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INVITED LECTURE - Recent advances in large scale isotope production at LANL

Wednesday 19 September 2012 12:00 (20 minutes)

Large scale production of isotopes proceeds at the Isotope Production Facility (IPF) of the Los Alamos National Laboratory (LANL), using intense 100 MeV proton beams. The main metric of this program's success is the reliable time-critical delivery of large quantities of high-purity medical isotopes, which in turn depends upon many aspects including robust high power targetry, availability of intense proton beams and the ability to modify the primary beam energy. The talk will highlight recent advances at LANL on these fronts, which will further elevate the institution's stature as a world leader in providing both large and small quantities of a wide variety of radioisotopes to users.

Successful efforts of the LANSCE accelerator team in improving the 201 MHz Drift Tube LINAC operations, resulted in recent demonstrations of a 40 MeV, 250 μ A capability and of 100 MeV, 360 μ A high current operation of the LINAC. These advances combined with the developing worldwide short supply of isotopes like Sr-82 and Ge-68 as well as the emerging demand for therapy isotopes such as Ac-225 intensified the LANL efforts to advance understanding of and control over failure mechanisms occurring in high power production targets. Advances include the development of a next generation of RbCl salt targets and Rb-metal targets for increased Sr-82 production, research focused on understanding of failure mechanisms of Nb encapsulated Ga targets used in the large scale production of Ge-68, and the development of a first generation high current Th metal target design for Ac-225 production.

Another exciting new development includes efforts focused on the parasitic utilization of secondary neutrons for smaller scale isotope production that will significantly expand the IPF production capability with no negative impact on the oversubscribed proton beam time.

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