

# LAr R&D Progress Updates

Yichen

4/14/26



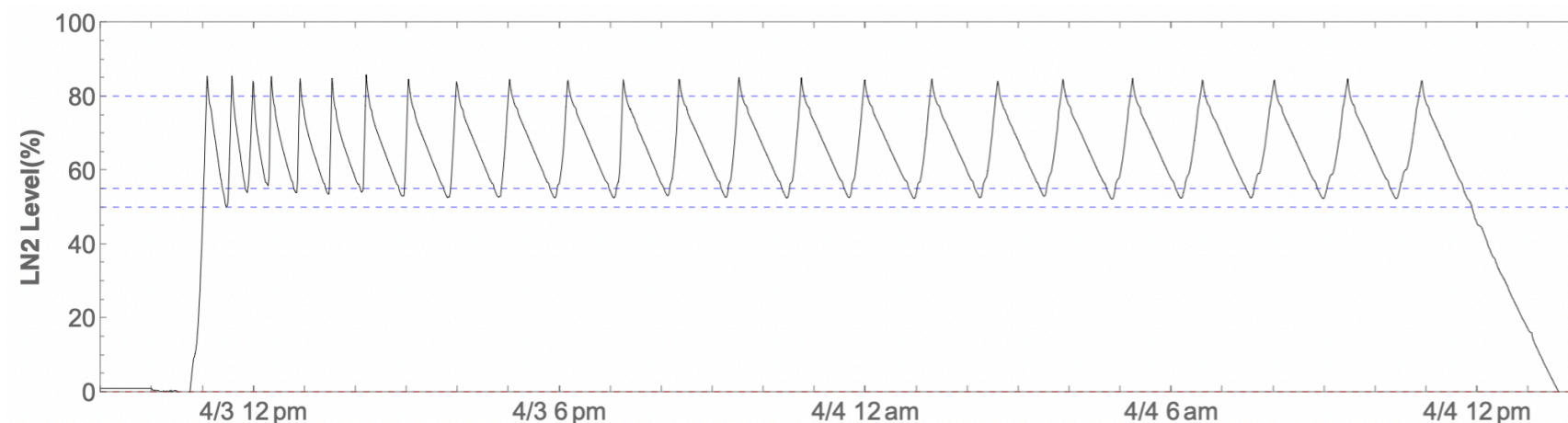
# Lab Safety and Space Management

- ▶ **PO FY26 Electrical Safety Self-Assessment Out Brief**
  - There is a out-brief scheduled this Thursday
  - All attendees of the interview were invited
  - I will go and report back on the next meeting

# pTP filter cryogenic test in 260L system

## ▸ pTP Cryogenic Test with LAr immersion

- Similar immersion time like the previous cryogenic test in open mouth dewar ~20 hrs
- The moisture is eliminated with closed system+pump and purge
- Closed loop filling used this time to save LAr
  - Filling directly without using inline filter
  - A large portion of LAr will be boiled off in the previous filling procedure
  - No venting to the air during the filling process with condensing on
  - All LAr being filled into the 260L with the samples immersed
  - The new LN2 dewar was used for the operation
  - Replaced the LN2 three times during the cryogenic operation as a practise
  - Overall process is smooth



# pTP filter cryogenic test in 260L system

- The system was opened up today
- Some twisting of the support rods observed
- The mounting screws turned to be extremely tight after cryogenic cycle, will add spring washer in the future
- The LN2 supply hose lost vacuum, need re-evacuation before next run



**Before**



**After**

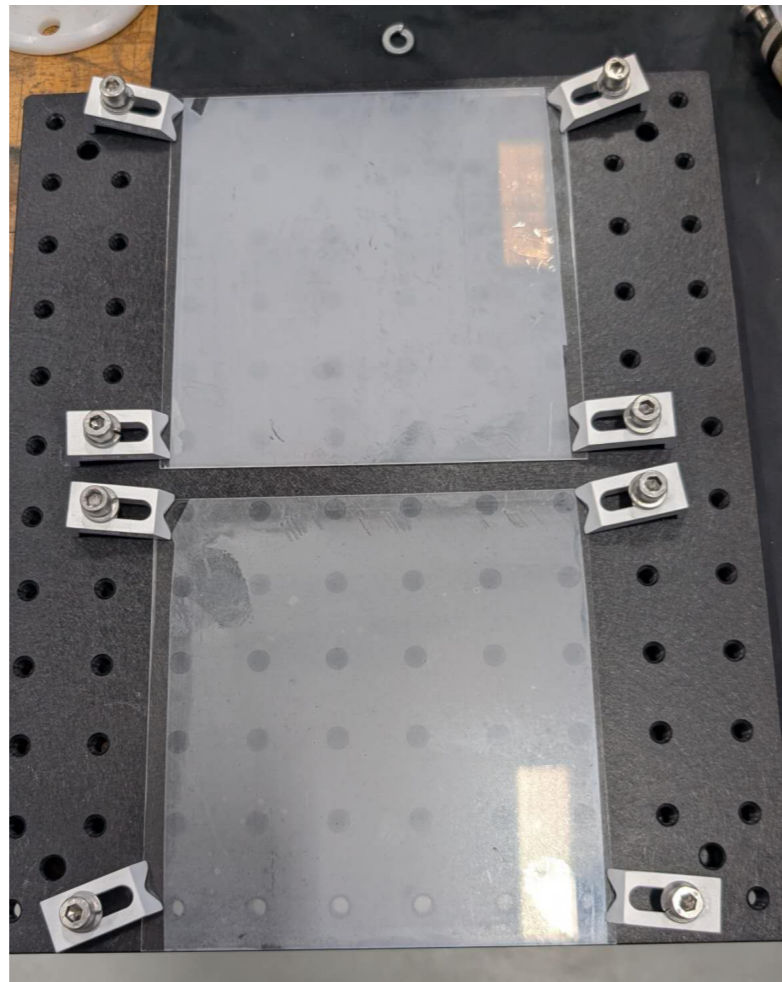


# pTP coating comparison

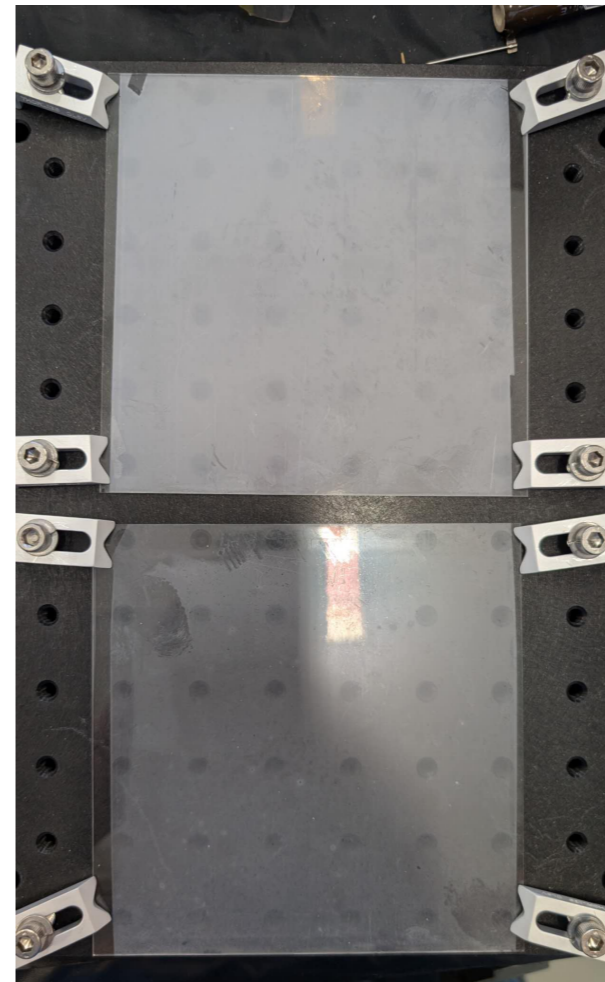
## ▸ Comparison before and after the cryogenic immersion

- Previous observation after the cryogenic cycle in open mouth LN2 dewar shows serious degradation on the surface conditions, most likely due to moisture in the warming up stage
- With no moisture, there is no visible change on the coating before and after the cryogenic cycle, just some tiny dust on the surface
- Will repeat the spectrum measurement once the spectrometer is returned to us

**Before**



**After**



# Thermal results and observation(**Previous**)

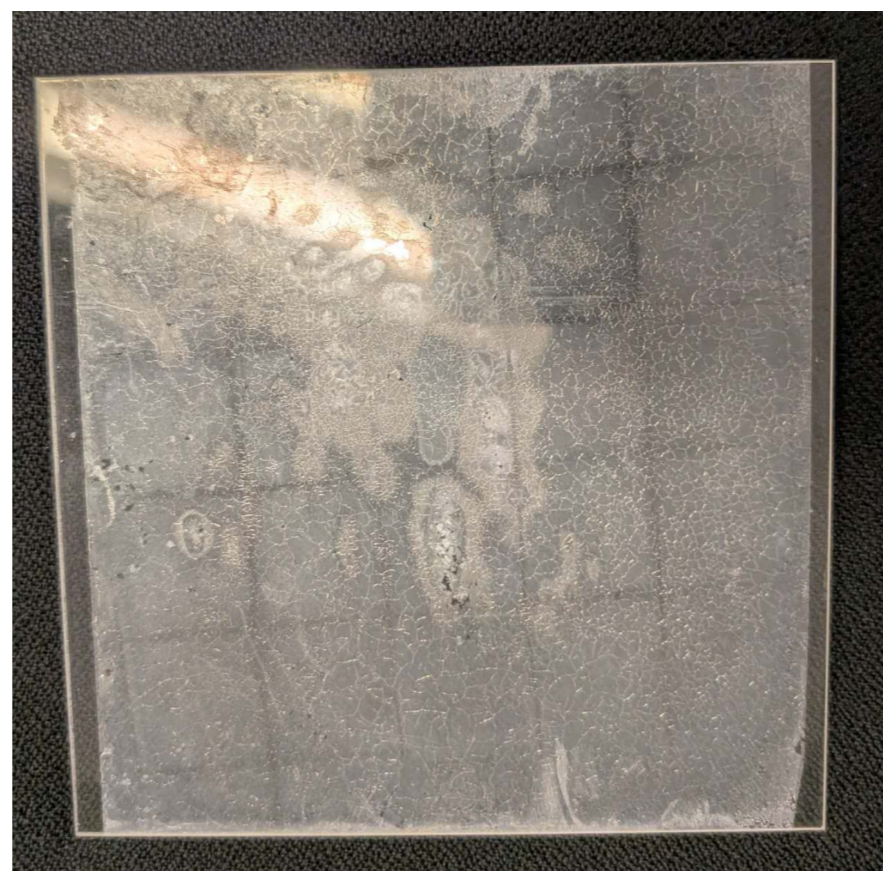
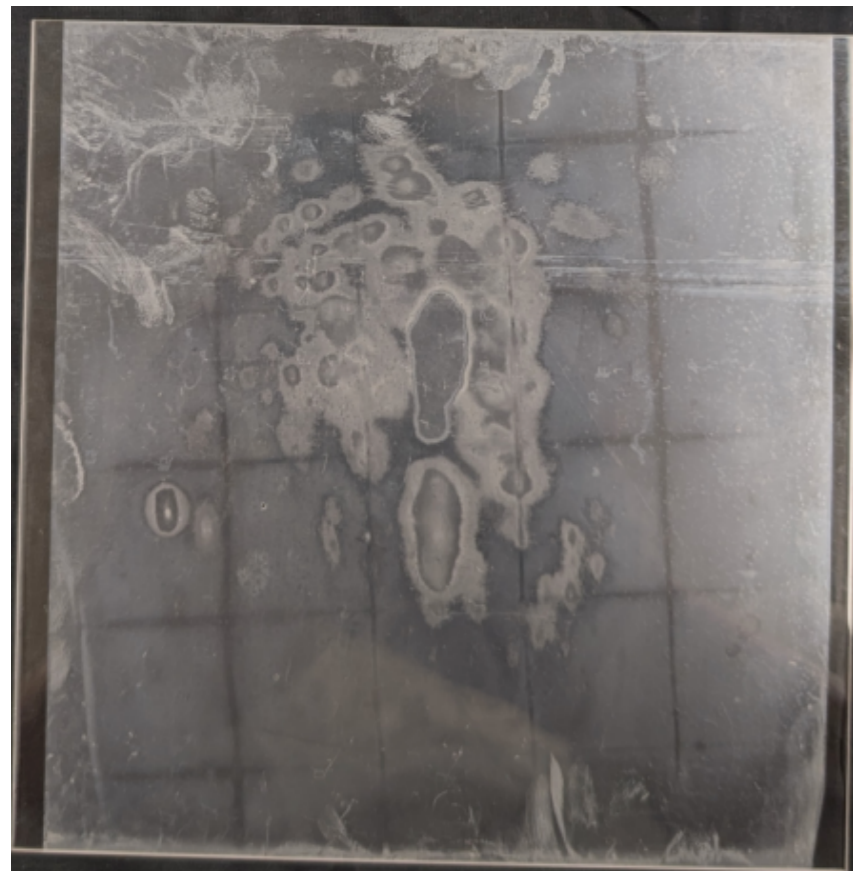
- All substrates survived the thermal stress test with the controlled slow cooling process, no visible damages
- Significant changes on the coating after the cryogenic cycle
  - Most significant on Sapphire, least impact on B33
- Water gets under the coating during warming up

## **S4 Sapphire**

Before

1st cold

2nd cold



# 260-L JINST paper

- Thank for all the comments from the team
- I saw most of the comments and suggestions from Matteo and Jay
  - I've modified a large part of the Matteo's comments
  - Some of comments on reference and detailed explanation are taking more time to address
  - The paper is now the priority and I will get all done by this Friday
  - Aiming for arXiv in a week

# Spectrometer Repair and Focal Distance Measurement

## ▸ **OceanOptics troubleshooting**

- With the cooling on, they can reproduce the issue now in their testing lab
- The spectrometer is now moved to the production floor for repairing
- The estimated shipping back time in the their system is 04/20, upgraded to overnight shipping
- Very inefficient communication with two layers in the middle,
  - me —>customer service —>RMA coordinator —>field engineer

## ▸ **Monochromator Focal Distance measurement**

- It is correlated with the spectrometer repair
  - Needs to confirm the correction wavelength selection
- The exit slit is fixed
- Will conduct once the spectrometer is back