

## Safety Management Group

### 1. Abstract

The RIKEN Nishina Center for Accelerator-Based Science possesses one of the largest accelerator facilities in the world, which consists of two heavy-ion linear accelerators and five cyclotrons. This is the only site in Japan where uranium ions are accelerated. The center also has electron accelerators of microtron and synchrotron storage ring. Our function is to keep the radiation level in and around the facility below the allowable limit and to keep the exposure of workers as low as reasonably achievable. We are also involved in the safety management of the Radioisotope Center, where many types of experiments are performed with sealed and unsealed radioisotopes.

### 2. Major Research Subjects

- (1) Safety management at radiation facilities of Nishina Center for Accelerator-Based Science
- (2) Safety management at Radioisotope Center
- (3) Radiation shielding design and development of accelerator safety systems

### 3. Summary of Research Activity

Our most important task is to keep the personnel exposure as low as reasonably achievable, and to prevent an accident. Therefore, we daily patrol the facility, measure the ambient dose rates, maintain the survey meters, shield doors and facilities of exhaust air and wastewater, replenish the protective supplies, and manage the radioactive waste. Advice, supervision and assistance at major accelerator maintenance works are also our task.

Minor improvements of the radiation safety systems were also done. The old exhaust equipment for the radiation-controlled area in the RIBF experimental building was replaced. A small and fully effective shielding for the RI production beamline in the Linac building was designed by using a Monte-Carlo radiation transport calculation code.

## Members

### Director

Kanenobu TANAKA

### Technical Scientists

Rieko HIGURASHI

Hisao SAKAMOTO

### Expert Technician

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### Technical Staff

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### Junior Research Associate

Kenta SUGIHARA

### Visiting Scientists

Masayuki HAGIWARA (KEK)

Toshiya SANAMI (KEK)

Nobuhiro SHIGYO (Kyushu Univ.)

Hiroshi YASHIMA (Kyoto Univ.)

### Administrative Part-time Workers

Kimie IGARASHI (Administrative Part-time Worker I)

Satomi IIZUKA (Administrative Part-time Worker I)

Tokie KUDO (Administrative Part-time Worker II)

Yukiko SHIODA (Administrative Part-time Worker II)

Naoko USUDATE (Administrative Part-time Worker II)

### Temporary Staffing

Ryuji SUZUKI

### Assistant

Tomomi OKAYASU

## List of Publications & Presentations

### Publication

#### [Original Paper]

K. Sugihara, N. Shigyo, A. Akashio, and K. Tanaka, "Measurement of neutron energy spectra of 345 MeV/u  $^{238}\text{U}$  incidence on a copper target," Nucl. Instrum. Methods Phys. Res. B **512**, 102 (2022).

**Presentations****[International Conference/Workshop]**

K. Sugihara (poster), N. Shigyo, E. Lee, T. Sanami, and K. Tanaka, “Study on JQMD and INCL models for  $\alpha$  particle incident neutron production,” 2021 Symposium on Nuclear Data (SN2021), Online, November 18–19, 2021.

**[Domestic Conferences/Workshops]**

田中鐘信 (招待講演), 「理研 RIBF における感染症対策と最近の安全管理状況」, 第 8 回加速器施設安全シンポジウム, オンライン, 2021 年 8 月 27 日.

杉原健太 (口頭発表), 池田裕二郎, 小林知洋, 池田翔太, 藤田訓裕, 大竹淑恵, 「RANS-II の  $p$ -Li 中性子線源特性の実験的研究」, RANS シンポジウム, 和光市 (理化学研究所), 2021 年 5 月 13 日.