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Production of an alpha-emitting radionuclide At-211 for medical use at JAEA tandem accelerator タンデム加速器施設での核医学利用 α 放射性核種 At-211 生成

Friday, 19 November 2021 15:30 (30 minutes)

In general, the 211At nuclide, a prospective candidate for targeted alpha radiotherapy, has been produced through the 208Bi(4He,2n)211At reaction. In contrast, our project is focused on the production in the 208Bi(7Li,2n)211At reaction using the JAEA tandem accelerator [1,2]. This enables us to supply 211At in a 211Rn/211At generator system. The daughter 211At of 7.2 h in half-life is generated through EC decay of the parent 211Rn of 14.7 h, expanding time-frame for transportation and use of 211At. In this project, chemical procedures based on dry- and wet-chemistry have been studied to develop the 211Rn/211At generator system. In addition, research subjects relating to the development of the 211Rn/211At generator system, namely, production of astatine and iodine radioisotopes [3, 4], astatine chemistry [5, 6, 7] as well as the analytical method of 211At using an alpha-scintillation camera and thin-layer chromatography [8] have been studied using the JAEA tandem accelerator. In the presentation, some experimental results in the project, e.g., production of astatine and iodine radioisotopes [2, 3, 4], the chemical procedure based on dry-chemistry for the 211Rn/211At generator system, and astatine chemistry [5, 6], will be presented.

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[5] I. Nishinaka et al., J. Radioanal. Nucl. Chem. 318 (2018) 897-905.
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Primary author: Dr NISHINAKA, Ichiro (Tokai Quantum Beam Science Center, Takasaki Advanced Radiation Research Institute, National Institutes for Quantum Science and Technology)

Presenter: Dr NISHINAKA, Ichiro (Tokai Quantum Beam Science Center, Takasaki Advanced Radiation Research Institute, National Institutes for Quantum Science and Technology)

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