



# SHANGHAI OPTICS

## LENS SYSTEM DESIGN & ASSEMBLY

# Our Customers

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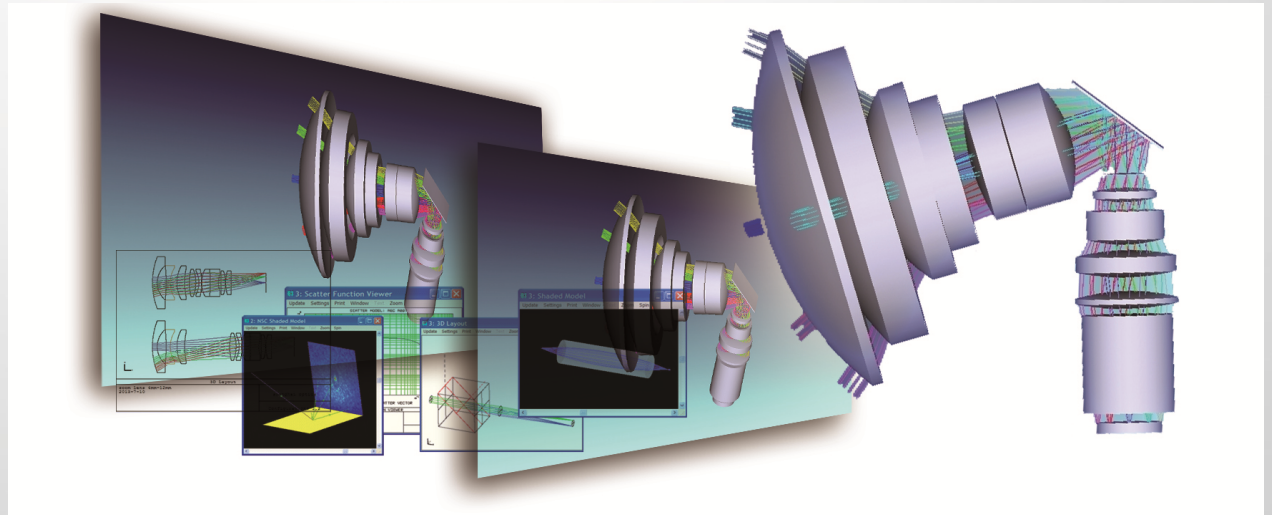
About 60% of our products are exported to Japan, United States, Germany, France, Australia and Spain. We are one of the leading optics suppliers in China.



# Lens System Design

**Shanghai Optics provides a variety of designs (imaging, illumination and opto-mechanical systems) for all different types of applications.**

- Precision optical system design and optimization
- Powerful optical and illumination analysis
- Fully integrated system including CCD/CMOS and circuit board integration
- Timely communication with customers
- Capability to provide model light sources, mechanical parts, and optical components



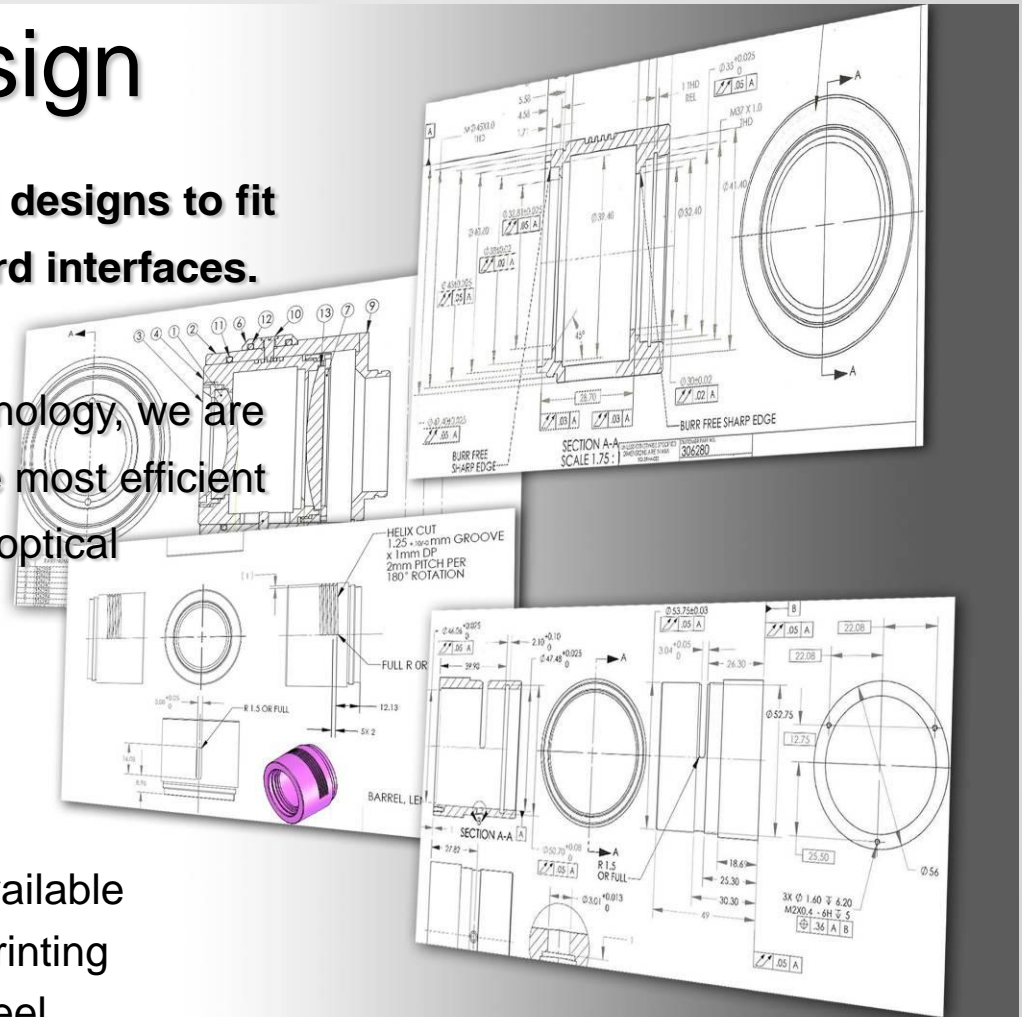
# Lens System Design

**Shanghai Optics offers mechanical designs to fit our customers' current and standard interfaces.**

With second-to-none processing technology, we are confident in our ability to complete the most efficient mechanical design along with secure optical performance.

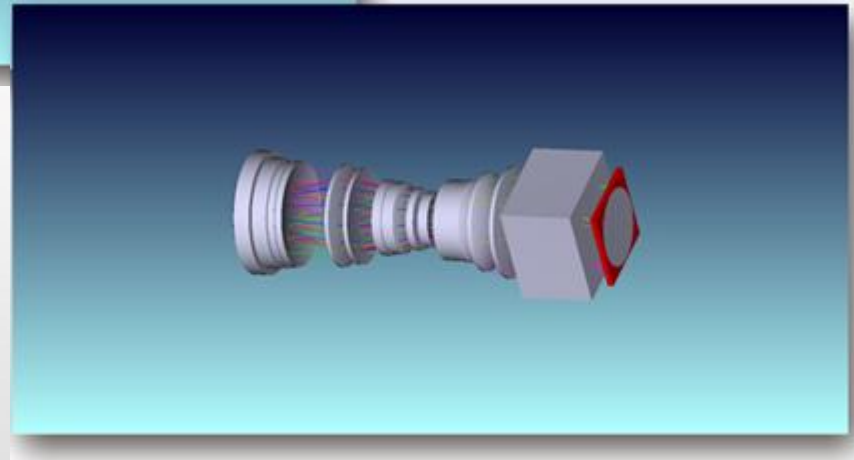
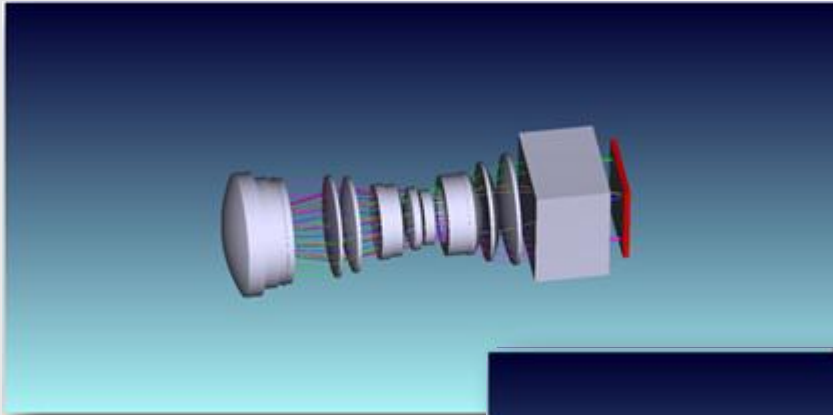
(3D projector metrology on site)

- Diameter tolerance:  $\pm 0.025\text{mm}$
- Aperture tolerance:  $\pm 0.020\text{mm}$
- Various outer surface finishing available
- Logo etching, curving, and pad printing
- Materials: aluminum, stainless steel



# Lens Design Portfolio:

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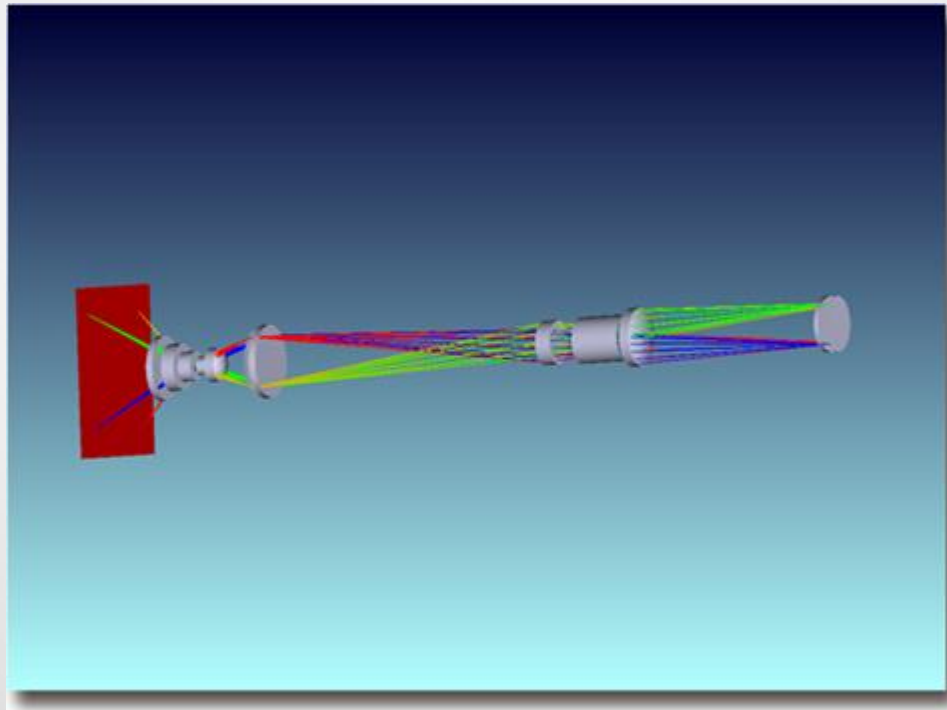


**Projector Zoom Lens**



# Lens Design Portfolio:

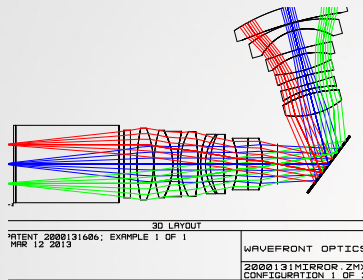
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**Micro-Scanning Lens**

# Lens Design Portfolio:

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**Rear Bending TV Projector Lens**

# Vertically Integrated Capabilities

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- Optical systems design
- Lens design
- Mechanical/Electrical/Systems design, modeling, and analysis
- Coating design
- Precision lens assembly
- Metrology including Zygo NewView, ZMI, VeriFire systems, Zygo proprietary distortion tester, multi-axis MTF (large aperture and multispectral), Aspheric null and metering mirror systems, vertical tower system test benches, CMM's, microscopes, autocollimators, spectrophotometers, profilers, and other advanced measurement equipment.

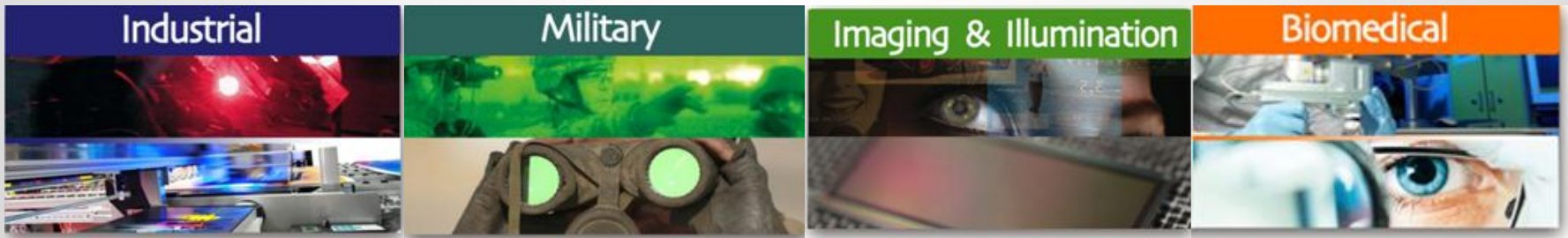




# Lens System Assembly

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Shanghai Optics offers a wide range of lens system assembly services covering visible to UV & IR wavelengths. We serve customers ranging from biomedical, imaging & illumination, to industrial and military applications. With extensive experience in manufacturing optical components, we have an excellent understanding between manufacturability and design expectations.



# Lens Assembly

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- **High Quality Manufacturing Capability**

With connections and support from domestic materials & accessories suppliers, SO can often propose affordable solutions without sacrificing performance

- **Ever-Expanding Metrology Capabilities**

SO is well equipped and constantly looking to expand its metrologies to ensure we can fully meet and measure our customers' specifications.



# Capability Highlights

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## **Large glass material inventories**

We have over 800 types of glass materials in stock for daily usage. Special materials can be arranged per the customer's request.





# Capability Highlights

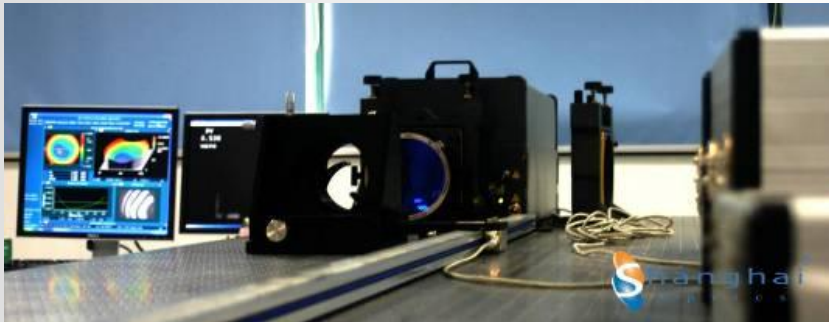
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We have built up a collection of more than 5,000 types of high end test plates. They are all sorted and classified, ready for the customer's selection.

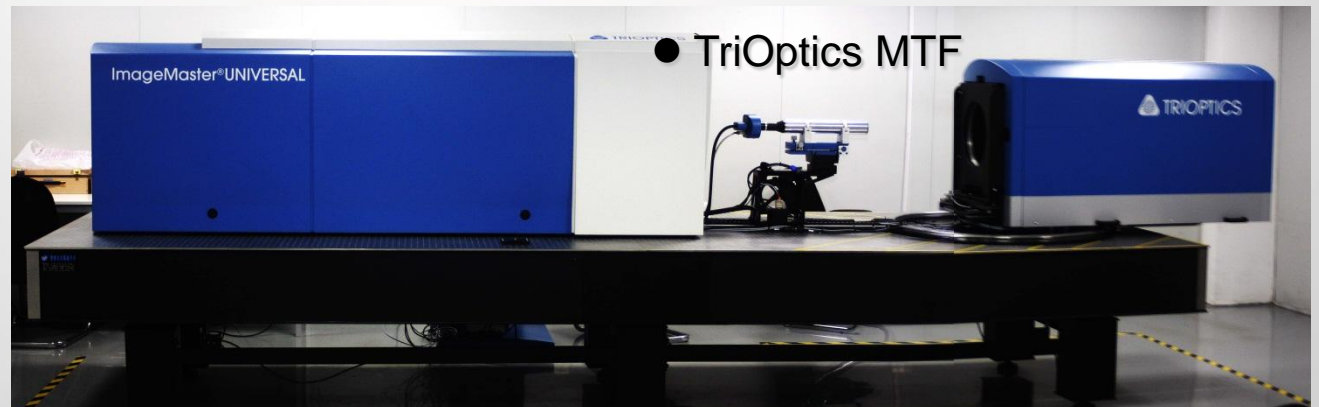


# Metrology Equipment

- *Zygo Interferometer 6'*



- *Parallel photocell*



- TriOptics MTF

# Metrology Equipment

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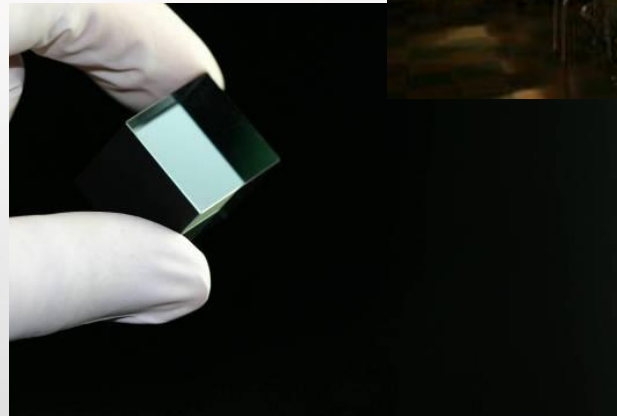




# Quality Assurance

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- Shanghai Optics stands behind our products 100%
- All parts are under the comprehensive quality control system (ISO: 9001 & 14001 certified)
- 100% inspection of all parts
- State-of-the-art metrology equipment



# Why Shanghai Optics

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- Reduce risks associated with handling optics
- Reduce the potential distortion of optics within the assembly and ensure the optimal accuracy
- Inspect and test mounted optics



# DFM Input from SO

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## The Cutting-Edge Advantages SO Offers:

- **Cost-Effective Philosophy**

Our experienced optical designers and engineering team can help you achieve the most cost-saving solution for your application.

- **System Optimization**

With over 55 years of manufacturing experience, SO can offer precise analysis to each single element in your system, preventing unnecessary specs that drive up the overall system cost.

# Production Highlights

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# Production Highlights

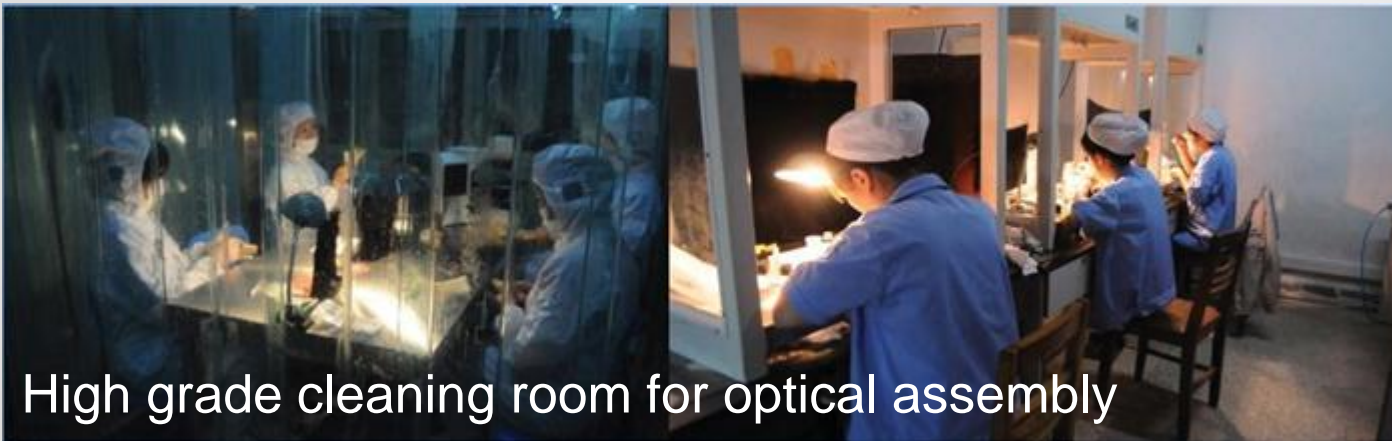
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Optical Assembly



# Production Highlights

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High grade cleaning room for optical assembly



Focus and centering testing



A collection of various optical lenses and camera components, including a large telephoto lens, a wide-angle lens, a fisheye lens, and several smaller lenses and filters, arranged on a white background.