

LAr R&D Progress Updates

Yichen

2/10/26



Lab Safety and Space Management

▸ EEI quarterly Meeting

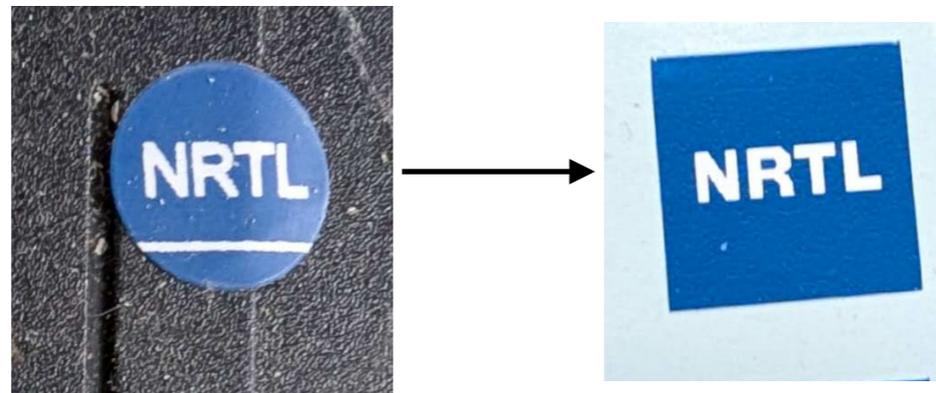
- Conditional approval now only good for 90 days
 - The associational conditions need to be label on the equipment
 - Further modifications on this rule is in discussion
- Change to new NRTL sticker

▸ Inclement weather expected this weekend

- Snow expected this weekend for a few inches accumulation
- Be careful for the slippery conditions outdoor

▸ Building Power Outage this weekend on 02/21

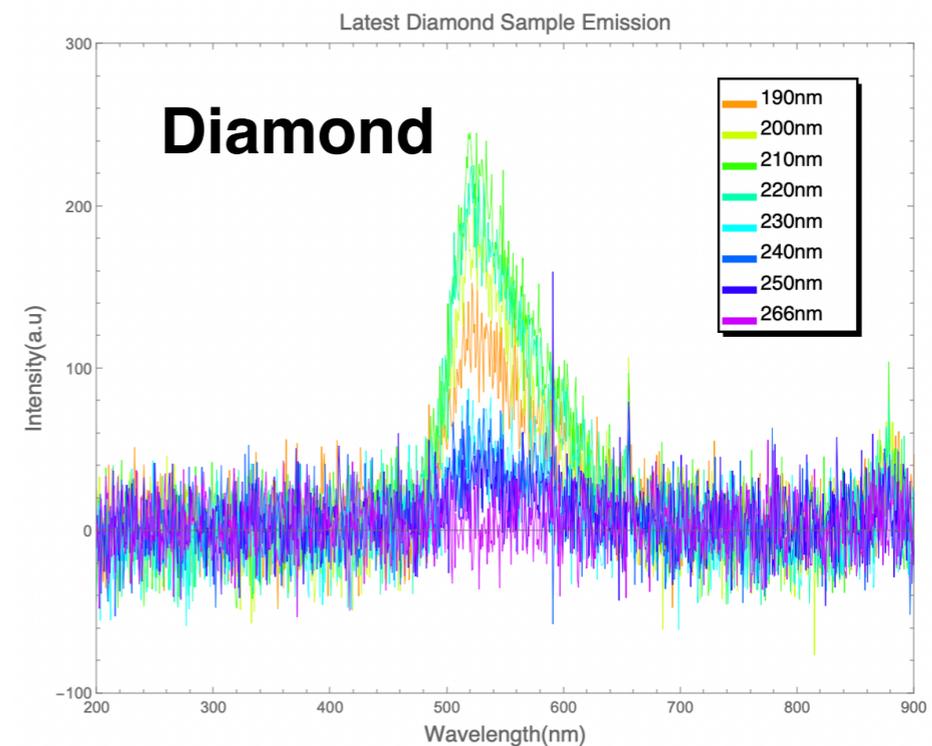
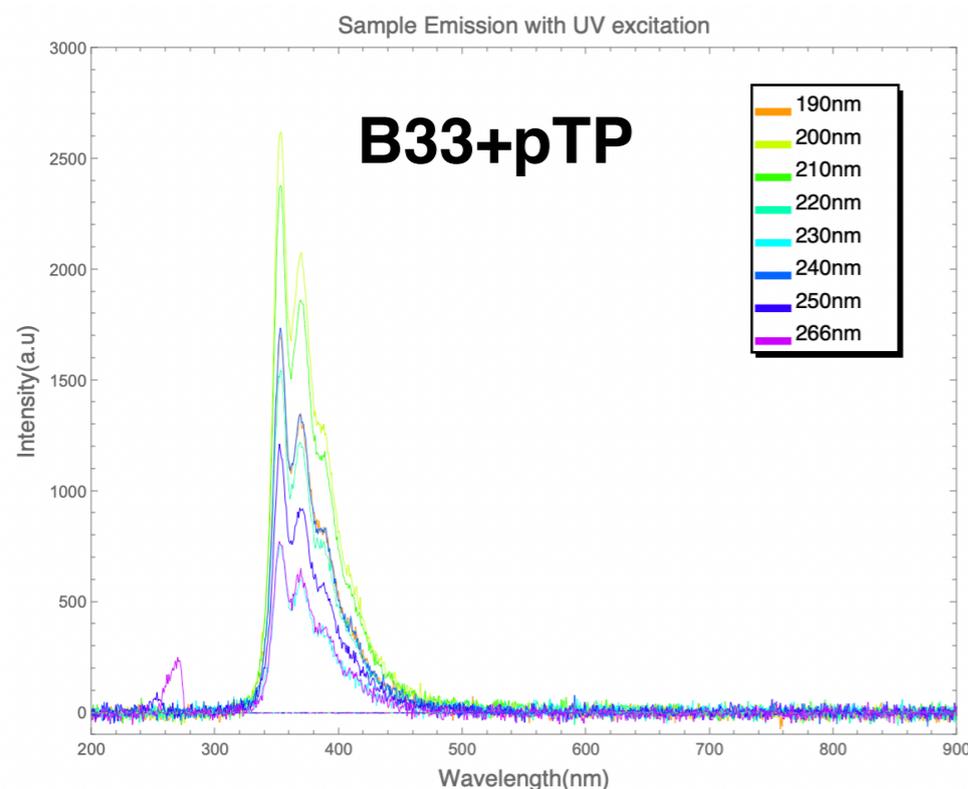
- Planned 7am to 3:30pm
- A serious of operation that will take the whole day
- LAr filling is planned to postponed to next Monday given this long power outage



Diamond sample measurement

▶ New Diamond Sample emission spectrum

- Continued from the measurement reported on the last meeting
- Wavelength measured: 190, 200, 210, 220, 230, 240, 250, 266nm
- Both diamond sample and B33 sample S52 from the 3rd batched were measured
- Both shows the maximum peak at about 210nm, for lower wavelength, light cut off due to strong UV absorption by air

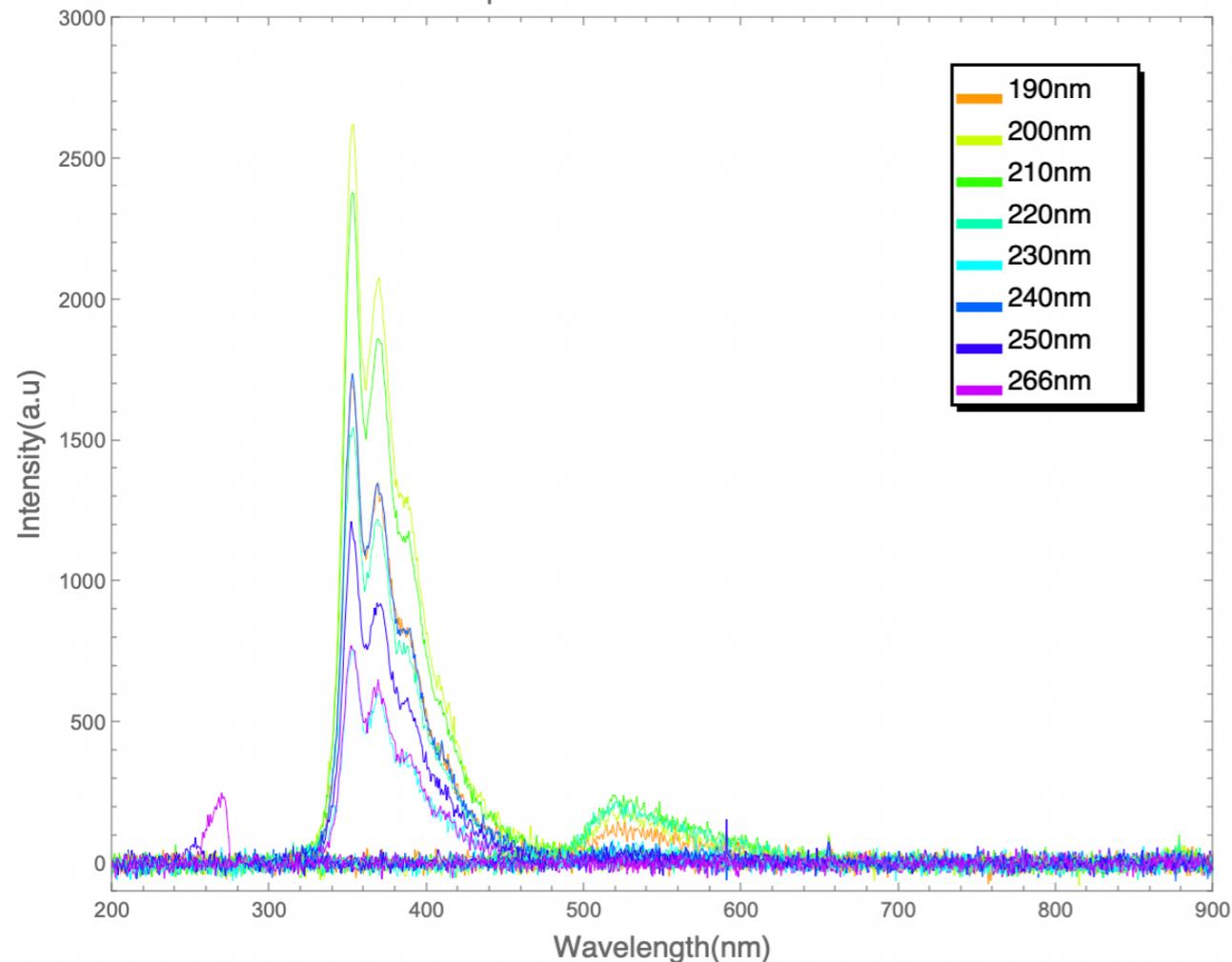


Diamond sample measurement

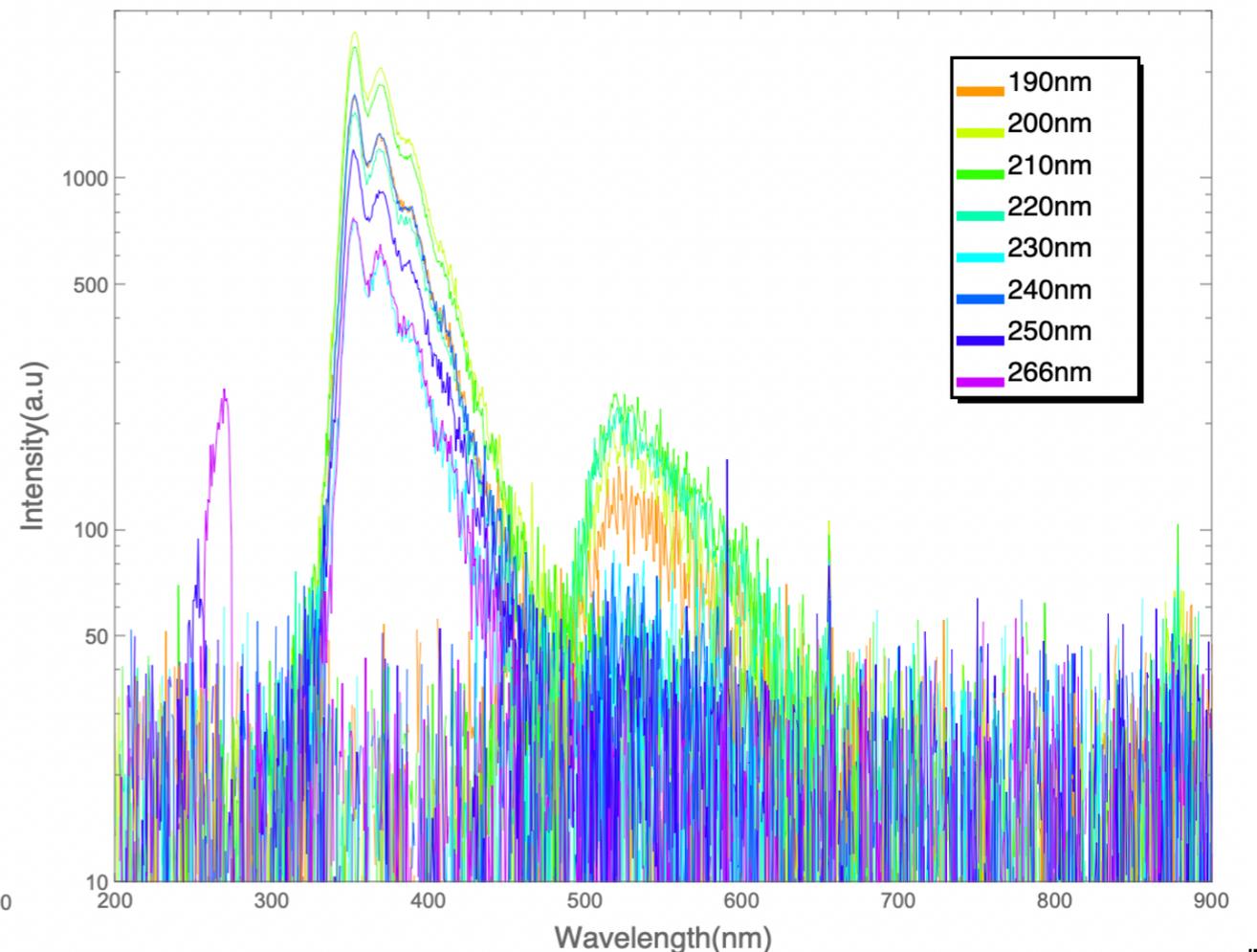
- The signal amplitude of the diamond sample is about 1 order of magnitude lower than the pTP sample
- The diamond sample is attached to a piece of glass with Gorilla tape
 - Need to do one more further exclusion measurement
 - Aleksey provides a sample with no diamond(question about the structure?)
 - I will conduct a quick measurement tomorrow
- Given the one step wavelength shift by diamond has the emission spectrum at the green range, we could probably argue it is still promising with room to improve



Sample Emission with UV excitation

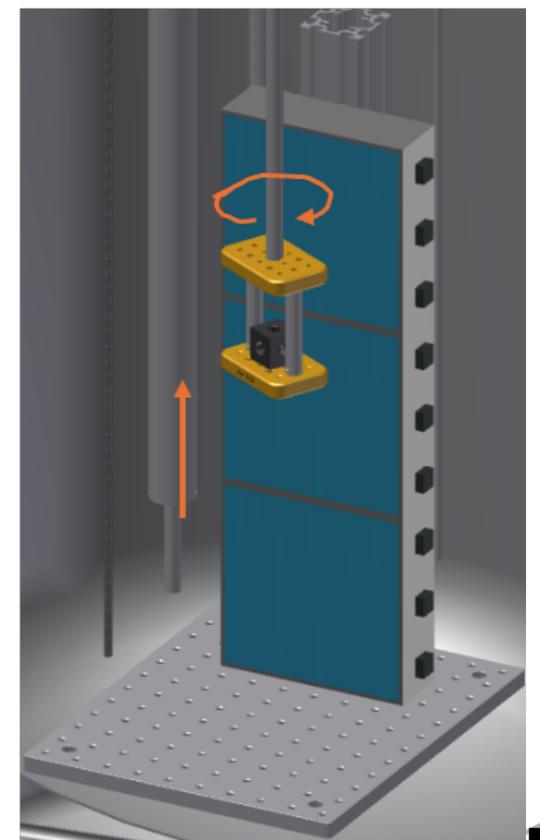
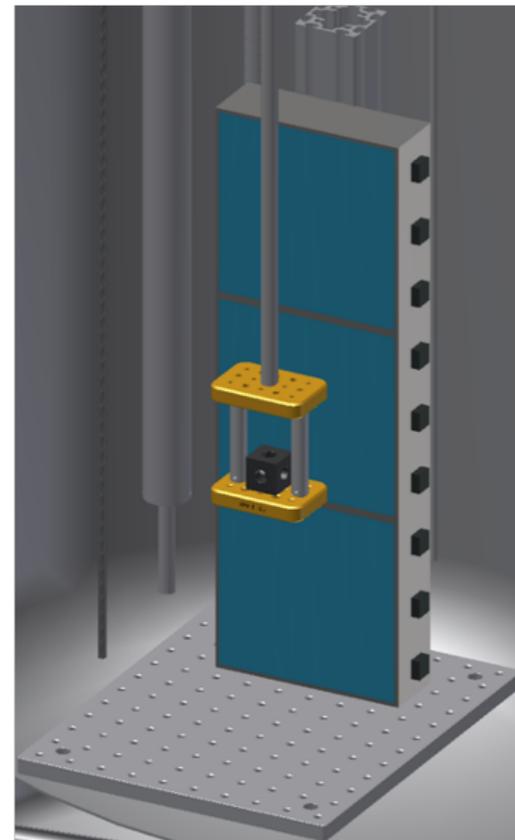
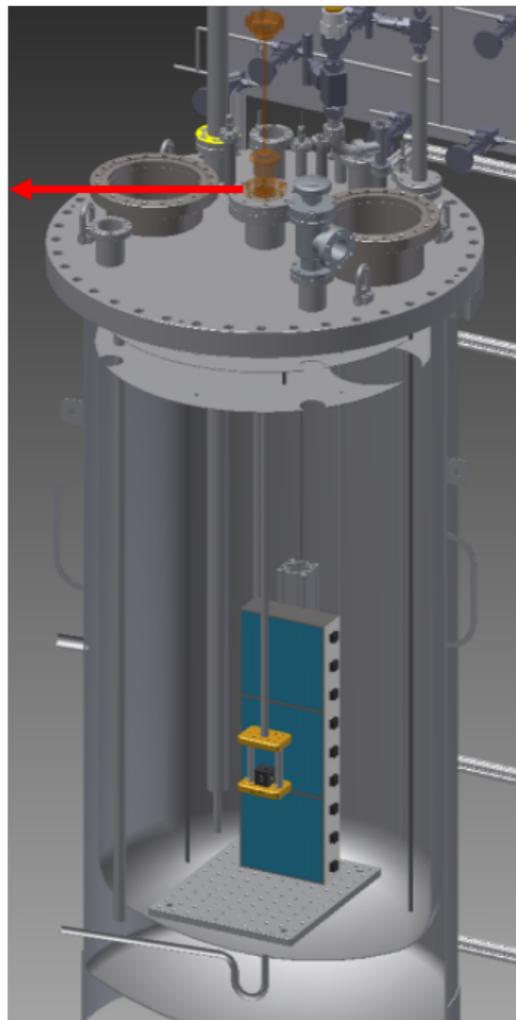


Sample Emission with UV excitation



System Drawings for LDRD-A

- **Conceptual arrangement of WLS detector with XARAPUCA-like structure**
 - Realistic mechanical support structure added
 - All are commercial catalog products available online
 - Mechanical Laser/Source mount platform added
 - The platform is supported from the top from the central 4.0" Conflat flange with a rotation/translation feedthrough with UHV seal
 - The mount platform now has full 360-degree rotational and 8 inches vertical translational degrees of freedom



Discussion for trip to CIENT

- Testing plan provided by Clara, total length is 2 weeks
- 6 samples are expected, we have enough from the 3rd batch
- My experience with such system is that, there is no much to learn/do once the system is closed
- Wprobably should go a few days before 03/09 to drop off the samples, attending the assembly, which seems to be more useful for us
- The flight to Madrid takes 7hrs.

March 9: X-ARAPUCA assembly with the new samples and insertion into the vessel.

March 9–16: Setup under vacuum for outgassing.

March 17: Liquid nitrogen and argon filling, followed by data taking.

March 18: Data taking and start of the warming phase.

March 23: End of warming and vessel opening.