

# Surface Analysis of AlGaAs Coating on 100mm Sample

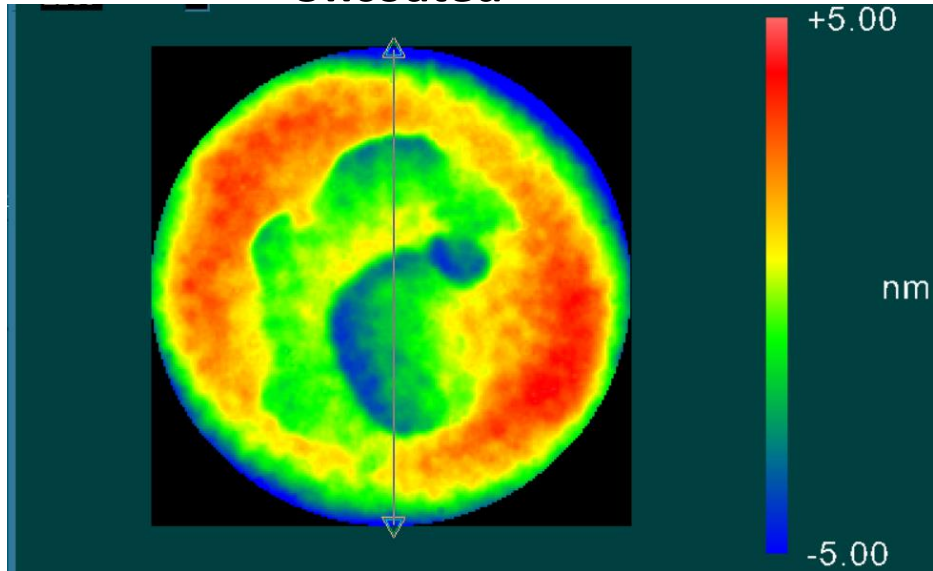
---

LIGO/Caltech

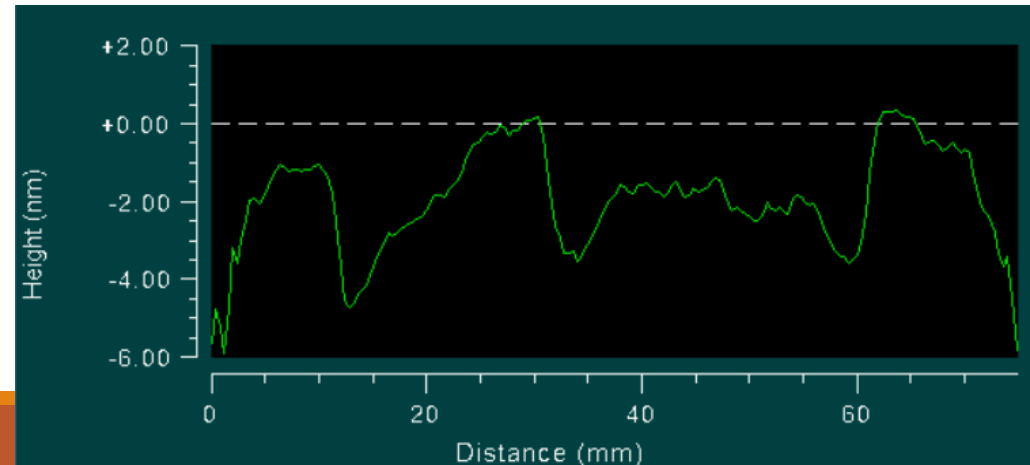
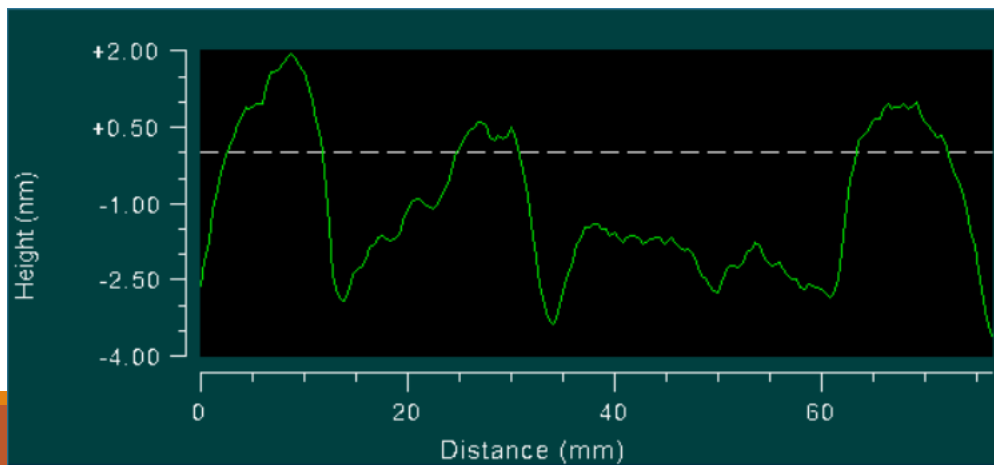
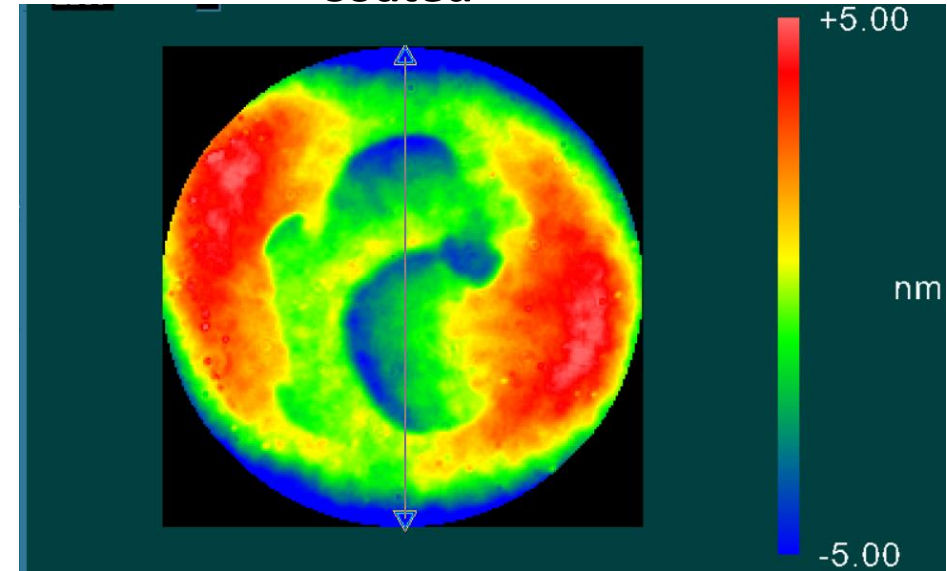
Camille Makarem, GariLynn Billingsley

# Surface profile of sample before/after coating

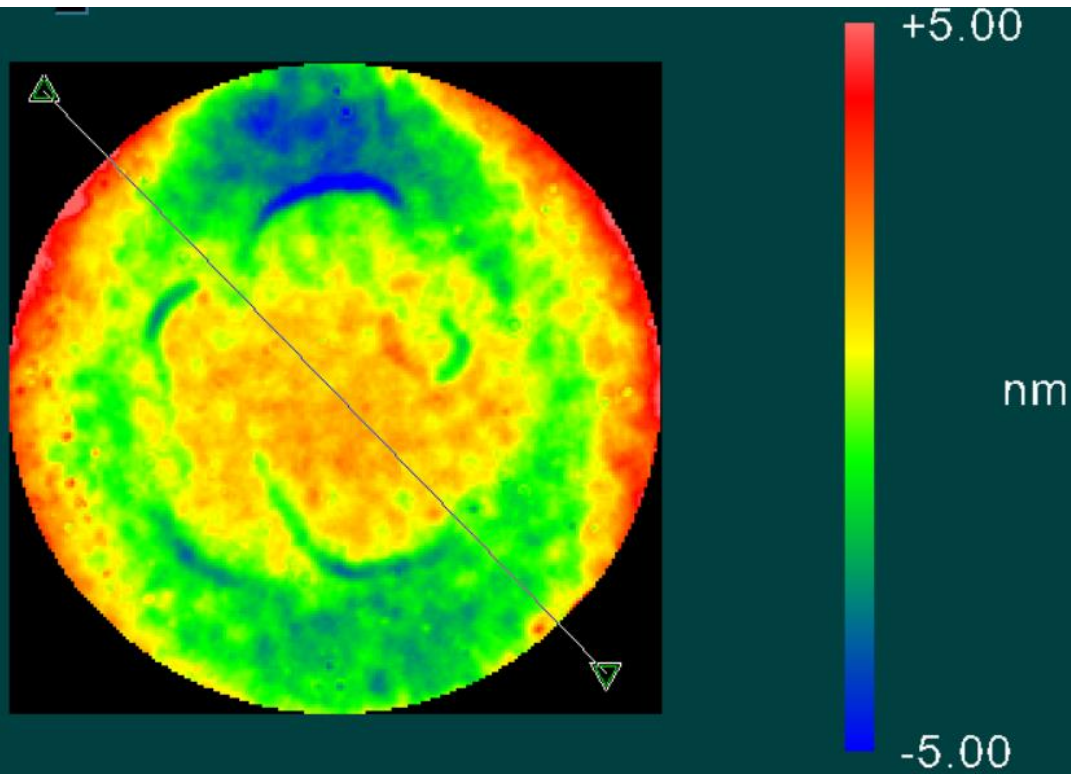
Uncoated



Coated



# Results from the Subtracted Data



Difference between coated & uncoated data gives surface info of coating.

Difficulties in subtracting data

- Coating edge is ragged
- Shifted overlap to minimize coma (Coma artificially generated when data is misaligned.)

Addition of coating shows significant change in power and astigmatism

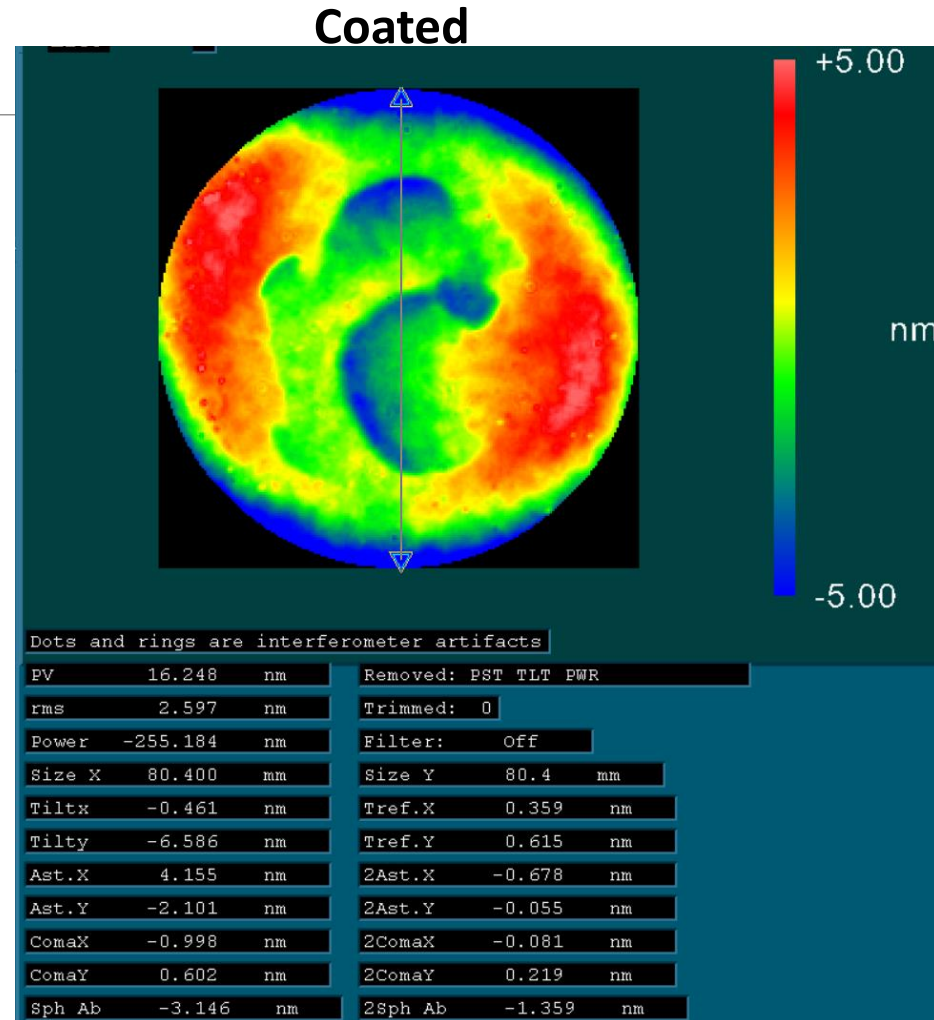
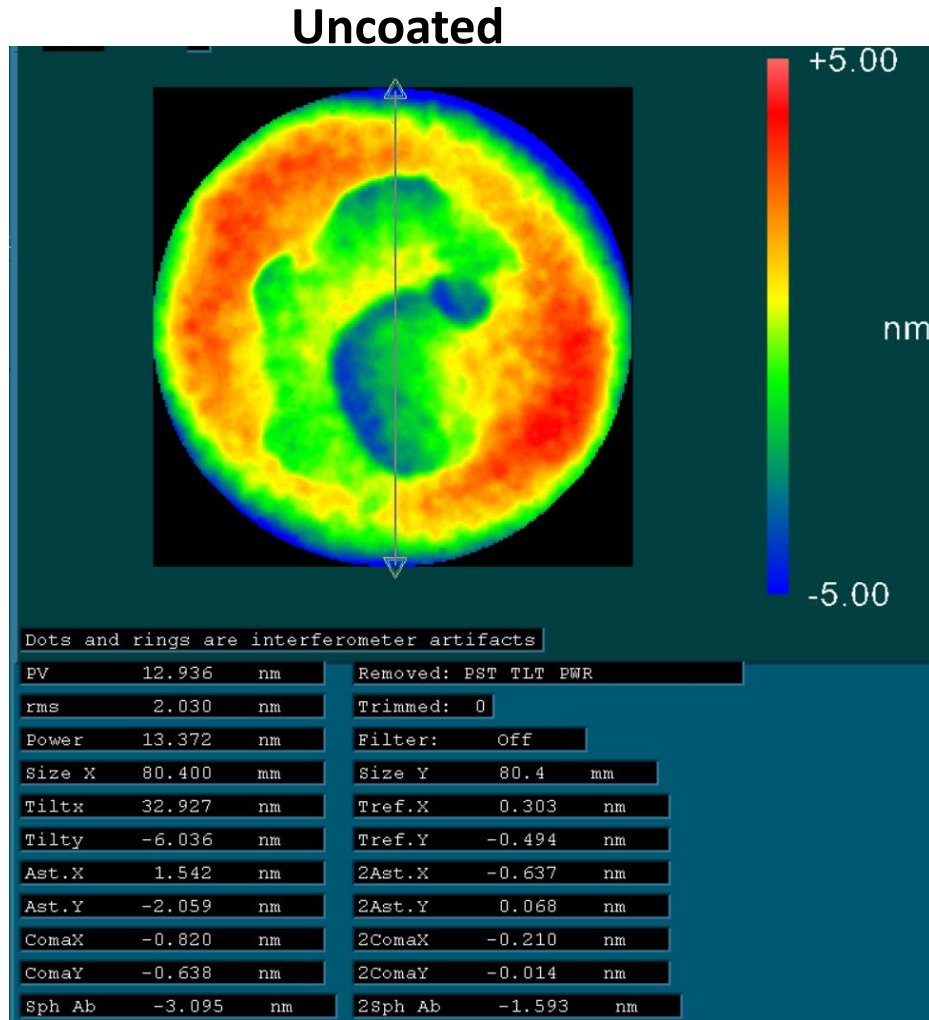
Astigmatism only in the x-direction (in line with one of the crystalline axes of coating?)

Dots and rings are interferometer artifacts

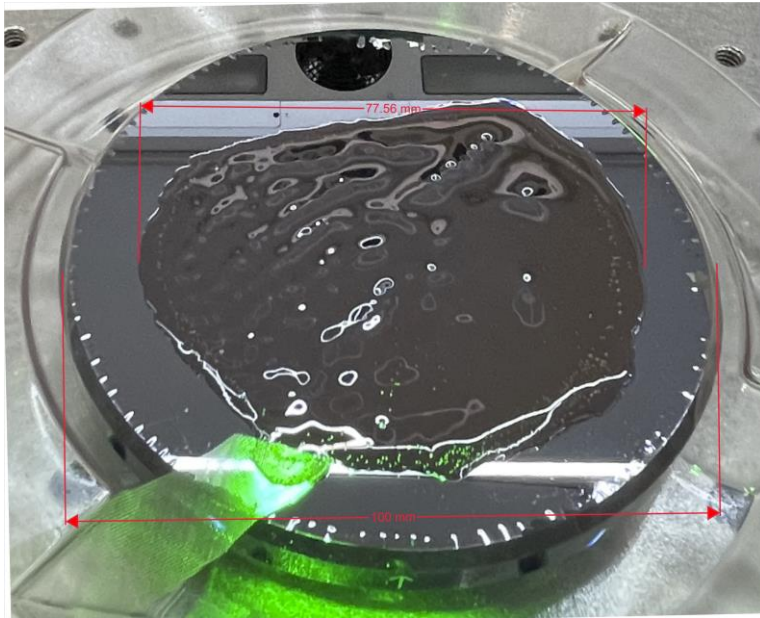
PV	13.350	nm	Removed: PST TLT PWR
rms	1.637	nm	Trimmed: 0
Power	-265.539	nm	Filter: Off
Size X	80.400	mm	Size Y 80.4 mm
Tiltx	-35.989	nm	Tref.X 0.015 nm
Tilty	10.323	nm	Tref.Y 1.023 nm
Ast.X	2.431	nm	2Ast.X -0.063 nm
Ast.Y	0.356	nm	2Ast.Y 0.023 nm
ComaX	0.035	nm	2ComaX 0.030 nm
ComaY	0.757	nm	2ComaY 0.219 nm
Sph Ab	2.223	nm	2Sph Ab 0.407 nm



# Reference slide: Zernikes of coated/uncoated figures

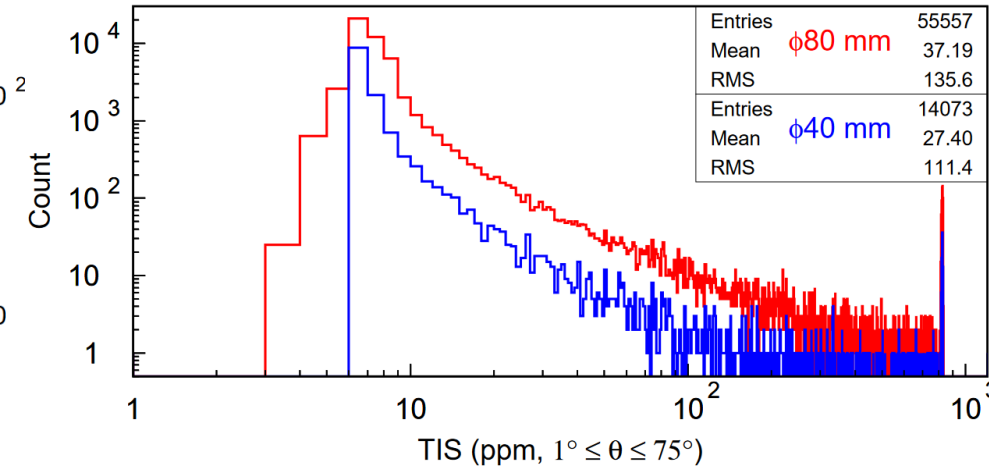
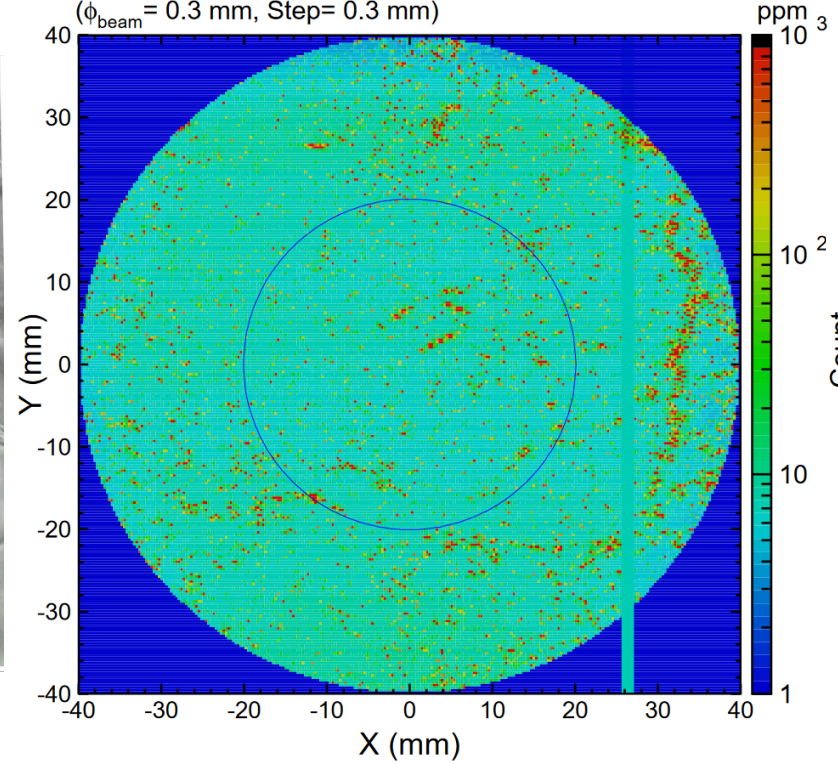


# Scatterplot Data



AlGaAs  $\phi$ 100 mm #1 HR TIS Measurement ( $\uparrow$ @Y-)

( $\phi_{\text{beam}} = 0.3$  mm, Step= 0.3 mm)



# Scatterplot compared subtracted surface profile

