

Production of Medical Radioisotopes at RIKEN RI Beam Factory/理研 RI ビームファクトリーにおける医療用ラジオアイソトープの製造

Friday, 15 November 2024 15:00 (30 minutes)

Radioisotopes (RIs) are widely used as tracers and radiation sources in basic research in physics, chemistry and biology, as well as in medical, agricultural and industrial applications. We are developing production technologies for useful RIs and promoting RI application research in various research fields using the heavy-ion accelerators in the RIKEN RI Beam Factory [1–3]. More than 100 RIs covering almost the entire periodic table of elements, from beryllium (Be) to element 107, bohrium (Bh) have been produced with the RIKEN AVF cyclotron and the RIKEN linear accelerator. On the other hand, RIs of a large number of elements (multitracer) are simultaneously produced from metallic targets such as ^{nat}Ti , ^{nat}Ag , ^{nat}Hf , and ^{197}Au irradiated with a 135-MeV/nucleon ^{14}N beam from the RIKEN Ring Cyclotron. RIKEN RIs are used for applied research in various fields ranging from chemistry of new elements to diagnosis and therapy of cancer, in collaboration with researchers in the world. In this symposium, the development and application of ^{211}At [4–6] and ^{225}Ac [7,8] will be discussed, especially from the viewpoint of their nuclear data and potential application to targeted α -particle therapy.

References

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- [2] H. Haba, J. Part. Accel. Soc. Jpn. **12**, 206 (2015) (in Japanese).
- [3] RIKEN Accel. Prog. Rep., each volume, Sect. Radiochemistry and Nuclear Chemistry, and the references cited in it (http://www.nishina.riken.jp/researcher/APR/index_e.html).
- [4] H. Haba, Drug Deliv. Syst. **35**, 114 (2020) (in Japanese).
- [5] X. Yin et al., RIKEN Accel. Prog. Rep. **56**, 151 (2023).
- [6] X. Yin et al., RIKEN Accel. Prog. Rep. **57** (in press).
- [7] H. Arata et al., RIKEN Accel. Prog. Rep. **57** (in press).
- [8] X. Yin et al., RIKEN Accel. Prog. Rep. **55**, 147 (2022).

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