

6th RaDIATE Collaboration Meeting



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BLIP 2020 Quality Assurance Trial Irradiation

Monday, 9 December 2019 16:10 (25 minutes)

The RaDIATE collaboration recently completed a two-phase material irradiation experiment at the Brookhaven Linac Isotope Producer facility at Brookhaven National Laboratory. Various materials of different grades were encapsulated in stainless steel capsules and bombarded with 181 MeV protons for a period of up to eight weeks. However, upon completion of the irradiation campaign, three out of nine capsules were observed to have been breached at the weld line, thus compromising the enclosed material specimens and irradiation parameters. Potential contributing factors to the capsule failures have been identified and are currently under investigation. Computational Fluid Dynamics (CFD) simulations are under way to examine flow characteristics around the capsules to determine whether the capsules overheated due to inadequate cooling. Thermo-mechanical Finite Element Analysis (FEA) of the capsules to explore whether beam offsets could have increased the heat deposition and stresses near the weld line is also in progress. Furthermore, improved weld designs and welding procedures are being developed to ensure a more robust capsule design. This talk will cover the ongoing efforts to better design and perform future long-term irradiation campaigns at BLIP, as well as plans to execute a quality assurance trial irradiation at the facility next year.

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