SPECIAL SEMINAR

Medical Isotope Production at TRIUMF: From Imaging to Treatment

Cornelia Hoehr, PhD
Research Scientist, TRIUMF, Canada

February 6, 2019
3:00 pm – 4:00 pm
Princess Margaret Cancer Centre, 610 University Avenue, Room 1B-615 Red Image Management Room

ABSTRACT

TRIUMF has a long history of medical isotope production. The Life Science Division produces PET tracers for the local hospitals for over 40 years. Recently, we have taken on the challenge to expand our isotope repertoire. Next to the more traditional PET isotopes F-18 and C-11, we are producing radiometals (Tc-94m, Sc-44, Y-86, Zr-89, Ga-68, Cu-61) in liquid targets on our 13MeV cyclotron. These radiometals are now available on short notice without a solid target infrastructure, and greatly advance research in radiochemistry.

Additional efforts at 19–24 MeV have established an alternative production method for Tc-99m, bypassing the need for nuclear reactors and with it highly enriched uranium targets. The team has demonstrated ~15 Ci production on a small 19 MeV cyclotron, enough to supply the Greater Vancouver area with Tc-99m.

Finally, we utilized the 500 MeV TRIUMF cyclotron to produce alpha emitters which can be used for therapeutic applications utilizing their high LET. So far, At-211 was isolated as a promising alpha-emitter to treat malignancies such as leukemia. The production of Ra-223/224/225, parent isotopes of Ac-225 and Bi-213 with similar applications in targeted alpha-therapy, is also studied.

BIO

Cornelia Hoehr received her Ph.D. in physics from Heidelberg University in Germany and the Max-Plank institute for Nuclear Physics in Heidelberg. After a post-doctoral research term at the Argonne National Lab, USA, she then moved to TRIUMF as a post-doctoral researcher, and subsequently took on roles in operation and facilities in isotope production and proton therapy. In 2013 she became a research scientist at TRIUMF and an Adjunct Professor at the University of Victoria, and in 2018 she took over the role as Deputy Associate Laboratory Director – Life Sciences. Her research interests are focused on medical isotope production and proton therapy. She is a member of the steering committee for the Particle Therapy Co-Operative Group (PTCOG), consultant to the IAEA in isotope production, and was chair of the TRIUMF User Group Executive Committee (TUEC).