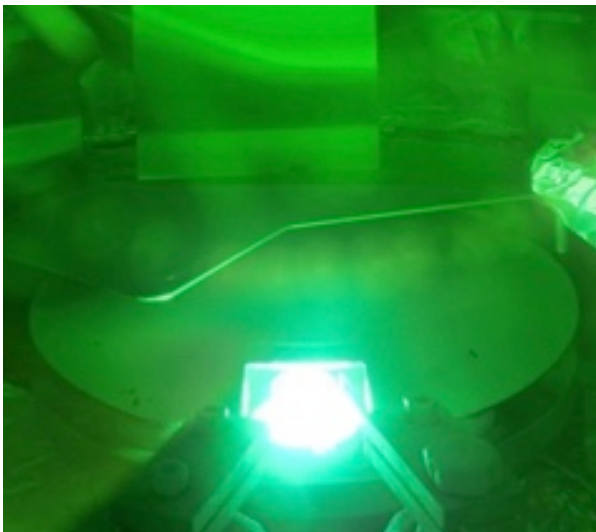
Wavelengths: UV-Near IR 193nm to 2400nm
Sizes: 5mm to 250mm

Products

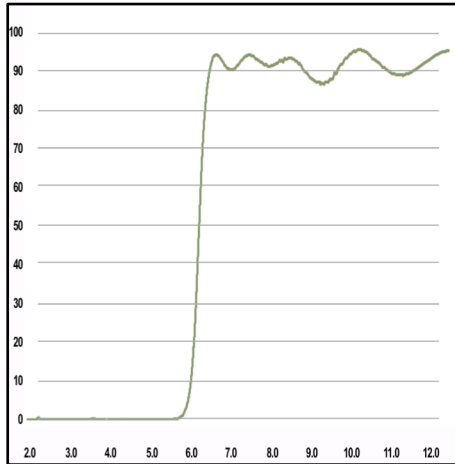
- Image quality filters
- Bandpass filters
- Wideband filters
- Ultra-narrowband filters
- UV filters

Benefits

- Lower cost
- Short lead times
- Variety of coating types available
- Ultra-narrowband selections $<0.1\text{nm}$ in the VIS
- Parts coated to size
- Low distortion for imaging applications

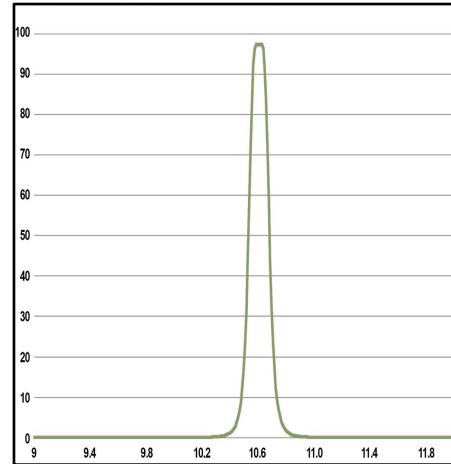


Specially Developed (IR) Coatings



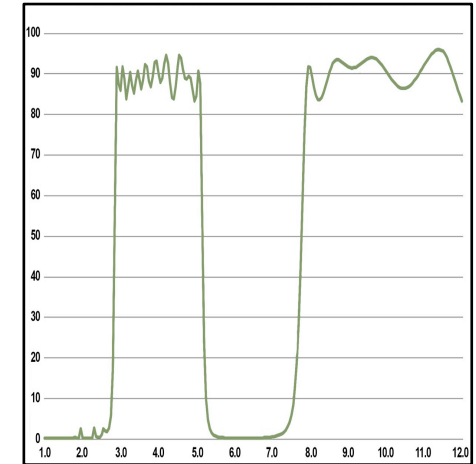
Custom IR Edge Filters

- 2-14μm range
- Custom product available
- Dichroic edge filters
- Used for beamsplitters



Narrowband Filters

- 2-14μm range
- Bandwidths as low as 1% of center wavelength

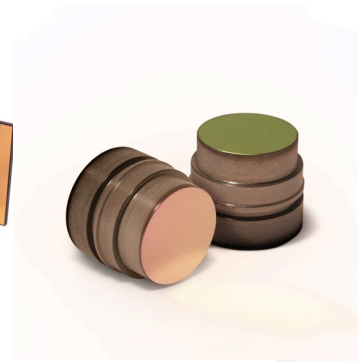
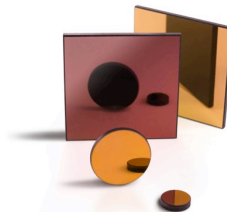
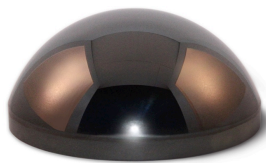


Dual-Band IR Coating

- Transmits 3-5μm and 8-12μm
- Used for combination targeting and thermal imaging applications
- Other wavelengths available

Products & Services

- Custom optics from 193nm – 15000nm
- Catalog optical filters from 193nm – 10600nm
- Custom bandpass filters from 240nm – 14000nm
- Optical accessory products
- Design support for custom applications and R&D services
- Measuring services
- Optical assemblies
- Substrate fabrication
- Dicing
- Precision beveling





Catalog – Filters & Accessories

Standard wavelengths: 193nm – 10600nm / Sizes: 12.5mm to 50mm

Bandpass Filters

Standard and Custom
First-surface UV filters
High transmitting
Hard-coated

Infrared Filters

Bandpass filters
Neutral density filters
Edge filters

Heat Control Filters

Ultraviolet cold mirrors
Cold mirrors
Hot mirrors
Infrared suppressing filters

Neutral Density Filters

Metallic UV-VIS-NIR
Infrared ND filters
ND filter sets
Absorptive ND filters

Dichroic Filters

Color-control filters

Steep-Edge Longpass Filters

Slope <1%
Deep blocking

Standard Edge Filters

Long wave pass
Short wave pass

Accessories

Threaded rings
Motorized and manual filter wheels
Temperature controllers

24/7 ONLINE ORDERING!

www.andovercorp.com

Manual & Motorized Filter Wheels

With the smallest footprint of their kind, our filter wheels can be used for a variety of applications, including;

- Color CCD photography
- Fluorescence microscopy
- Photometry – Measuring colors and intensity of light

Features

- Motorized and manual
- Compact footprint
- Local or remote control
- Labeled filtered positions
- Base and post mountable
- Programmable filter sequences
- Two 4" diameter wheels available;
12.5mm and 25mm



Temperature Controller

Protects against the influences of fluctuating ambient temperatures and enables fine tuning of bandpass filters

General Specifications

- Regulation Accuracy: $\pm 0.25^{\circ}\text{C}$
- Ambient Temperature Range: $0^{\circ}\text{C} - 40^{\circ}\text{C}$
- Min. Regulated Temperature: 30°C
- Max. Regulated Temperature: 60°C
- Filter Sizes: 50mm and 75mm Dia.

Features

- Custom sizes available
- Ovens available with or without bandpass filters



Quality Control

Spectrophotometers

- Cary 500, 5000 & 7000:UV-VIS-NIR
Spectral Range 193nm – 33000nm
- PE 983G NIR-MWIR-LWIR
Spectral Range 2000nm – 56000nm
- PE Frontier Optica, FTIR
Spectral Range 15000nm – 25000nm
- Spex 1.26 meter for ultra-narrowband filters (VIS-NIR)
Spectral Range 193nm – 1200nm, 0.0025 Resolution



Inspection & Testing

- Mitutoyo optical comparator
- Near-infrared inclusion tester
- Janis cryostat tunable from 77°K to 500°K
- Custom-made tunable white light interferometer
- Zygo laser interferometers
- Environmental test chambers – humidity and temperature cycling
- Optical alignment testing capabilities
- Custom testing & inspection



Grinding, Polishing & Fabrication

- Diamond surface grinders
- Myford cylindrical grinders
- Strasbaugh single-sided polishers
- Speedfam double-sided polishers
- Speedfam double-sided diamond lappers
- Automated lens centering machines for high precision beveling
- Dicing
- Haas CNC fabrication centers
 - Coring -Milling
 - Sawing -Shaping



Valued Customers



L3HARRIS



LOCKHEED MARTIN



BOEING



Edmund
optics | worldwide



OptoSigma®



JOHNS HOPKINS
APPLIED PHYSICS LABORATORY

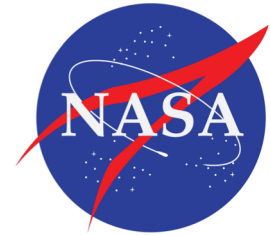
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SIEMENS

Ingenuity for life



Lawrence Livermore
National Laboratory



NORTHROP GRUMMAN



SLANTRANGE
IMPROVING AGRICULTURE FROM ABOVE

DAYSTAR FILTERS

Raytheon

BAE SYSTEMS



ASTRON

TETRACAM  **INC**



UTC Aerospace Systems



Los Alamos
NATIONAL LABORATORY

Quality Assurance

Andover Corporation's Quality System is Certified to;
ISO 9001: 2015
AS9100: 2016



Additional details

Cage Code:
0J798

Duns no:
09-427-6854

EIN:
04-2607555

SIC Codes:
**3827 Optical Instruments &
Lenses**

NAICS code:
**333314 Optical Instrument &
Lens Manufacturing**

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Thank you!



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