pixelligent

THE CLEAR SOLUTION®

PixNIL® SCS1 and PixNIL® SCS2 Application Notes

August 2023

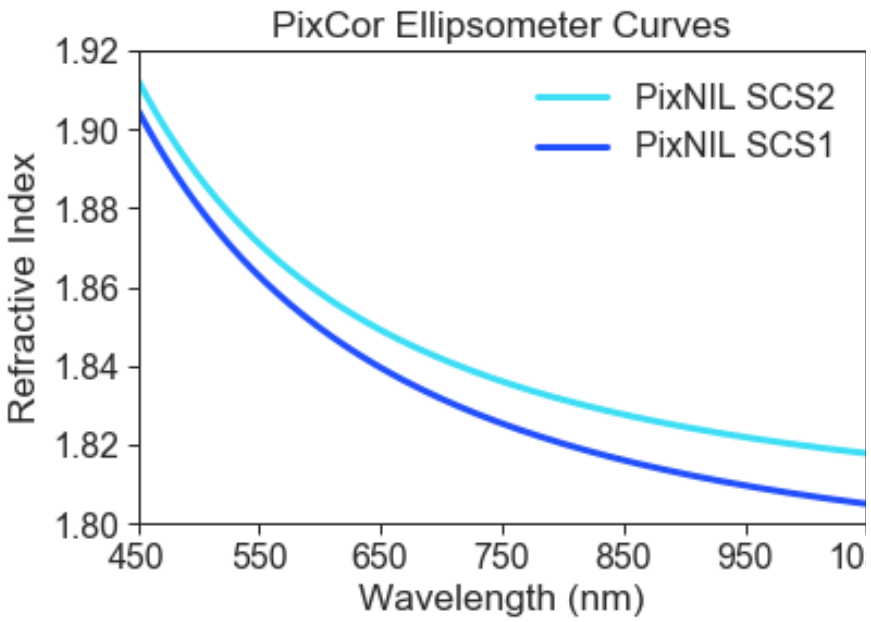
Standard Film Conditions

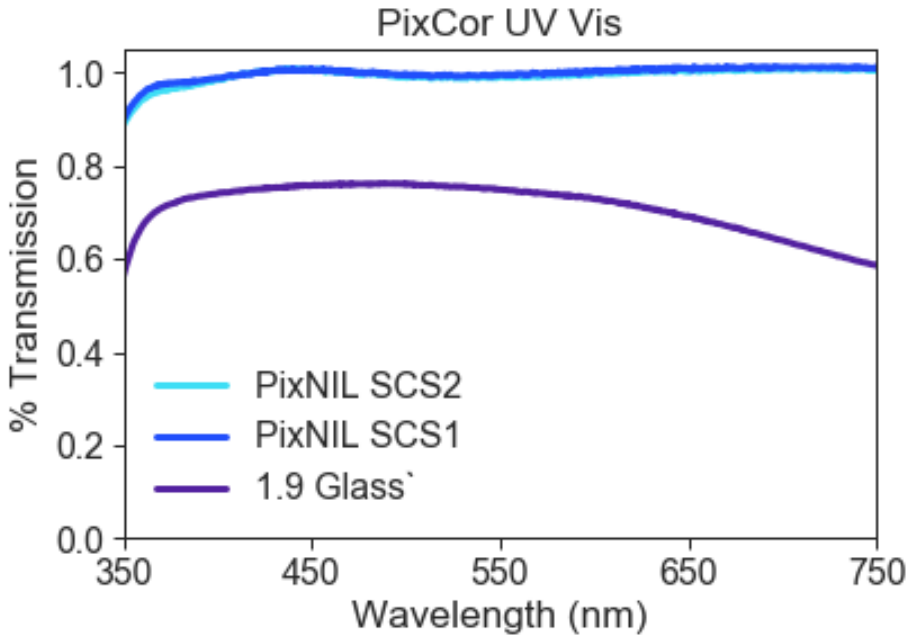
For 300 nm flat film

- Spin coat: 2000 rpm / 45 sec
- Prebake: 50 C/ 1 min, hotplate
- Cure: 320 mJ/cm2 = 2.5 s * 128 mW/cm2, N2 environment*
- Postbake: 100 C/ 5 min, oven

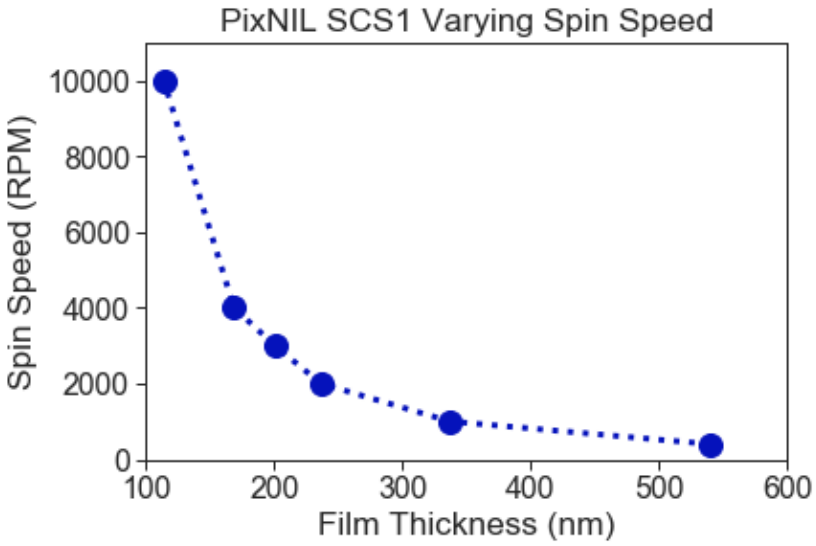
*If curing through a NIL stamp, then N2 environment is not needed.

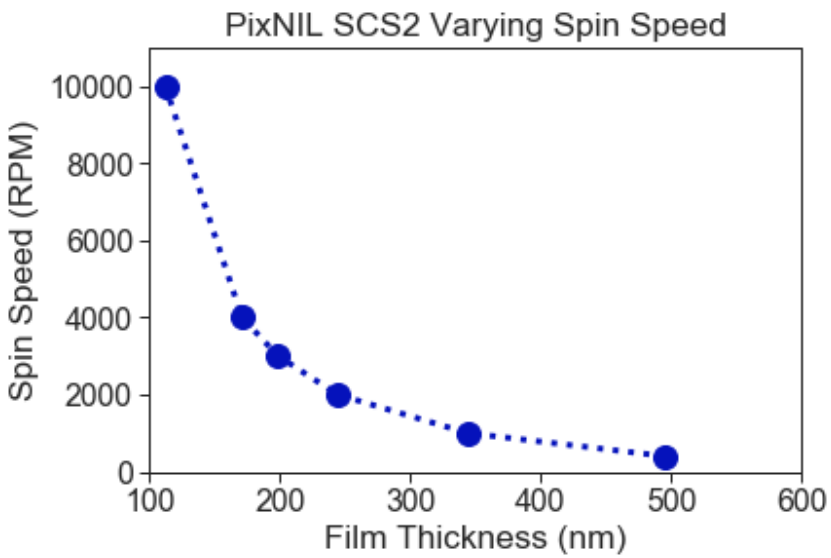
Film Data using Recommended Conditions





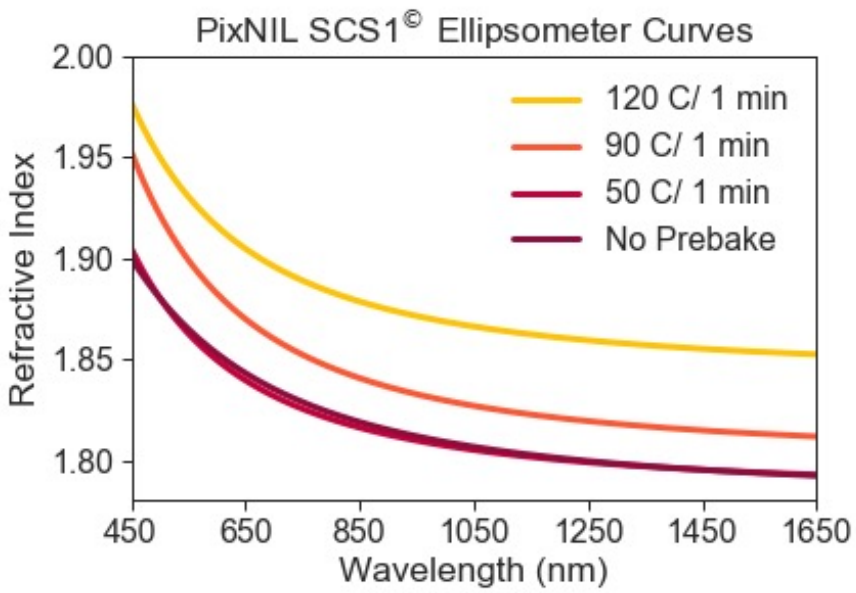
PixNIL® SCS1 and PixNIL® SCS2 Spin Curves

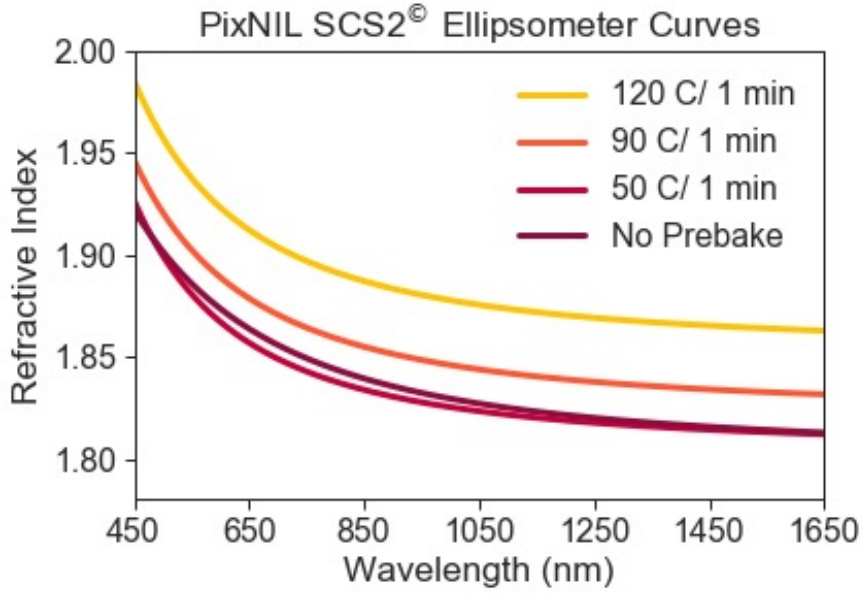




- Spin speeds between 1,000 – 4,000 RPM are recommended and achieve film thicknesses of 150 – 350 nm.

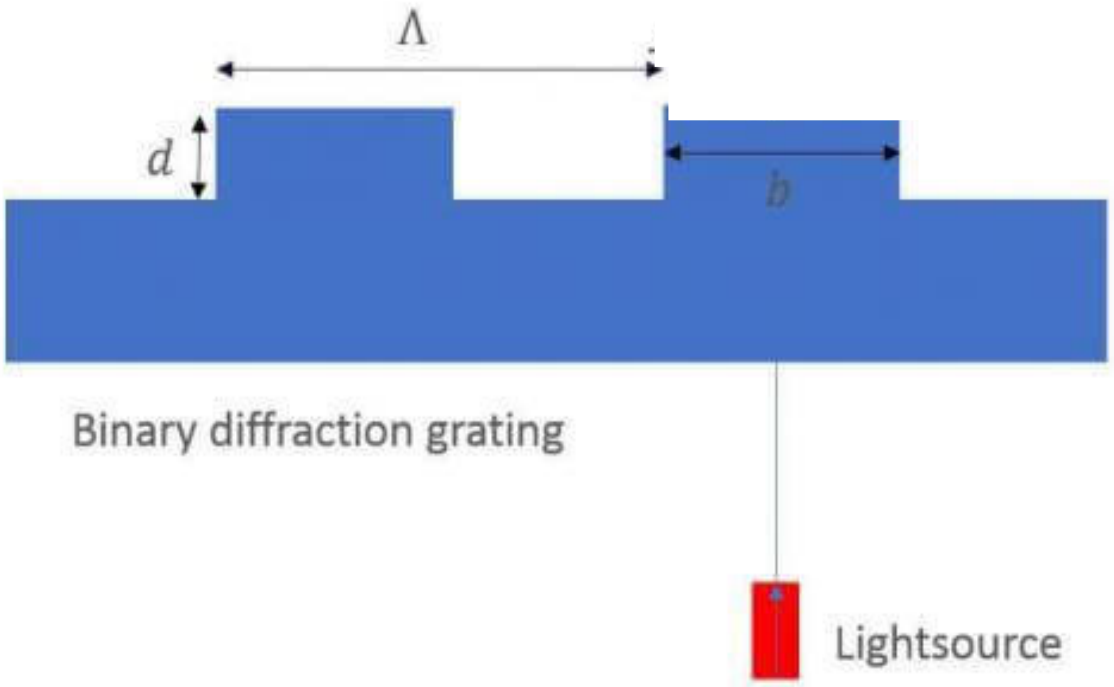
PixNIL® SCS1 and PixNIL® SCS2 with Prebakes





- Films are spun at 2000 rpm and postbaked at 100 C/ 5 min while prebakes were varied between no prebake and 120 C / 1 min.
- 50 C/ 1 min prebake is recommended for optimal imprinting.

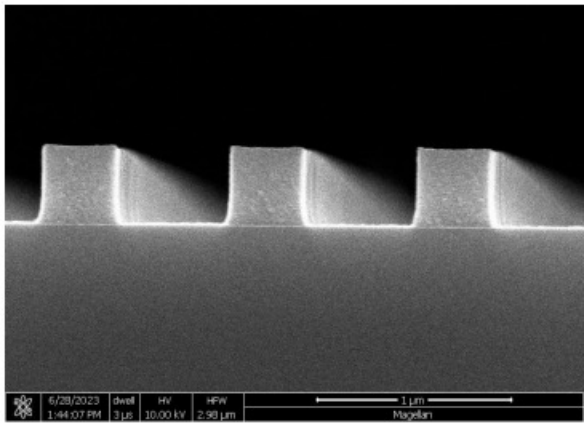
Residual Film Thickness (RLT) Calculator

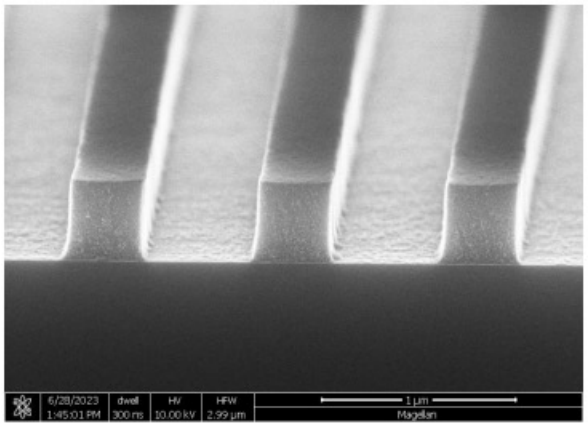


$$RLT = FT - \left(\frac{d * \Lambda}{b}\right)$$

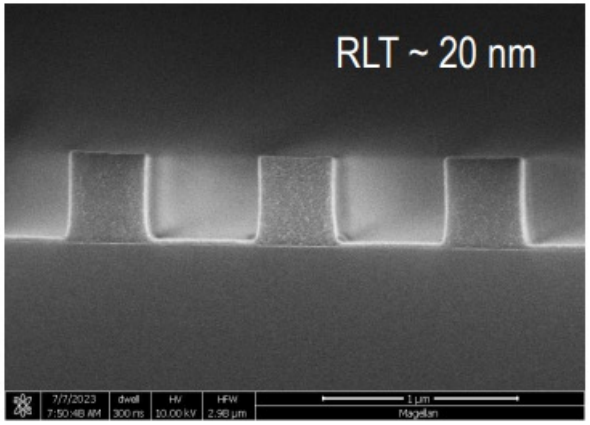
- FT is the initial film thickness
- Calculation works for slanted and binary gratings

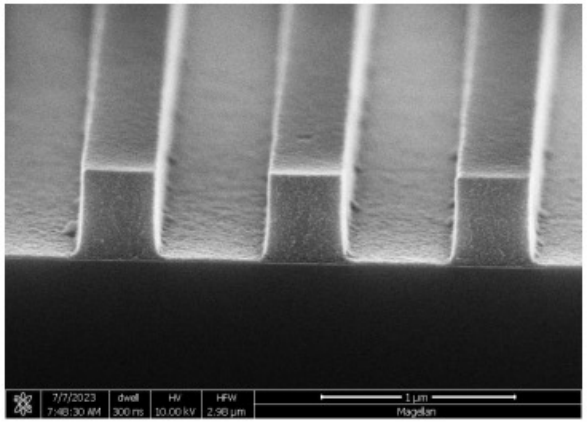
500 nm binary - PixNIL® SCS1





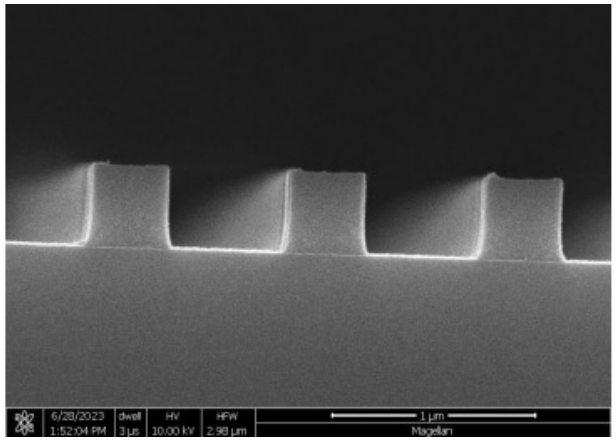
- No prebake, imprint, post bake 100C/ 5 min
- <10 nm RLT

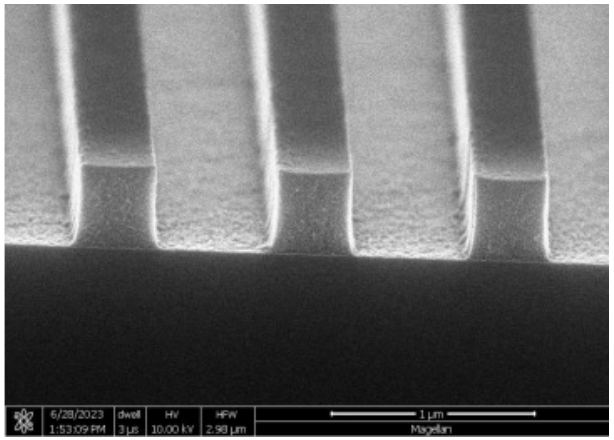




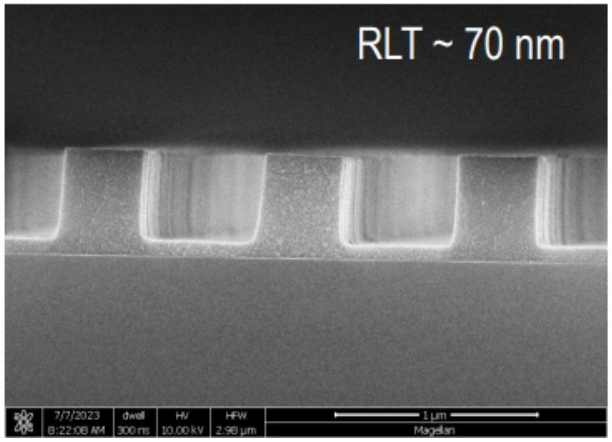
- Prebake 50 C/1 min, imprint, post bake 100C/ 5 min
- ~20 nm RLT

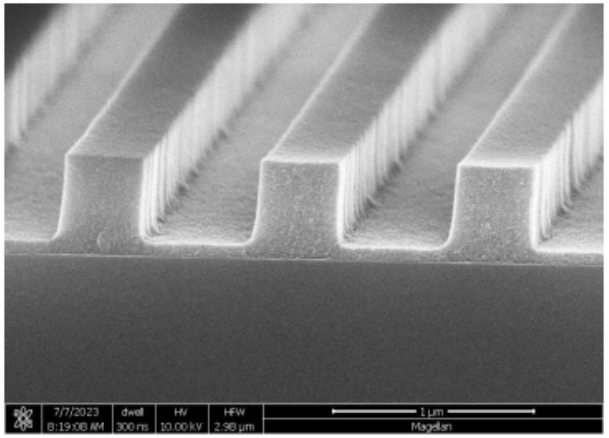
500 nm binary - PixNIL® SCS2





- No prebake, imprint, post bake 100C/ 5 min
- <10 nm RLT

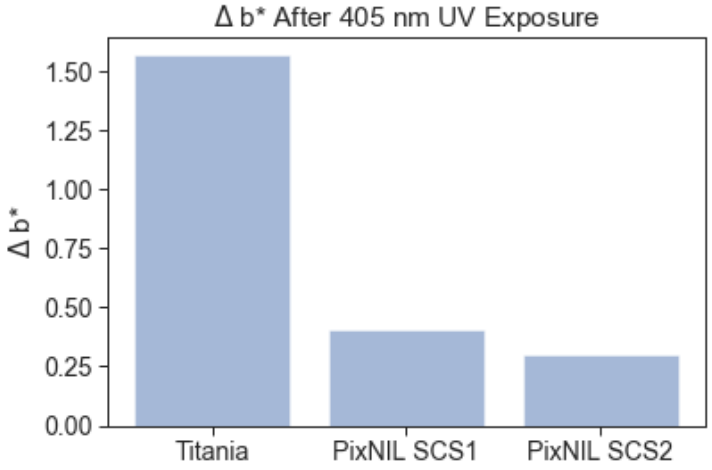


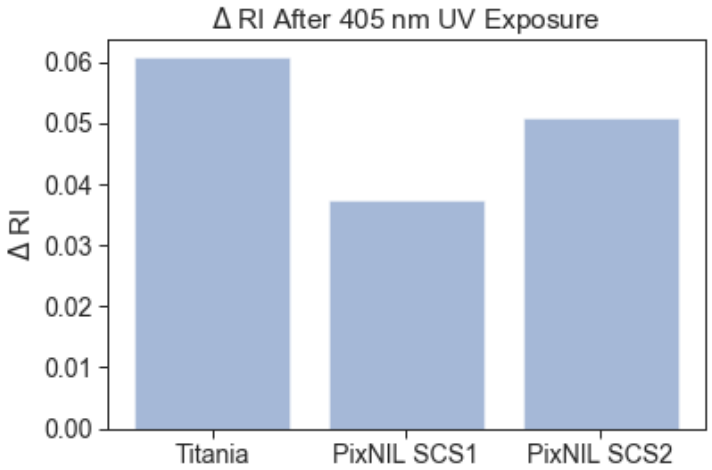


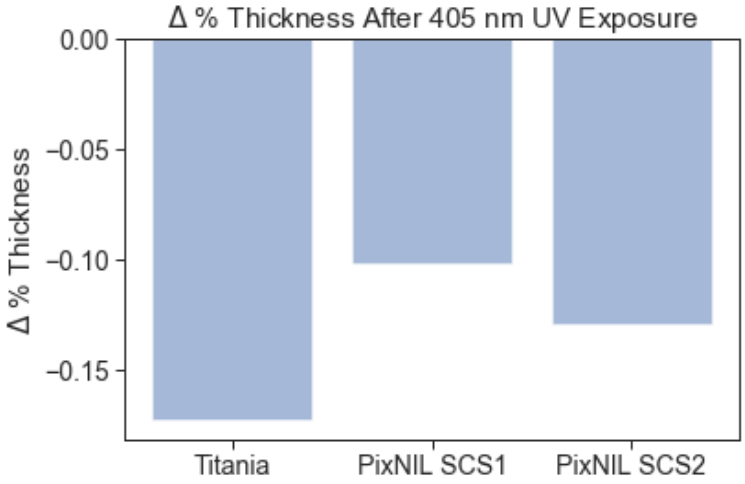
- Prebake 50 C/1 min, imprint, post bake 100C/ 5 min
- ~70 nm RLT

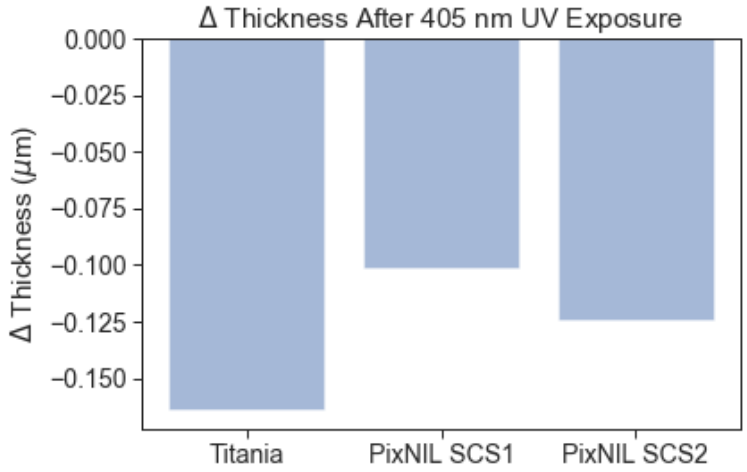
1.9 RI NIL PixCor™

UV Exposure Δ%Haze shows no variation between the materials

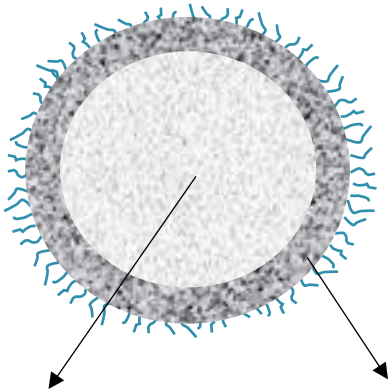


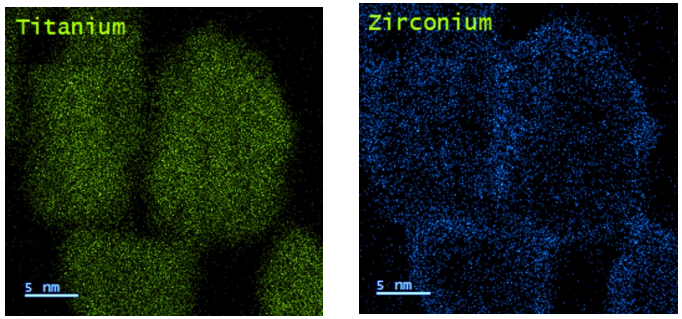






PixCor™ Nanocrystals





Ti and Zr in the same particle