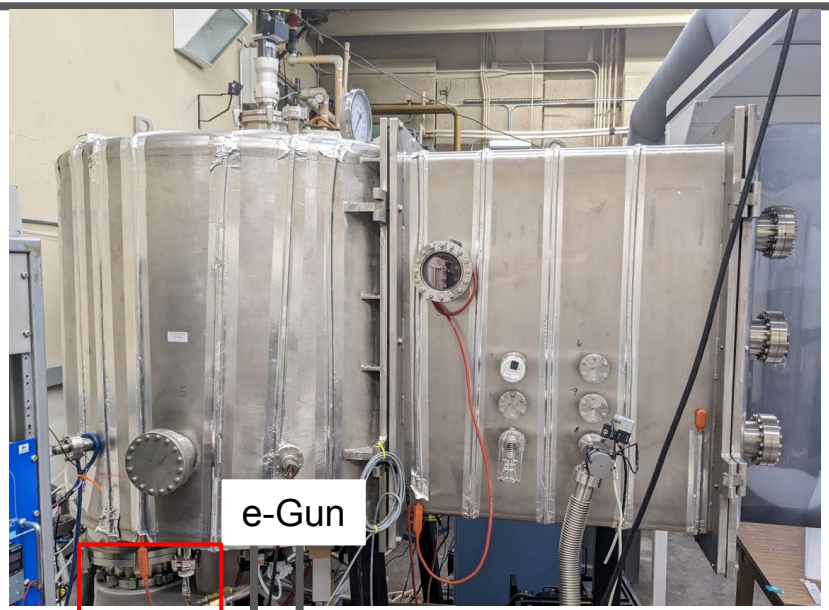
Refurbishment of SBU Evaporator at SBU for pfRICH Prototype and Final Production

Sep 11, 2023

Proposed Refurbishment Items

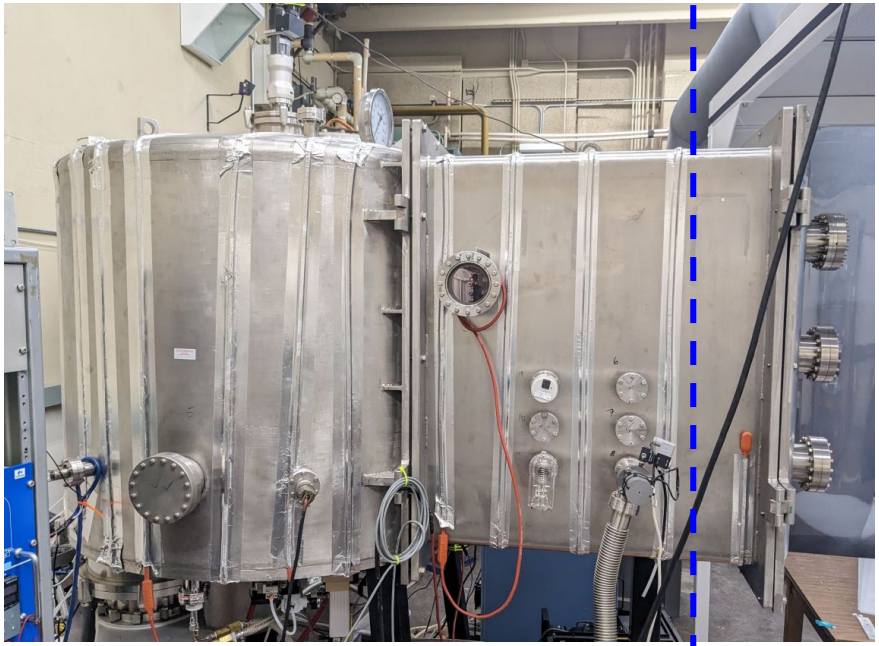
Item Description	Specification	Cost Description
#1 Water Chiller	1HP, 6000 - 9000 BTU (cooling power)	$4,000
#2 Portable Clean Room	(6' x 8'): $10,000	$10,000
#3 Shelf for Storage	For the mirror storage	$600
#4 Rotational Stage	For mounting the Ionized Argon source	$4,000
#5 D2 Lamp	Stabilized Deuterium UV Light Source (150-500nm)	$3,500
#6 Dry box	Storing sensitive coating material: chromium, Al, crucible	$1,200

A New Water Chiller



- **Two Water chiller loops**
  - Loop 1 cools e-Gun
  - Loop 2 cools turbo
- **Currently, Loop 2 Chiller is broken**
  - Motor is burnt
  - under repair
- Can we evaporate without cooling the turbo?
  - **Yes. But we should never risk the turbo!!**
- **Recommendation:**
  - **We need a reliable water chiller (Item #1) immediately**
  - **Old repaired chiller will serve as a spare.**

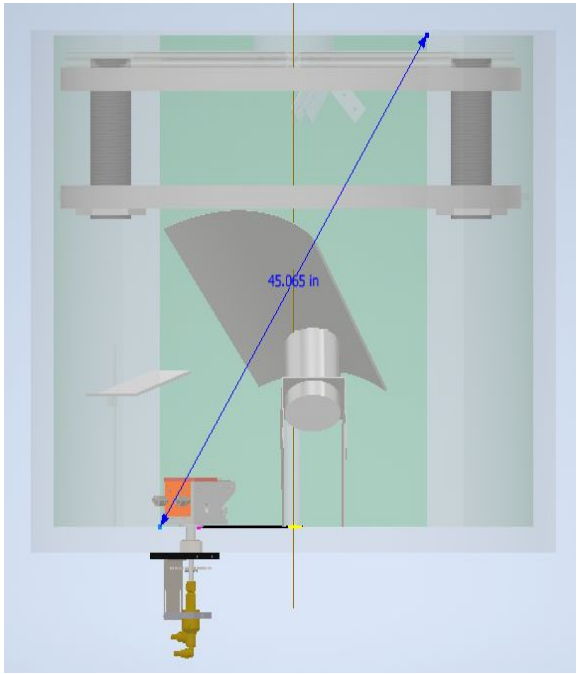
A Clean Space for Staging and Mount/Dismount Mirrors

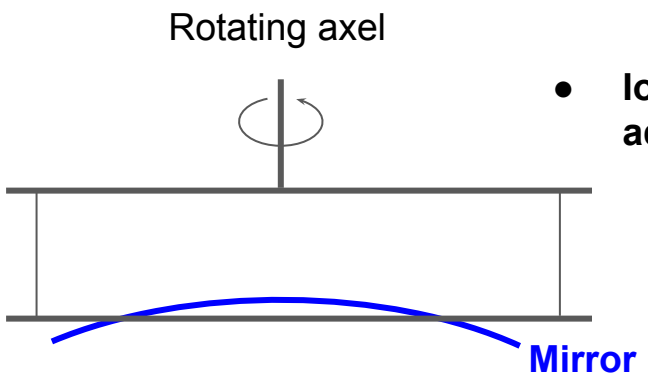


Enclosed clear area (item #1)

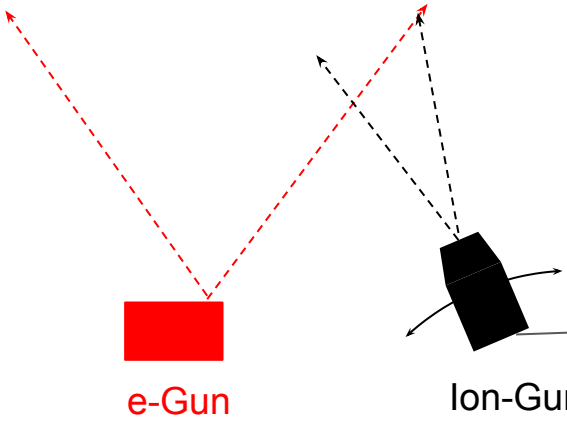
- **Mount/dismount mirror from mounting fixture before/after coating.**
  - On a stainless steel bench top.
- **Accessing to the dry box (item #6) for load to the e-gun.**
  - Minimize the exposure to the ambient dust and moisture

A Clean Space for Staging and Mount/Dismount Mirrors

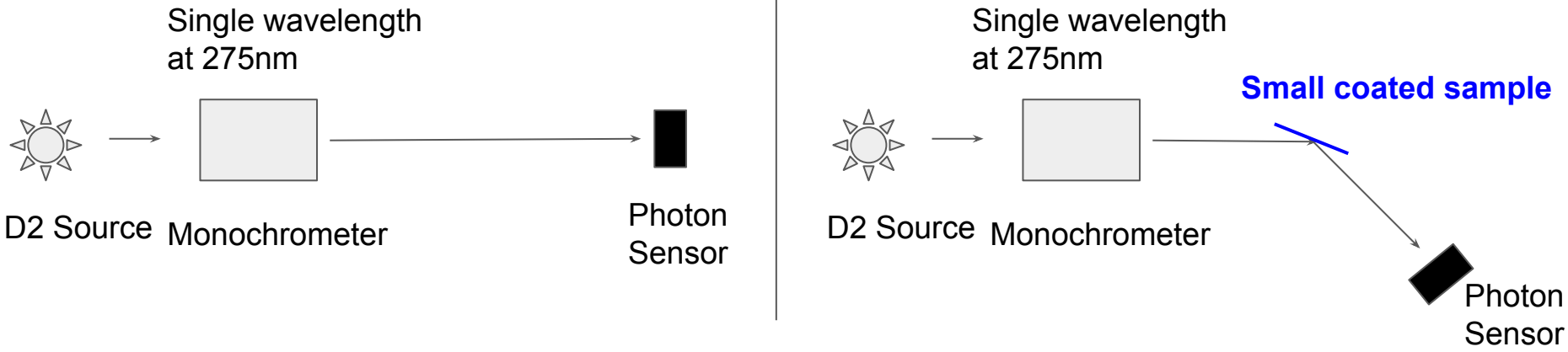




- **Ion source required pitch adjustment under high vacuum**
  - A remote control vacuum compatible stage is a must for large size mirrors
  - Thanks to mirror rotation, yaw angle is not needed



Quick validation of the coating



- A quick validation stand near the evaporator to validate the result at 275 nm wavelength
  - A significant time saver
  - A must have during the production
- **It doesn't replace the full characterization!**
  - **After the quick validation, the coated product will be sent to Bob and Grag for full characterization**
- **Only D2 source is missing**
  - Optical bench, darkbox, photon sensor and monochrometer will be SBU in kind constribution

Proposed Landscaping

#1 Water Chiller
#2 Portable Clean Room
#4 Rotational Stage
#5 Dry box

#3 D2 Lamp

#3 Shelf for Storage

Final Remarks

Item Description	Specification	Cost Description
#1 Water Chiller	1HP, 6000 - 9000 BTU (cooling power)	$4,000
#2 Portable Clean Room	(6' x 8'): $10,000	$10,000
#3 Shelf for Storage	For the mirror storage	$600
#4 Rotational Stage	For mounting the Ionized Argon source	$4,000
#5 D2 Lamp	Stabilized Deuterium UV Light Source (150-500nm)	$3,500
#6 Dry box	Storing sensitive coating material: chromium, Al, crucible	$1,200

- **Item #1,2 and 6 are needed ASAP for the prototyping**
- **Item 3, 4 and 5 are needed for the full production**