POLISHING OF HIGH PRECISION SiC ASPHERE

Precision Asphere, Inc
Fremont, California
COMPANY

- Operation: 2004
- Mission: Best Cost-to-Performance Ratio
- Precision Aspheric Surface Forming
  - Deterministic
  - Versatile
  - Lower Cost
  - Scalable
CUSTOM ASPHERES

650mm

14mm
CAPABILITY

- Material: All Glasses, Si, SiC
- Shape: On- and Off-Axis
- Surface Figure: 1/30 waves PV @633nm
- Roughness: <3Å RMS
- Slope Error: 1-4uRad RMS
- Mid Freq Error: <5Å RMS
STARFIRE OPTICAL RANGE

Φ=15” Secondary Mirror
Φ=14” Stand Alone OAH
Toroidal Mirror
Si Cylindrical Mirror
Φ=22” Stand Alone OAP
SiC MIRROR SUBSTRATE

- CVD cladding
- Light weighted
  - > 60%
  - Face Sheet: <2mm
  - Aspect Ratio: 15
- Shape
  - Convex
  - Hyperbolic
  - 20 um aspheric departure
METROLOGY

Aperture Converter

SiC Mirror

4" Interferometer

Custom CGH
POLISHING PROCESSES

- Stock material removal
  - Comparable to glass
RESULTS – INTENSITY MAP
RESULTS – ROUGHNESS

![Roughness Image]

Ra 1.898 Å
RESULTS – ROUGHNESS