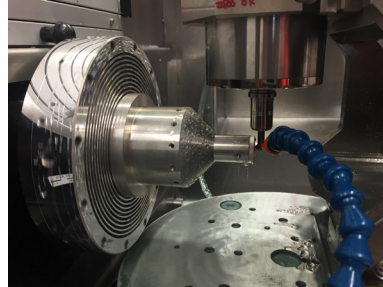
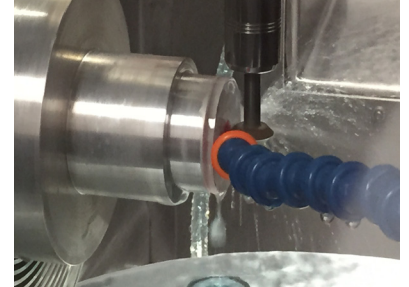




Nanoform® 250 ultra grind



Set up



Grinding in process

### Goal:

Demonstrate the surface finish and form accuracy achievable when grinding glass with a Levicron® ultra precision spindle

### Process:

Freeform XZC spiral glass grinding on a Nanoform® 250 ultragrind specifically designed for flood coolant applications. Starting with a flat blank removed 183 µm at the clear aperture.

### Part Details:

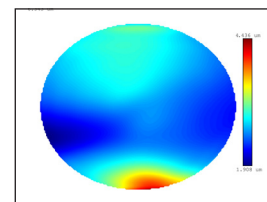
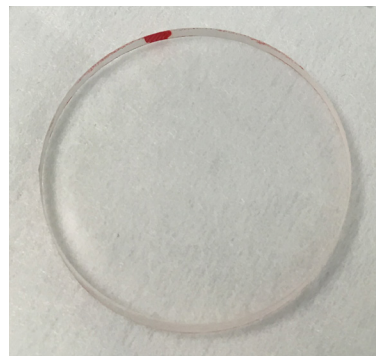
- Material:** BK7 glass
- Diameter:** 40.0 mm
- Clear aperture:** 26.3 mm x 22.29 mm  
(oversized blank used for convenience)
- Freeform surface:** defined by Zernike polynomials

### Process Details:

- Grinding wheel:**
- Roughing:** 12.05 mm diameter/metal bond wheel  
Semi-finish & finish – 15.84 mm diameter/  
#1800 Resin bond wheel
- Grinding spindle speed (finish pass):**  
30000 rpm (24.9 m/min wheel OD speed)
- Grinding surface speed (constant surface speed grinding):** 1400 mm/min  
(11 rpm @ edge to 125 rpm @ center)
- Depth of cut:** Roughing – 2 passes at 5 µm  
Semi finish – 10 passes at 2 µm  
Finishing – 1 pass at 0.5 µm
- Total time:** 267 min

### Results:

- Surface finish:** 25.0 nm rms
- Subsurface damage:** 4 µm
- Form accuracy:** 6.34 µm PV (spec < 8 µm)



z_rms	0.8295 um
z_ptv	6.343 um
apr_x	26.3 mm
apr_y	22.29 mm
z_min	-1.908 um
z_max	4.436 um
z_avg	-0.01685 um

