

RaDIATE BNL BLIP Irradiation Run Planning VC Meeting 4

06.16.16

Present

ESS: Yongjoong Lee

FRIB: Aida Amroussia

CERN: Antonio Perillo Marcone, Elvis Fornasiere, Claudio Torregrosa, David Horvath

BNL: Leonard Mausner, Nick Simos

KEK: Shunsuke Makimura, Taku Ishida

PNNL: Dave Senior

FNAL: Patrick Hurh, Bob Zwaska, Kavin Ammigan

OXFORD: Slava Kuksenko

Notes

- Irradiation run of more than 8 weeks is possible. However, there may be intermittent stops during irradiation (at most for a week but usually for a couple of hours). BLIP research schedule for next year is not up yet, and can usually only be confirmed within 2-3 months in advance.
- BNL will be responsible for the design and fabrication of the vacuum degrader
- Rotational fix of specimens and capsules.
 - Current CERN design is acceptable: internal pins and straight edges on upper half of specimen holder
 - Nick suggested adding a small screw through target holder and into thickness of specimen capsule to further lock capsule.
- CERN is considering adding a 0.1 mm thick flexible graphite layer between the specimens and SS window in their heavy capsule to increase thermal conductance. However, the issue of radiation damage and degradation of thermal conductivity during the experiment is a concern. CERN team will look into this.
- Leonard noted that 6 hours of cooling time during target swaps is too long. Typically the time to swap capsules is in the order of around 10 mins, which is what will be available as cooling time before extracting from BLIP target area hot cell. There is also no space available in the hot cell to temporarily store target drive to provide additional cooling time.
- Patrick suggested considering a back-up vacuum degrader in case there are issues with the heavy capsule (eg. higher dose than expected after 2 week run). A new vacuum degrader could then be inserted (also perhaps run at lower BLIP beam energy - 161 MeV) in order to continue irradiation of the other capsules to the desired level.
- CERN bend specimen dimensions may be too small for handling with telemanipulators in hot cells during post-irradiation examination. CERN will consider increasing width of their specimens.

- ESS is checking the possibility of their capsule fabrication and assembly at either CERN or BNL. Yongjoong to inquire with both institutions to determine which route is more favorable.
- All capsule drawings and STEP files should be sent to BNL (C. Cullen & N. Simos) for review prior to procurement and fabrication. This should be done as soon as possible!
- Identification marks on specimens are important, in case specimens get mixed up during capsule disassembly.
- Cooling water pressure on SS capsule window is 2 atm.
- Leak tightness check of vacuum capsules at BNL involves placing capsule in 3 atm He bath before inserting in an alcohol bath to observe if there are any bubbles.
- 50 μm gap between specimens should be assumed for thermal analysis.
- FRIB will send out an update on capsule design and thermal analysis. FNAL will design and fabricate Ti specimen holder as well as weld capsule in Helium.
- Responsibility for disposal and shipping of specimens after experiment is not included in interface document. However, this will be included in the statement of work that each institutions has with BNL.
- Each institution needs to write up their statement of work with BNL to include
 - PIE work
 - Handling and shipping of specimens
 - Capsule/fillers disposal activities
- Nick will be away on vacation from June 26th to July 17th, and will have limited access to emails.
- Nick and Leonard will schedule a preliminary meeting with BNL safety group regarding the experiment.
- FNAL need to coordinate activities with FRIB/KEK – Kavin will draft a table of responsibilities and follow-up with FRIB and KEK.
- FNAL will be assembling and welding the Be and Ti capsules.
- D. Senior has requested that all institutions planning PIE at PNNL submit a rough statement of work to him to indicate the number of specimens and type of tests that will be conducted.