

# IoLaser Update

David Rivera

ioLaser Group Meeting

November 1, 2022

# Ongoing activities at LANL

- ~~Packing feedthrough components~~
- ~~Packing actuator rods (steel and Torlon)~~
- ~~Cleaning and packing Quartz tubes~~
- Packing assembly bases

# Quartz tubes

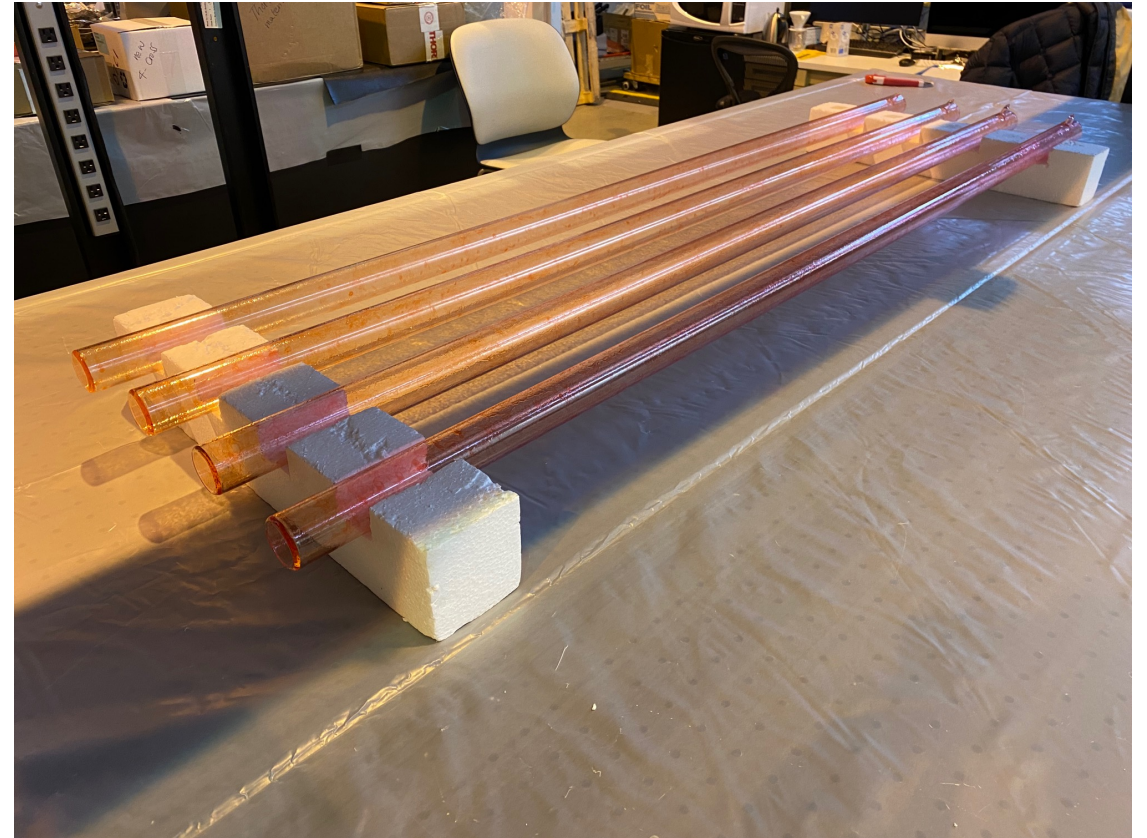
- 6 total
- 1 largely unused
- 1 used heavily (Quartz tube #4)
  - Cold tests
  - Installation tests
  - This one shows contamination or striations on the inner surface – noted at the time of first inspection (April 1<sup>st</sup>)
- 4 tubes used for periscope tests of P1 and P2
- Over time, tubes have collected dust and some show “water spots” and other contaminants on their surface from their handling during installation and through testing
- Will show more videos and pictures next time
- The same cleaning agent from Photonic Cleaning Technologies, LLC identified for cleaning the quartz glass windows will be employed for cleaning the tubes

# Q4



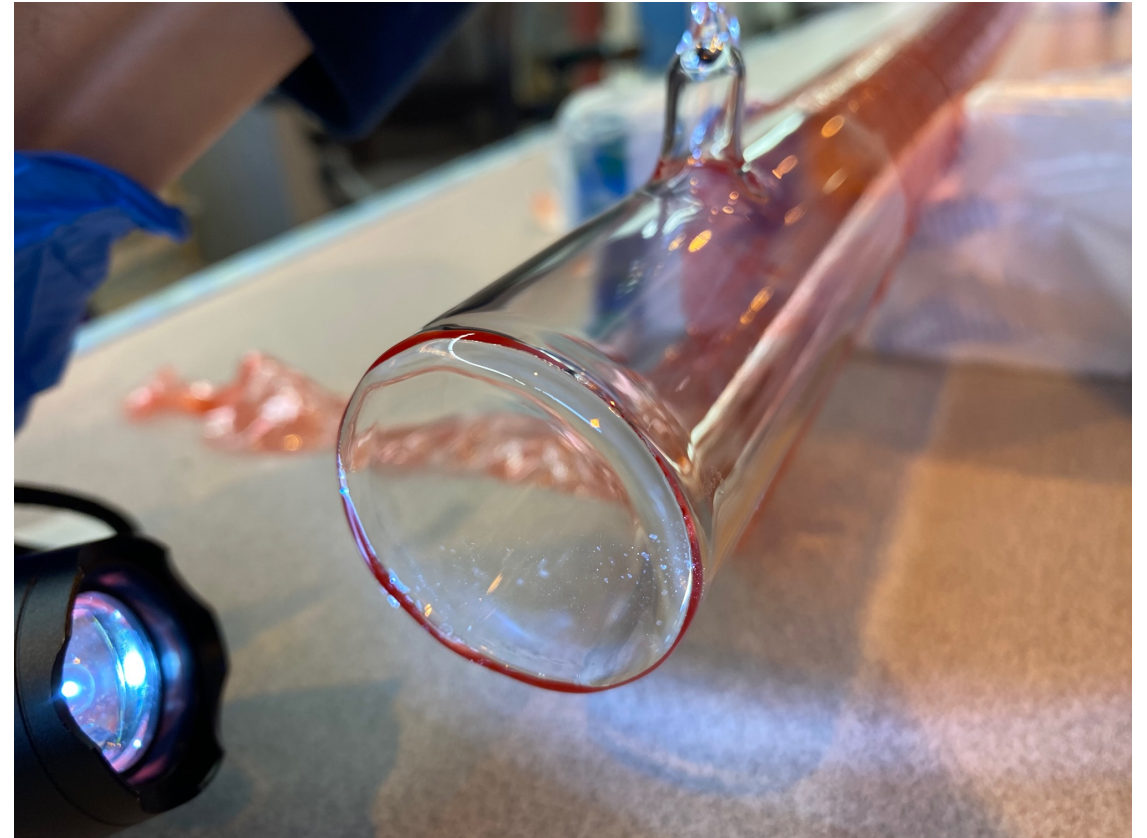
Coated twice w/ the polymer spray

- Q4 (will not be used)
  - Q1 (P2 Steel)
  - Q6 (P2 Torlon), and
  - Q3 (P1 Steel)
- (shown on the right)



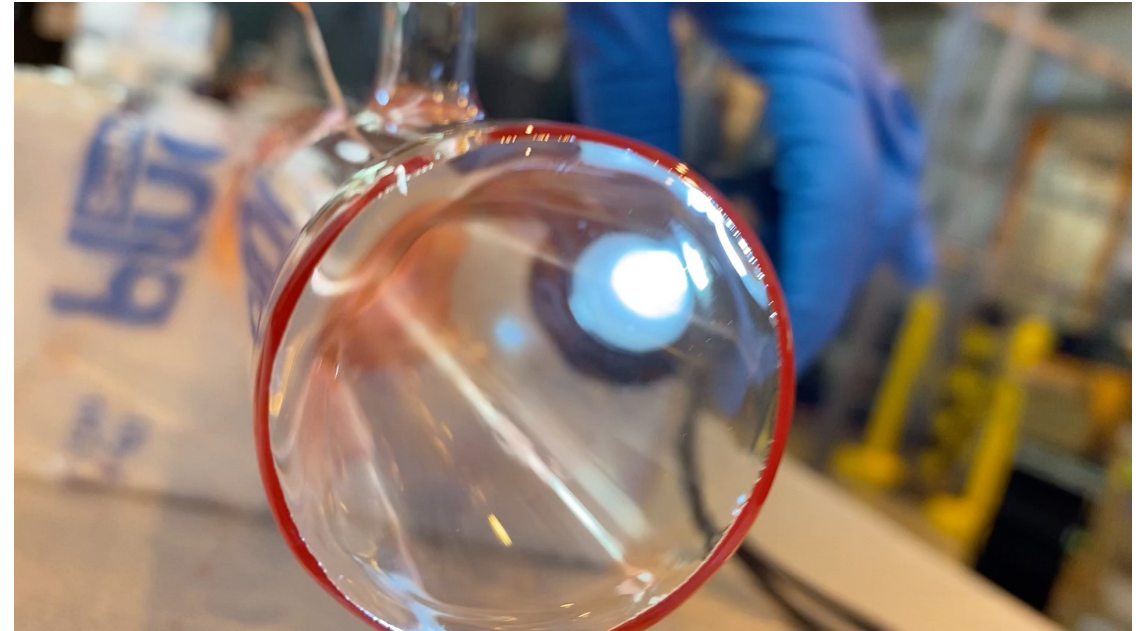
# Q4 after first peel

- Peeled the polymer coating for Q4 incident side
- Water spots observed to remain both on the window and where the tube holder ends
- As with the MDC flanges, a water spot treatment was applied



# Q4 after water spot treatment peel

- Allowed the polymer coating to dry for a couple of hours
- Water spots removed
- Marking where the tubeholder "gripped" the tube, remained
  - Incident and outgoing faces of the tube are the most critical

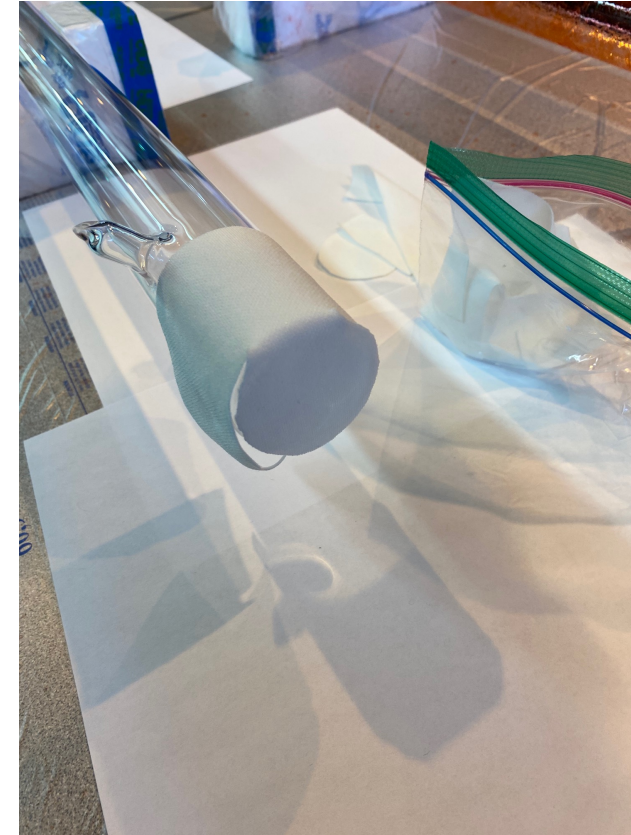
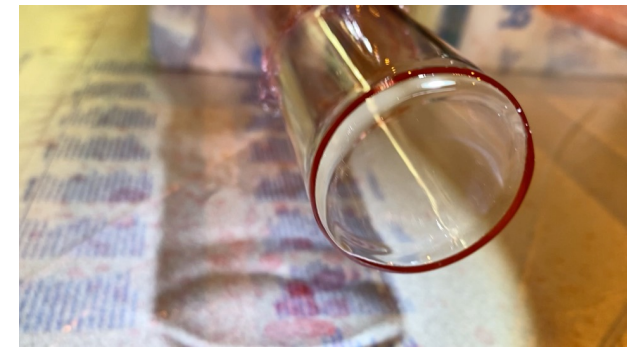


# Q6

- This tube will go *inside* the liquid (P2 Torlon)
- The first coating was fully peeled to remove all excess dust and contaminants
- Water spot treatment performed on the incident face, the outgoing face, and on a couple of places where large collections of water spots were noted along the length of the tube
- Ends were peeled and treated a second time w/ water spot treatment to be as thorough as possible.



Q6 after first, full peel



Q6 water spot treatment application to “endcap”



# Completed Quartz tube cleaning

- Peeled endcaps and applied water spot treatment to all incident and outgoing windows of first four quartz tubes that were coated (Q4, Q1, Q6, Q3)
- Another layer of polymer was added to these four tubes to ensure that they all peel well
- Q2 (P1 Torlon), like Q6, also goes in the liquid so it was cleaned in the same manner.
  - Full peel + 2 x water spot treatment to each endcap
  - Applied 2 coats
- Q5 (spare) applied water spot treatment and fully coated

# Large shipment



- Large shipment (280 pounds!) includes all the SS and Torlon components for the two periscopes and feedthrough hardware.
- + 2 x 8" x 6' tubes (one for stainless steel, one for Torlon), see next slide

# Rod packaging



Built a stiff, protective housing for the three, long, Torlon actuator rods and then packaged into a tube w/ instant foam packaging.



Multiple layers of foam and bubble wrap + instant foam packaging to keep rods fixed in place. Both tubes placed onto a pallet to keep them static.

# Quartz tube packaging

- Tubes allowed to dry for at least 1 day
- Wrapped all tubes in a protective, non-stick, plastic wrap for additional protection (w/ help from Mark, left fig.)
- Inserted tubes in original poly bags, and bubble wrapped
- Will take the tubes to LANL shipping (today) to guide the packing process into dedicated crate procured for the tubes



# Bases



- The G10 and plywood assembly bases were saran wrapped and will also be taken to LANL shipping (today) to pack into dedicated crate
- Assembly bases:
  - 1 set of G10 bases
  - 1 set of Plywood bases

# BACKUP