

World's Largest Inventory of Optical Components

# MODIFIED STOCK MADE EASY!

*TIPS TO REDUCE LEAD TIME AND COST*



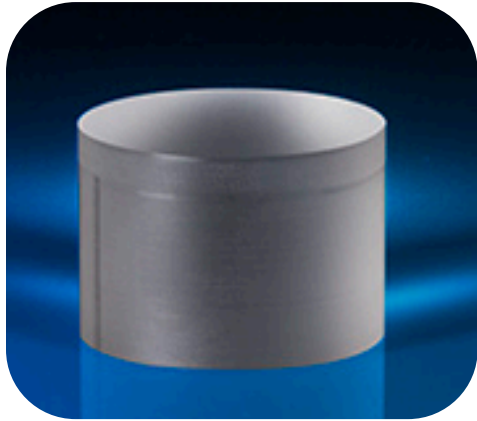
February 2015

Andrew Fisher



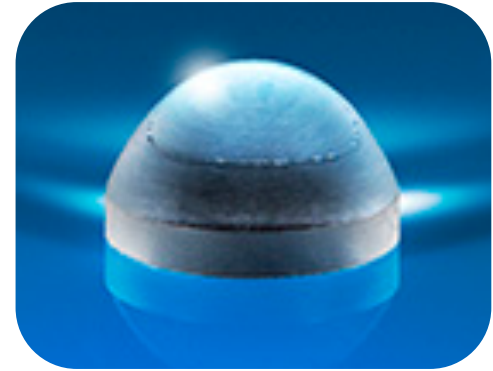
**Edmund**  
optics | worldwide

# HOW DO YOU MAKE AN OPTIC?

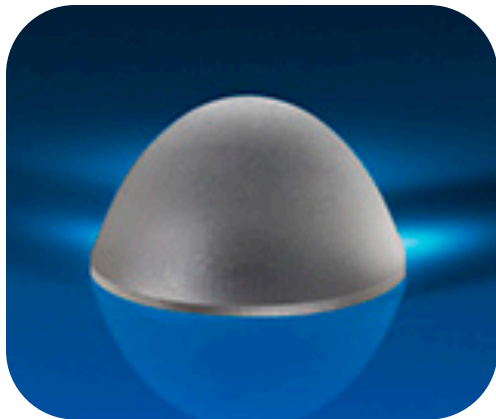


Grind

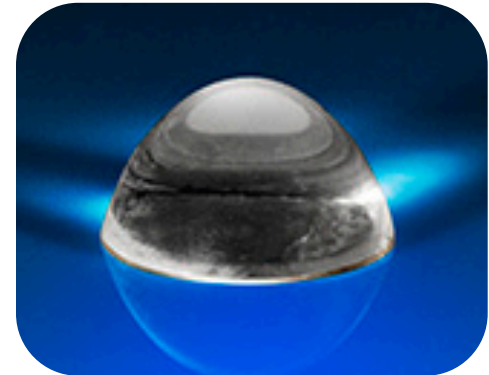
x2



Edge



Polish



# HOW DO YOU MAKE AN OPTIC?



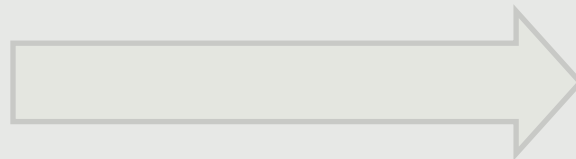
Grind



Edge



Polish



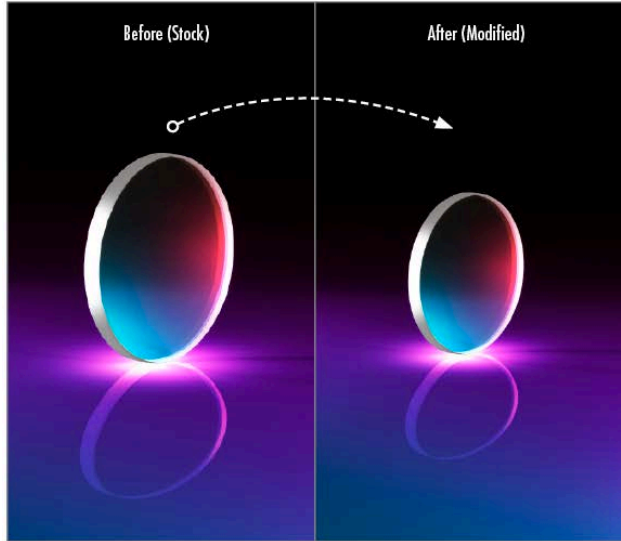
6-8 weeks

# INSTEAD, MODIFY YOUR STOCK OPTICS



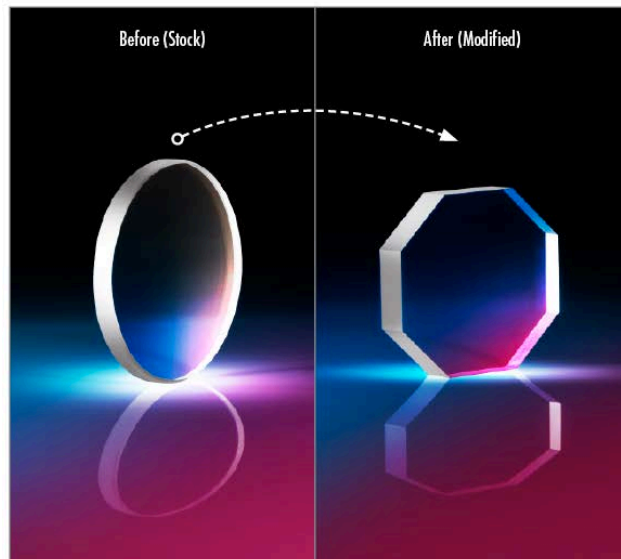
- 2-3 week lead times
- Small lot sizes
- Modifications to just about **any** optic

# TIP #1: LEAVE YOUR SURFACES ALONE



## Diameter Reduction

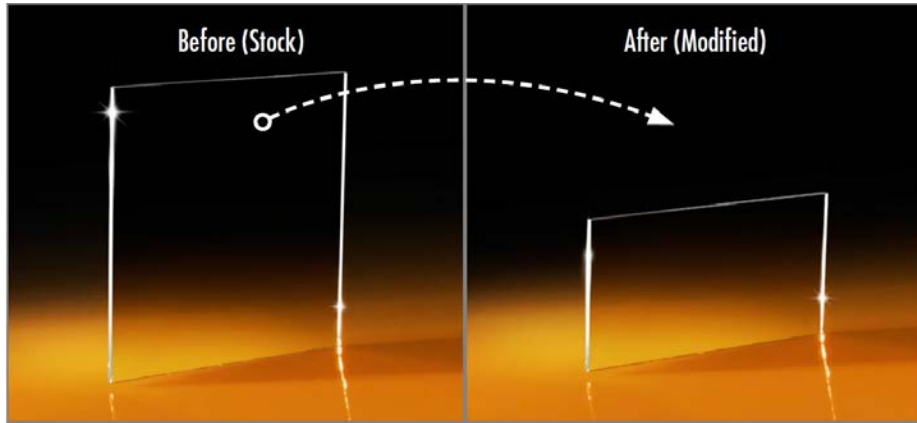
- Precision fit a lens to your custom barrel diameter
- Edge down a filter to match your system's dimensions



## Truncation

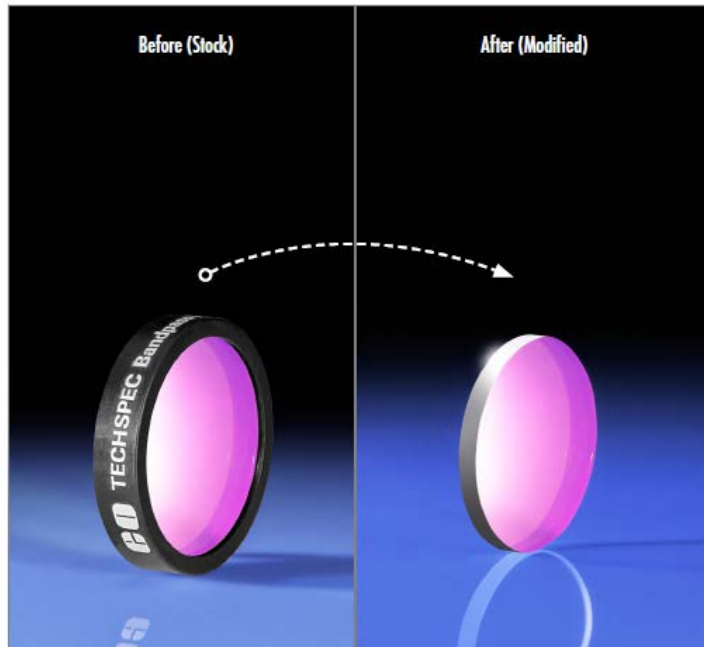
- Use to remove unnecessary, excess material in weight-sensitive applications

# TIP #1: LEAVE YOUR SURFACES ALONE



## Linear Cut to Size

- Cut a protective window to size
- Make multiple cuts to create different shapes



## Core Drilling

- Use to remove a filter from its mount
- Create a custom diameter for a filter

# CUSTOMER SUCCESS STORY

**Need:** Replacement of an existing molded condenser lens due to its loose focal length tolerance



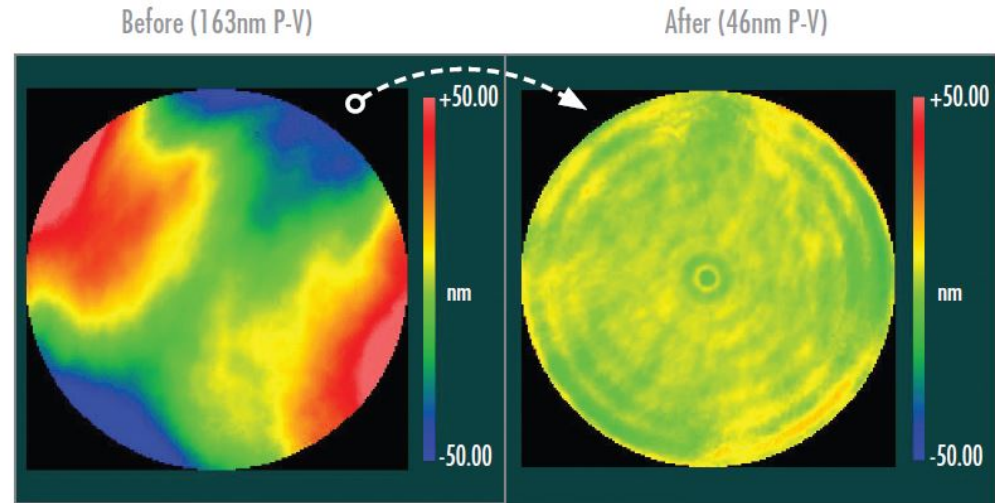
**Product Solution:** Use a more tightly toleranced TECHSPEC® asphere

**Modification:** In order to fit the application's existing housing, the oversized asphere was quickly edged down and delivered within 2 weeks

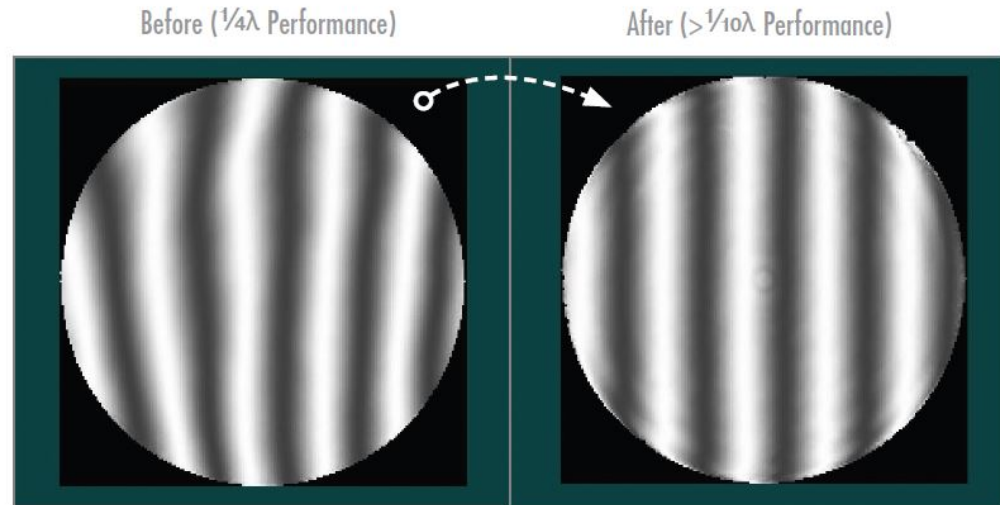


# TIP #2: SKIP THE GRINDING STEP

- Grinding can be responsible for as much as half of your process time!
- Use MRF technology to improve a unique surface map
- Transform a  $\lambda/4$  surface to a  $\lambda/10$  surface



Surface Wavefront Map

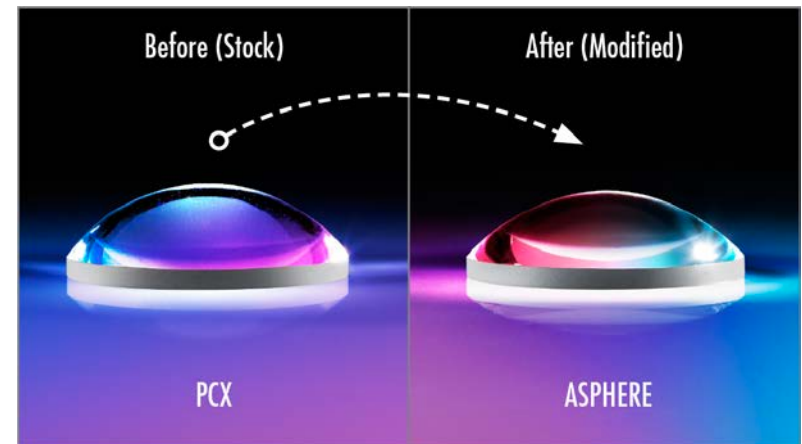
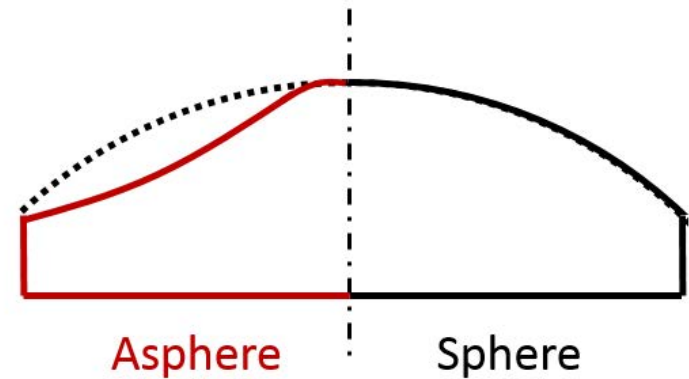


Interference Fringes



# TIP #3: TURN A SPHERE INTO AN ASPHERE

- Aspheres are often used for aberration correction
- Often ideal to use a custom asphere that will correct the error specific to your system
- Aspheres are defined as a departure from a spherical surface
- Just a single grind step and polish applied to one surface



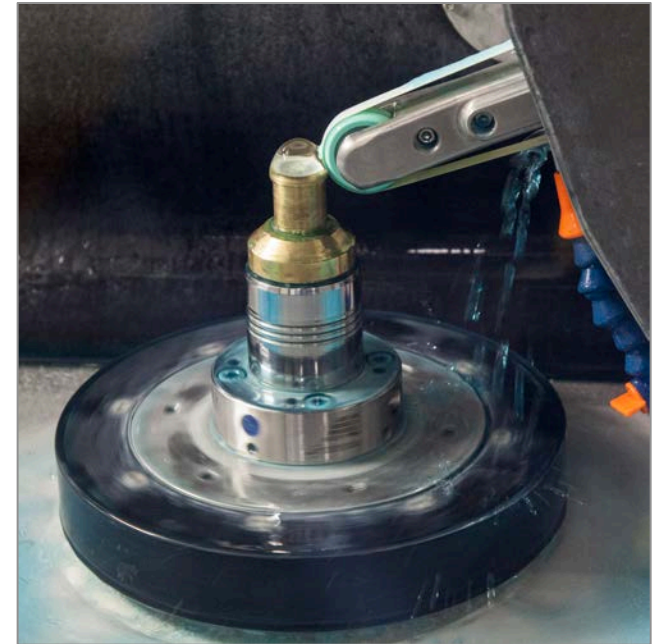
# CUSTOMER SUCCESS STORY

**Need:** A custom asphere, but not hundreds of pieces



**Product Solution:** Choose a stock spherical lens with a similar shape to the desired asphere

**Modification:** Using a single grind step followed by a polishing step we were able to create a small lot of aspheres much faster than the fully custom solution

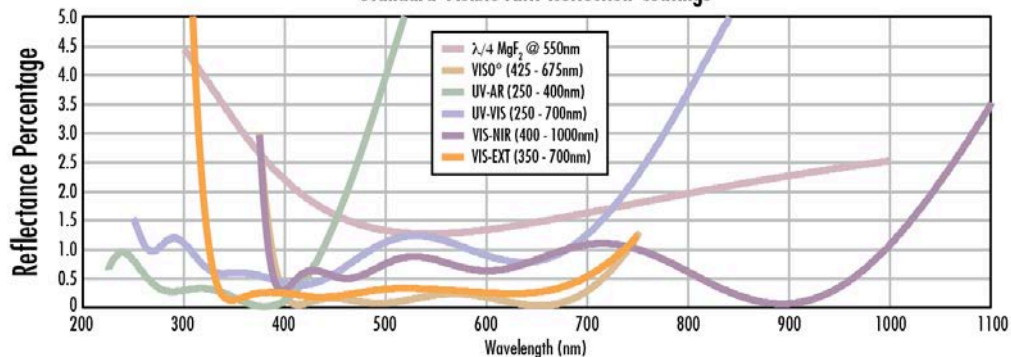


# TIP #4: JUST COAT IT

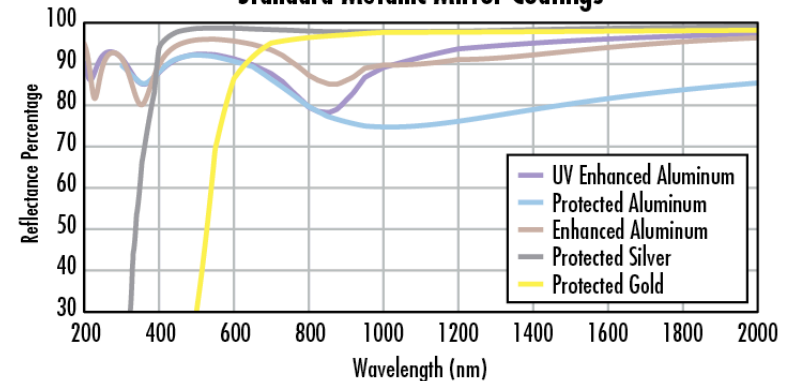
- Apply an AR, mirror, or filter coating to any window, lens, or prism



Standard Visible Anti-Reflection Coatings



Standard Metallic Mirror Coatings



# TIP #5: COMBINE PROCESSES

- Apply multiple modifications to the same part
- For example, create a custom-sized filter with serialization
  - Core Drill → Diameter Reduction → Engraving
- Potential savings on tooling costs as well



Core Drill

Diameter Reduction

Engrave

# CUSTOMER SUCCESS STORY

**Need:** A semiconductor testing machine required a 35mm diameter ND filter



**Product Solution:** Use a 50mm square equivalent filter

**Modification:** First use glass coring to create a round 38mm part. Then edge down to the 35mm required diameter.

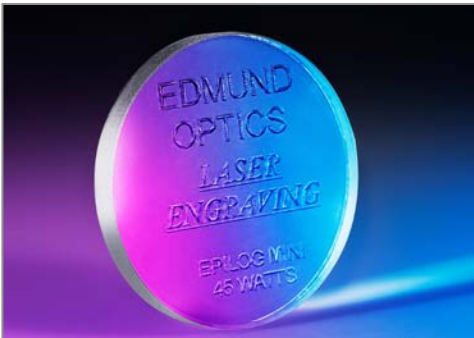


# ADDITIONAL TIME SAVING SERVICES



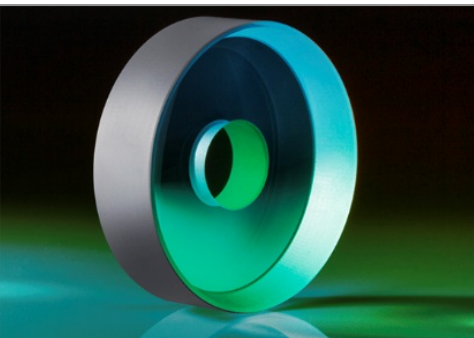
## Edge Blackening

- Reduce stray light
- Improve image contrast



## Engraving

- Serialize or individually label assembly components



## Through-hole

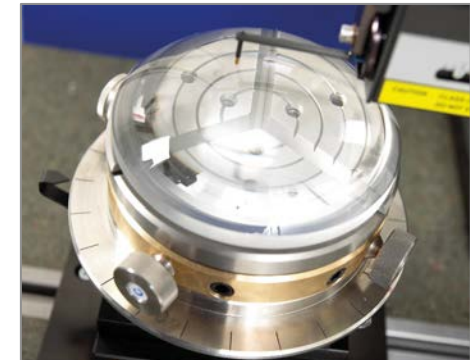
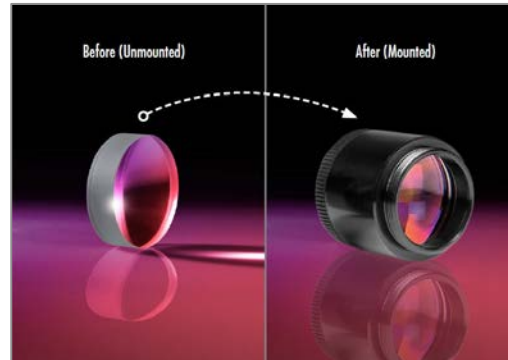
- Cut a through-hole for specialty applications

# ADDITIONAL TIME SAVING SERVICES

- Mounted Stock Optics
- Kitting and Custom Packaging
- Custom Inspection Reports

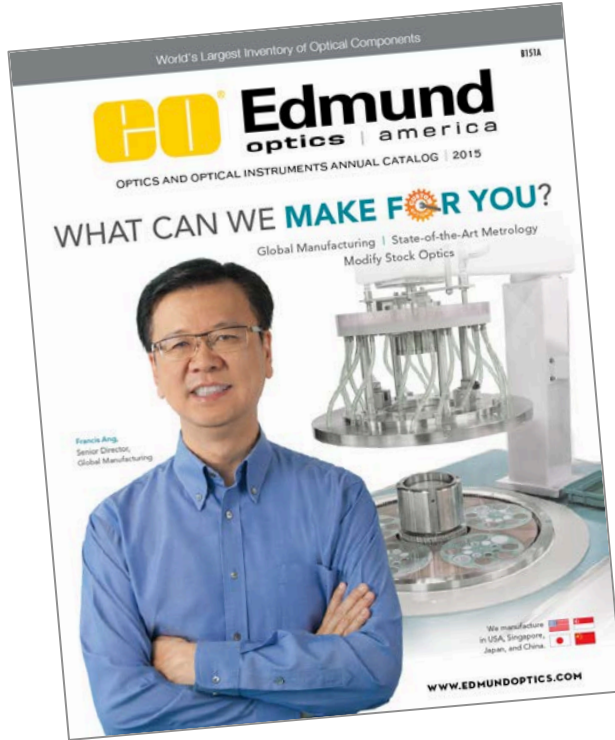


Non-Contact White Light Interferometer



Asphere Surface Profilometer

# WHAT CAN WE MAKE FOR YOU?



- Instant Access to Over 19,500 Unique, Off-the-shelf Optics
- Ideal for Prototyping



# HOW CAN I HELP YOU?



## **Andrew Fisher**

R&D Manufacturing Engineer

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