

# Optical Fabrication & MRF

## *IR Exotic Materials*



Reynard operates a fully integrated, in-house optical fabrication facility engineered to meet stringent precision optical manufacturing requirements.

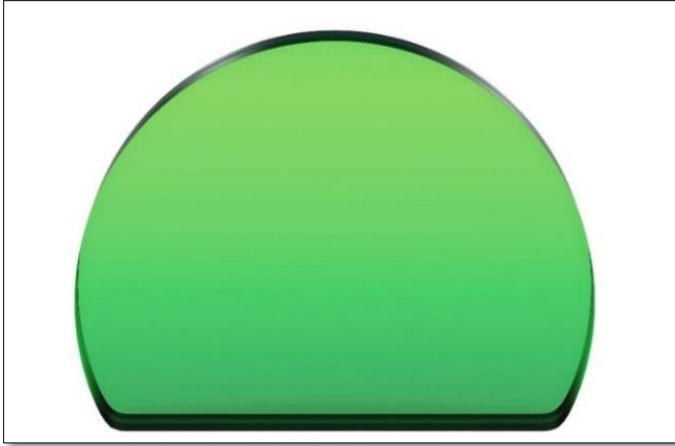
Shaping of optical components is carried out using CNC mills, semiconductor-grade dicing saws, and precision optical edgers, followed by measurement with calibrated, high-accuracy hand tools and instruments. Surface finishing advances from coarse grinding to precision lapping and spindle polishing, achieving tight tolerances in thickness, surface figure, and surface roughness. Protective bevels are applied to minimize sharp edges and prevent chipping.

Diamond-turned spherical, aspherical, diffractive, and freeform optical components are manufactured and metrologically verified in-house on compatible substrate materials. Optical surfaces may be further refined using Magnetorheological Finishing (MRF) to achieve enhanced surface figure and finish. Dimensional and surface characterization is performed using both contact and non-contact metrology systems to ensure compliance with stringent optical performance specifications.

We process a variety of optical materials from popular visible and UV materials such as borosilicate, fused silica, and colored glass to infrared materials including Germanium, Silicon, Zinc Selenide, and multi-spectral Zinc Sulfide. We also are familiar with working on a variety of exotic crystals and chalcogenide materials for use in the 1 to 16 $\mu$ m (SWIR, MWIR, & LWIR) wavelength regions.

## CAPABILITIES

- IR Materials
- Polishing: 1/20 wave
- Grinding: 1mm to 450mm
- Beveling: down to a few thousands of an inch
- Core Drilling: glass, metals and ceramics
- Edging: a few ten thousandths of an inch
- Wafer Dicing: automated for precision & accuracy
- Lap & Spindle Polishing
- Miniature to Over 30" Diameter
- Stacking and Bonding
- Precision Flats, Plano Elliptical and Spherical
- Diamond Point Turning
- Magnetorheological Finishing (MRF)
- Contact & Non-Contact Measuring
- Visible Interferometry



**MATERIALS:**

**GENERAL CAPABILITIES:**

ALON	Germanium (Ge)
AMTIR 1-5	Indium Phosphide (InP)
Barium Fluoride (BaF2)	Magnesium Fluoride (MgF2)
Borosilicate (N-BK7)	Mercury Cadmium Telluride (MCT)
Calcium Fluoride	Sapphire (Al2O3)
Ceramics	Silicon (Si)
Crystals	Zinc Selenide (ZnSe)
Fused Silica (SiO2)	Zinc Sulfide (ZnS) / Cleartran
Gallium Arsenide (GaAs)	And more...

- ISO 9001:2015 Certified
- ITAR Registered
- Cybersecurity (CMMC) Compliant
- Magnetorheological Finishing (MRF)
- UV-VIS, NIR, IR
- Freeform Optical Designs
- Precision Flats, Plano/Plano, Elliptical & Wedge
- Diamond Point Turning
- Full Manufacturing Traceability
- MIL-PRF-13830B
- MIL-C-48497A
- ISO 10110
- In-House Environmental Testing
- Made in USA

All manufacturing processes are vertically integrated and performed in-house to ensure rigorous quality control, streamlined communication, and advanced customization capabilities.

Contact Reynard to discuss how these capabilities can support and enhance your optical system performance.

