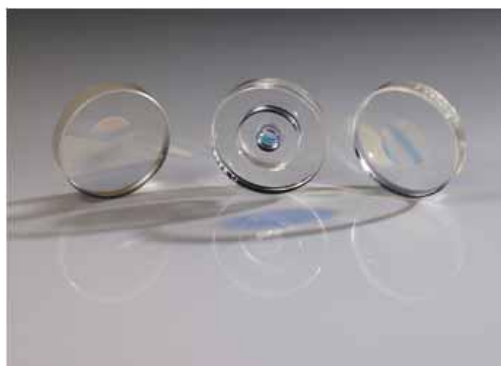
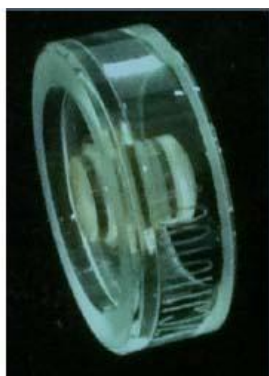
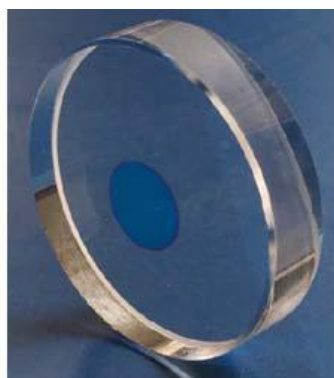
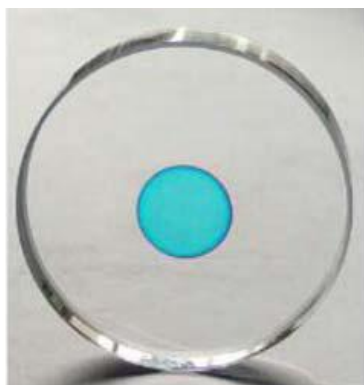


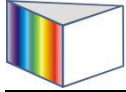
## Mirrors for Ring Laser Gyros

High reflection and low scattering mirrors are one of the critical components in the laser gyro systems, the super-polishing technique is used to make the low roughness mirrors substrates. Hangzhou Shalom EO offers the mirrors or substrates used in the laser gyro with roughness less than 1Å, by our classical super polishing line, atom force roughness measuring system and Zygo interference flatness test instrument, we are able to provide the laser gyro mirrors in stable and identical quality and volume quantity.



### Specifications of the ring laser gyros

Substrate Materials	Zerodur Glass, Fused Silca
Diameters (mm)	Φ12.5, Φ19.05, Φ25
Surface Roughness RMS	<0.1nm
Total Integrated Scattering (TIS)	5ppm
Surface Quality	10/5 S/D; 0/0 at central area
Flatness	<Lambda/20 @ 633nm

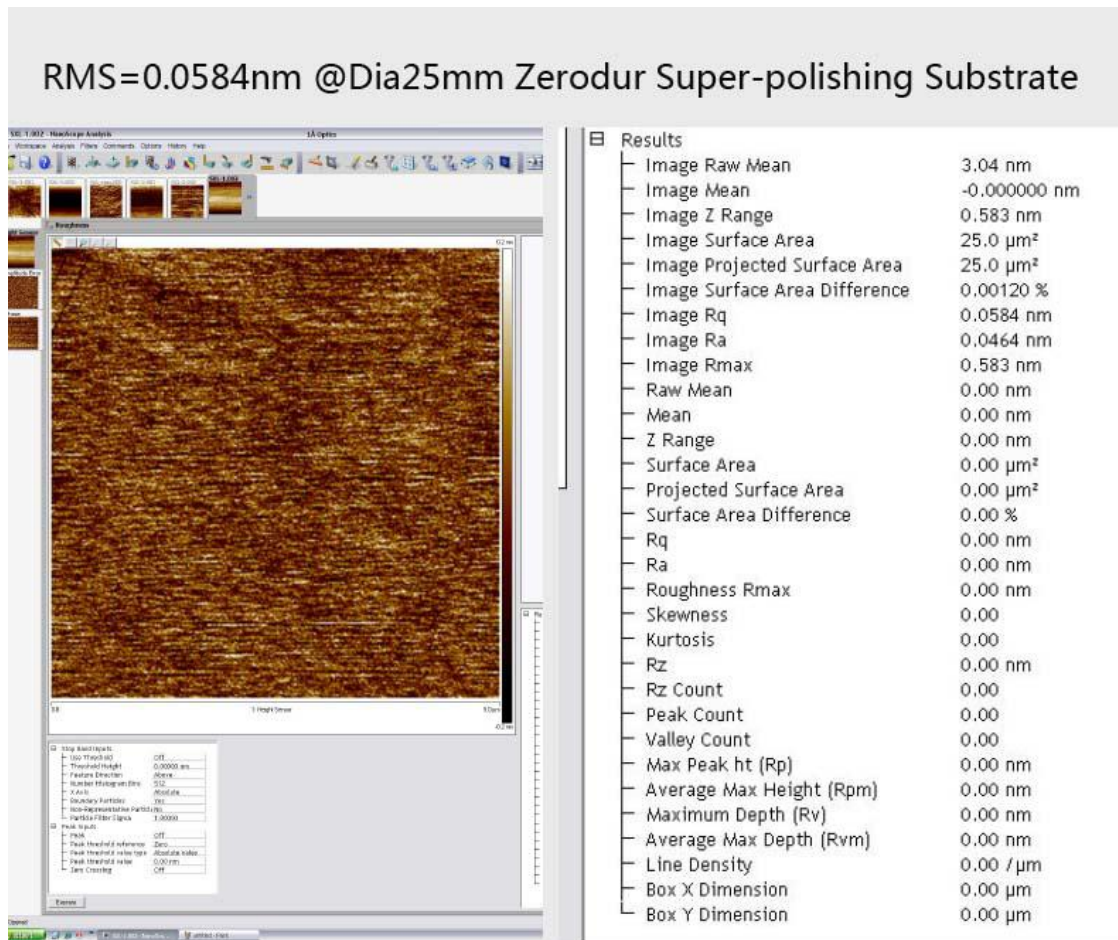


### 1) Unique classical polishing method

Although the magnetorheological fluid polishing method is thought to be a promising way to make the extra lower roughness optical surfaces, but its high-cost and low producing rate makes it unpractical in industrial applications, therefore most of the super-polished optics are made from the classical polishing method. A unique processing of classical polishing are developed to make the super-polished optics, the pitch plate is used as the polishing module,  $<1\text{\AA}$  roughness can be obtained by our polishing art. The testing show that our substrates and mirrors works well in the laser gyro system.

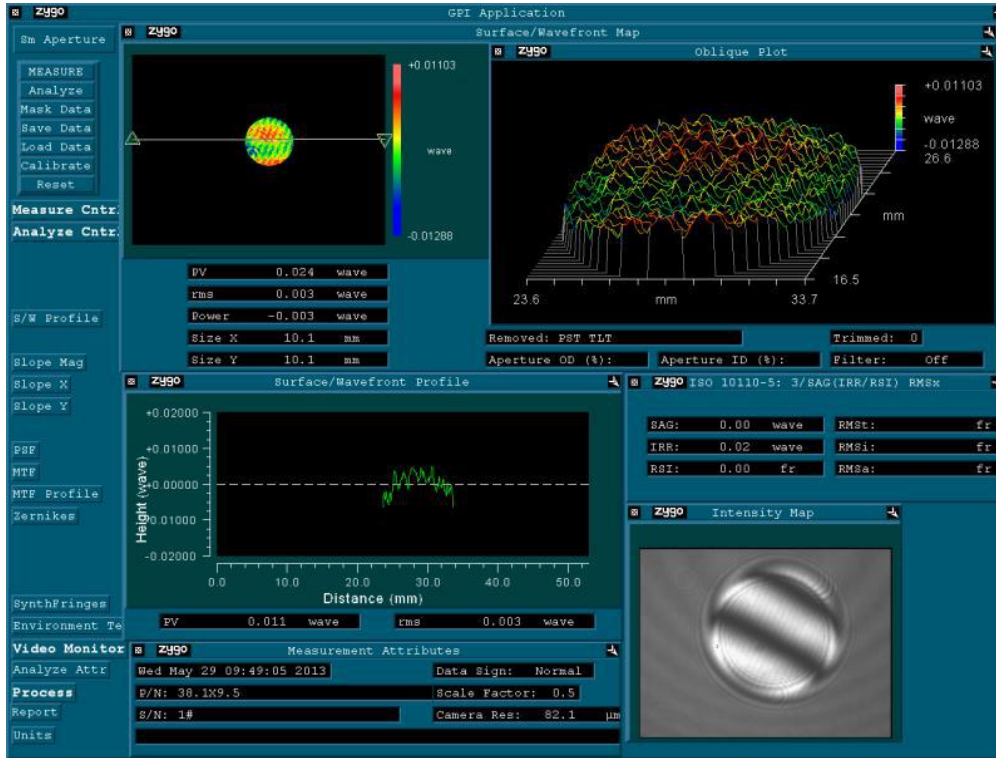
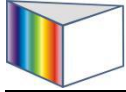
### 2) Roughness measurement

For the primary scattering test we use the green laser of 25mW and 40mW, the scattering point can be found by watching the reflection laser light from the optics surfaces, this is easy and fast, which is used as the primary test of surface roughness. For the final test of the roughness or scattering test, the Atom Force Microscope (AFM) of Bruker company is used to measure the final roughness of the polished optics. Please see the following picture get from the AFM measuring system.



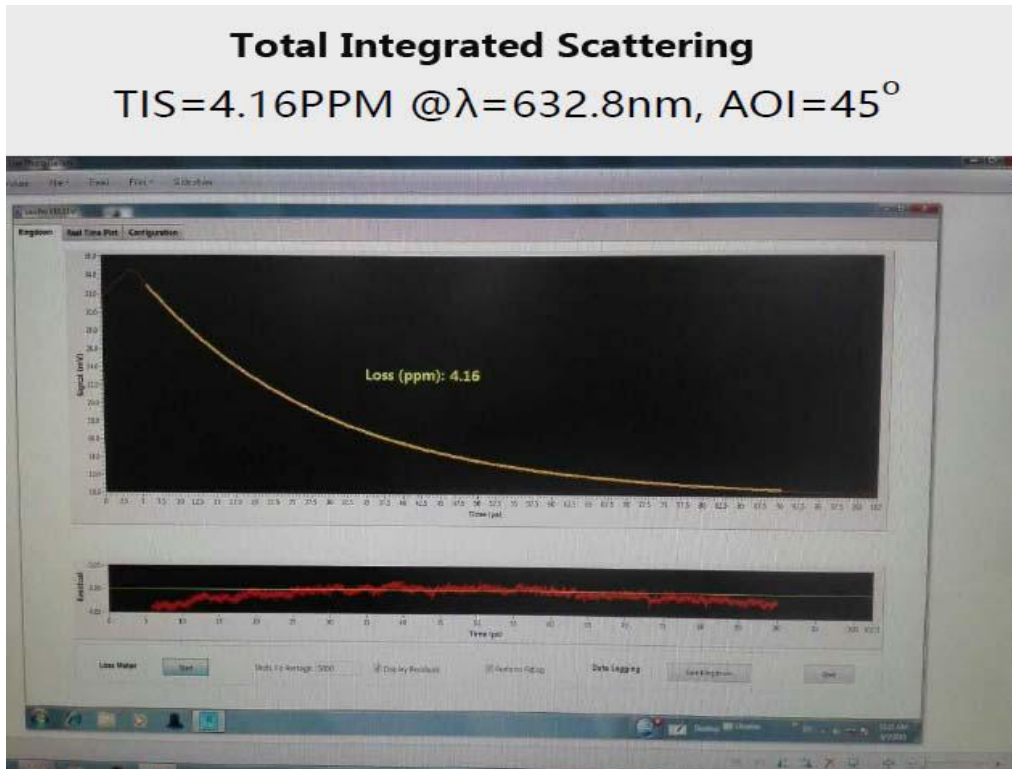
### 3) Flatness Measuring

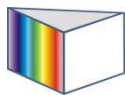
The Zygo Lambda2000 series Module GPIXP-D6" is used to measure the final flatness of the polished surfaces. Please see the following diagram of the measuring.



#### 4) Coating Testing

The final processing of coating is also critical for the laser gyro mirrors, low absorption and low scattering loss is required, the Total Integrated Scattering or TIS is measured to evaluate the surface loss of the mirrors.





**Shalom EO**  
Crystals, optics and components

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