

High Flatness Optics

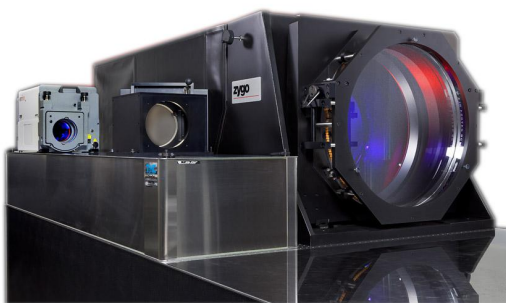
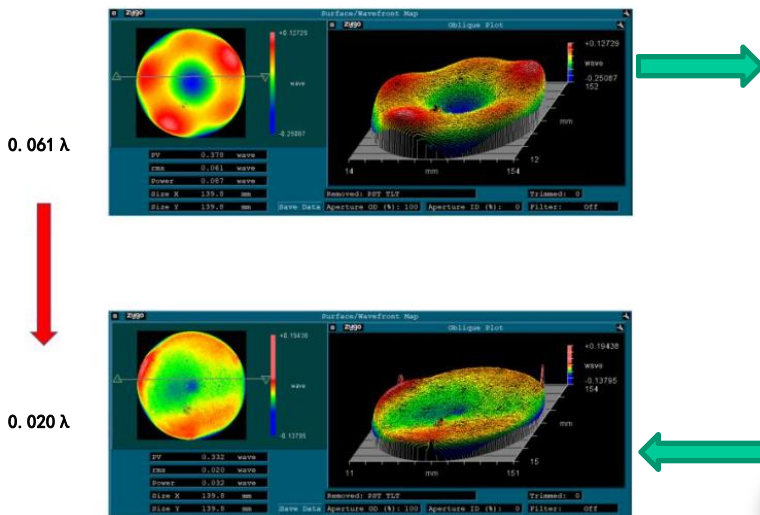
Ion Beam and Magnetorheological Processing Technology

The ion beam figuring (IBF) process is realized as the most precise technology of optical surface figure correction. A Gaussian formed beam of accelerated ions operating in a vacuum environment bombards into the surface of workpiece to remove the material by physical sputtering at the atomic level. A ZYGO interferometer was used to monitor the face shape of the optical elements, and the measured data were imported into the ion beam processing equipment for simulation. Based on the different local surface shapes, the residence time of the ion beam spot on the workpiece surface is controlled to accurately process the ultra-high surface shape.

Magnetorheological polishing is the use of polishing fluid that undergoes rheological behavior in a gradient magnetic field, resulting in a flexible "small grinding head" with viscoplastic behavior and rapid relative motion between the workpiece and the workpiece. This causes a significant shear force on the surface of the workpiece, resulting in the removal of surface materials. It is a contact polishing method without subsurface damage, and it is also fitted by importing test data into magnetorheological equipment to achieve deterministic processing.

CASTECH's ion beam and magnetorheological processing equipment can process large-size optical components with an outside diameter of 600mm, which is suitable for precise control of the face shape of various optical materials.

- Excellent stability of atomic level removal
- Contactless process without induced stress
- Flat, Spherical, Aspherical surfaces workable
- Surface quality PV < $\lambda/40$ achievable



ZYGO GPI-XP Interferometer for wave front & parallelism measurement
 (The picture shows ZYGO MST, with a measurement diameter of up to 600mm)
 With $\lambda/50$ accuracy
 Parallelism measure accuracy: 0.5 "



4D Interferometer(FizCam 2000) for high accuracy measurement of flatness