# LAr R&D Progress Updates

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# Lab Safety and Space Management

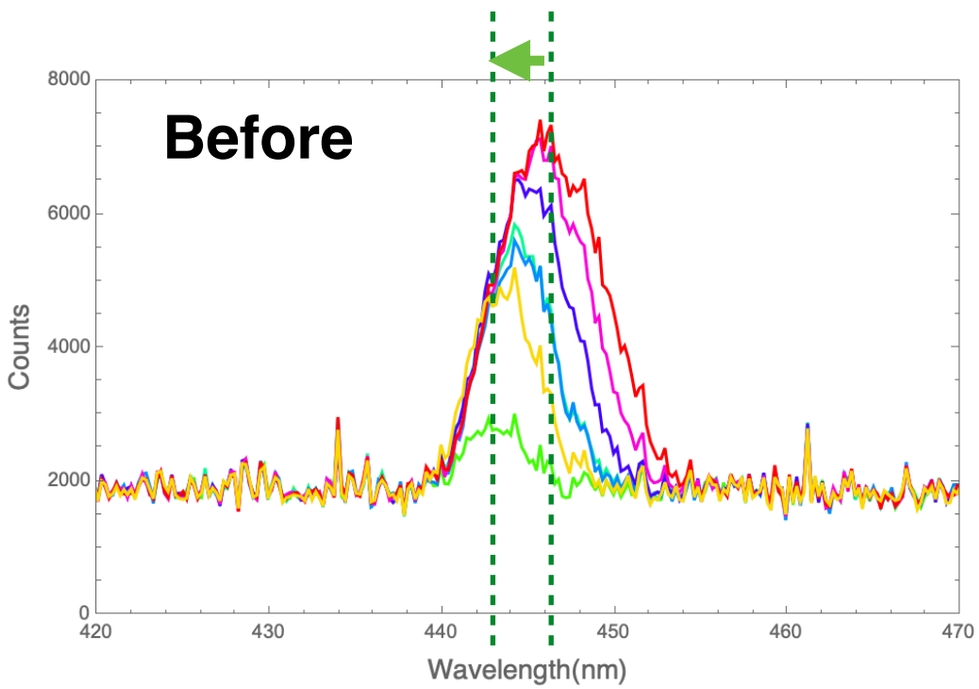
- **HighBay AC work**
  - Still in progress with power panel on LOTO
  - Robotic testing stand is still not running at this moment
  - New air handler on the roof now
  - Plumbing is finished with ceiling panel put back

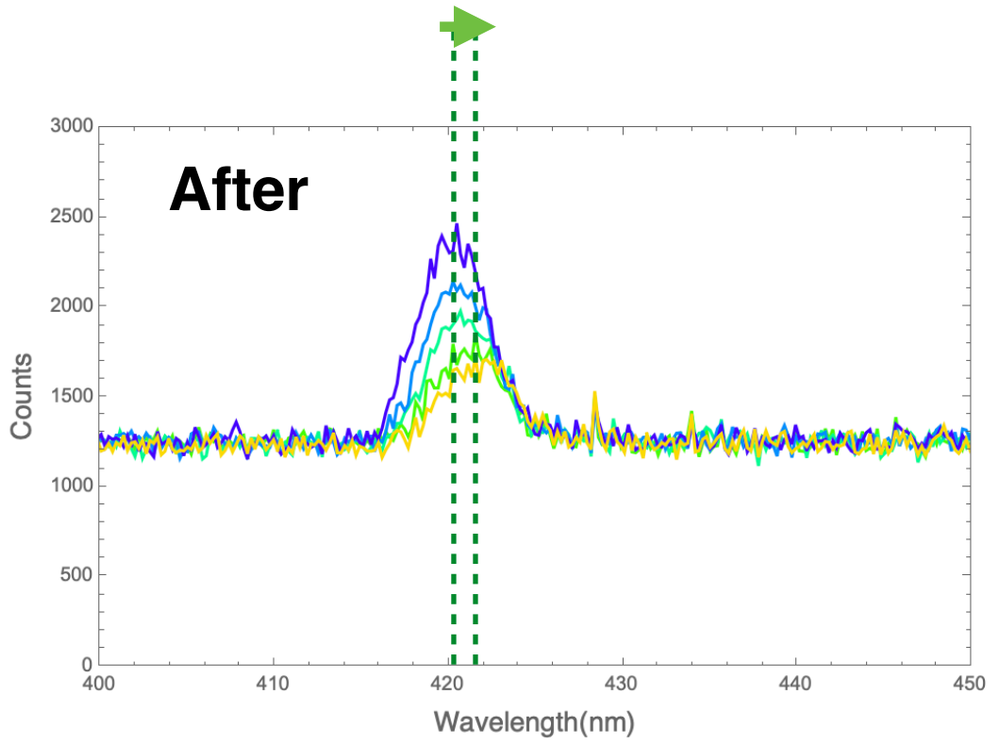
# Spectrometer exit slit repair

- **Re-install the slit back to the setup**
  - Bill finished the cleaning up and re-assembled the slit assembly
  - Both panel moves on both direction by visual
  - I reassembled the slit back to the spectrometer


# Spectrometer exit slit repair

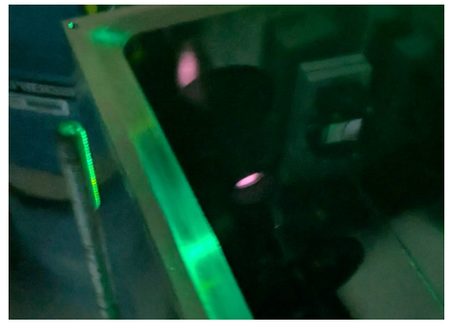
- Repeat the peak position test by opening up the slit at fixed wavelength
  - The situation improved but not resolved
    - The peak shifting amplitude is now smaller
    - The shifting position changed
  - We probably need a slit replacement

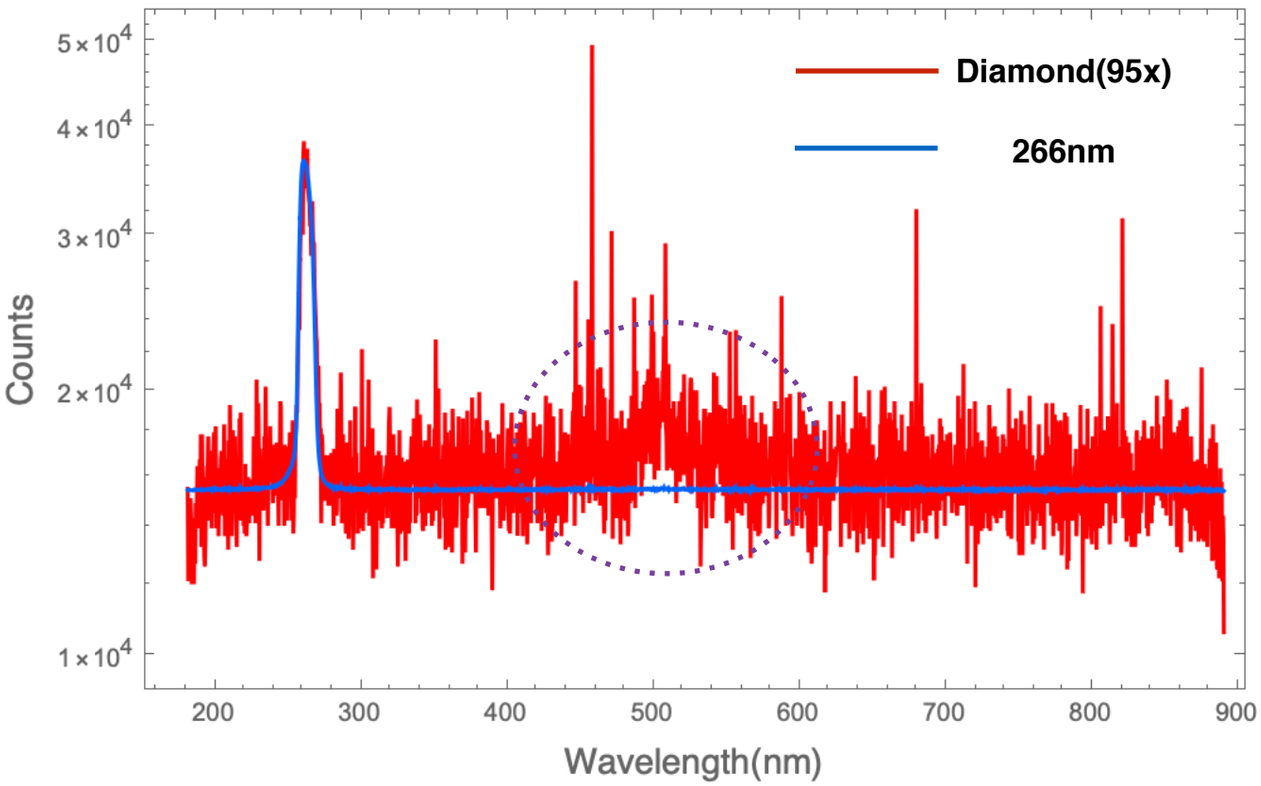


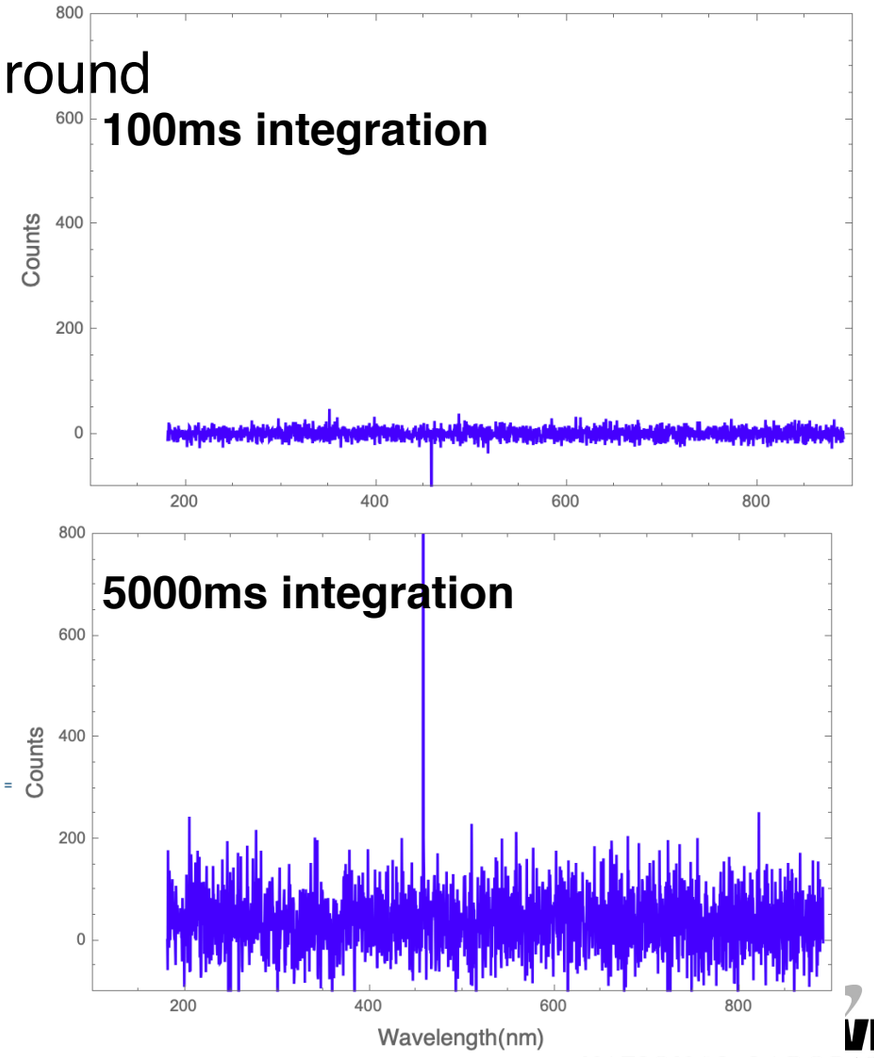



# Diamond Substrate Emission Measurement Preliminary

- **Diamond Substrate Emission Spectrum Measurement**
  - Observable emission with full spectrum
  - Repeat the measurement with 1/4 nm collimator with 300 nm cutoff with 266nm wavelength selection
  - Taking background with offline substraction
  - No emission spectrum observed with all integration time
  - The weak bump observed previous seems to be background



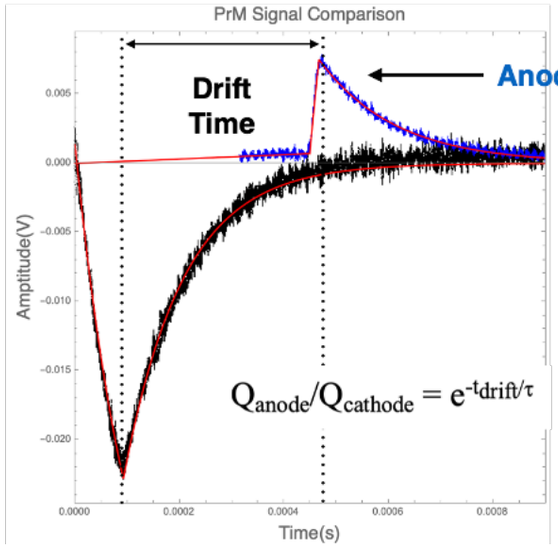


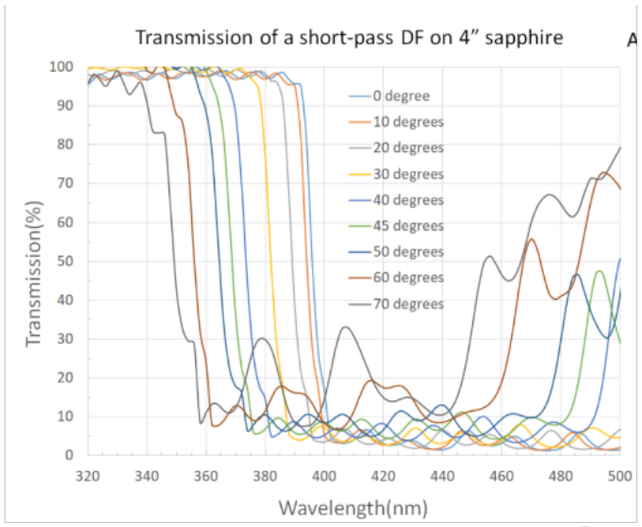



# Slides for KA25 Discussion

## LAr Test Stand

- 260-L LAr system commissioned with long-term cryogenic operation stability and quick turnaround time demonstrated
- High LAr purity (<1.0 ppb equivalent [O2] and ~1.0ppm [N2]) with ~0.5 ms electron life time was achieved in the 260-L LAr System
- Ready for physics measurement for both charge and light signals
- High performance dichroic filter with advanced Atomic-Layer Deposition technique developed for LAr application in collaboration with Raytum Photonics with sample filters delivered

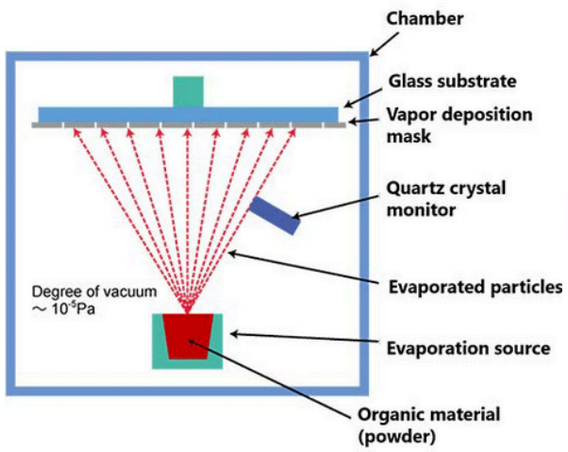


# Slides for KA25 Discussion

## Spectrometer for Filter Performance Measurement

- Photon detection for LAr scintillation lights requires lar area wavelength shifter coating with PTP, an organic material
- We are working on a possible solution using industry vacuum deposition for computer monitors for mass production with quality control and low cost High coating uniformity is expected to be achieved with capability of mass production




- The development of this technique can benefit the proposed DUNE APEX PDS
- High risk and high benefit project fills into the blue sky category
- A VUV spectrometer was just refurbished for the filter performance testing
  - An upgrade grade with cryogenic testing vessel could establish the capability of sample test in LAr
  - NIST calibrated set of PMTs will calibrate the beam from 110 to 600 nm.