

PREFACE

New Year's Eve 2015 turned out to be a historical moment for the Nishina Center. In the early morning on the same day, Kosuke Morita received an email from IUPAC notifying that the experiment team of RIKEN has been certified as the discoverer of the 113th element, and that the team will be granted the naming right for the element. At 17:00, we held a press conference at the RIKEN RIBF building for a large number of media. Immediately following the conference, the news was featured in a variety of media.



In Japan, there is a very popular TV singing-contest program shown on the Sylvester night every year from 19:00 to 24:00 with a high audience rating of more than 40%. Midway through the show, a national news program featured the groundbreaking news that RIKEN has clinched the naming rights for element 113. This means 40-50% of the Japanese watched our press conference and saw a joyful face of Morita-san. The news that we have been waiting for so long could not have come at a better timing. We extend our heartiest congratulations to everyone who contributed to this superb accomplishment, especially to Morita's group and the accelerator group, and would like to share the joy with all the members of the Nishina Center.

At the collaboration meeting held in March 2016, the name and the symbol of the 113th element were decided as Nihonium and Nh, which are currently undergoing a public review by IUPAC until November 2016. "Japan" is written in Japanese with two Chinese characters "日本" meaning "the land of the rising sun". They can be read as Nihon or Nippon, with both pronunciations officially accepted in Japan. "Japan" is a European dialect for pronouncing Nippon. Thus we call our country Japan, Nippon or Nihon. This is similar to Genève, Geneva or Genf, all of which are from the same verbal origin and officially allowed in Swiss.

In 1908, Ogawa discovered element 43 and named it "nipponium" (Np), the name which was added to the old periodic tables. He was wrong. Technetium ($Z=43$) is unstable, and what he actually discovered was rhenium ($Z=75$, in the same family). In 1940, Nishina discovered element 93, but was unable to perform purified isolation. Element 93 was named Neptunium (Np) by McMillan. Now our earnest wish spanning 100 years finally came true. Morita and his collaborator chose the name Nihonium *to pay homage to their predecessors*.

Another big news of the year was Dr. Tohru Motobayashi and Dr. Hiroyoshi Sakurai, our fellow researchers at the Nishina Center, being jointly awarded the 2015 Nishina Memorial Prize for their research on "Discovery of anomalies in magic numbers of neutron-rich nuclei". The award signifies a true recognition of the research accomplishments obtained at RIKEN RIBF. The fact that they were given the award not only for their latest papers but also for the one written two decades ago shows that the quintessence of the long, sustained effort required for research in the field of nuclear physics has been properly acknowledged and appreciated. Together with the 2005 Nishina Memorial Prize recipient Morita, the 2011 Prize recipient Dr. Yasuyuki Akiba and the 2012 Prize recipient Dr. Tetsuo Hatsuda, there are now five recipients of the Award affiliated with the Nishina Center. Since 3% of the Nishina Memorial Award recipients have received the Nobel Prize in Physics in the past, I believe we are finally beginning to see the next higher goal.

There were many surprises and joyous moments shared at the Nishina Center in 2015. The scientific highlights are compiled in this volume of Accelerator Progress Report including: the first data from SEASTAR collaboration, polarized RI purified with BigRIPS, Multi-Reflection TOF measurements for superheavy elements, discovery of ideal charge stripper, successful commissioning of PALIS/Rare-RI-Ring/SAMURAI-TPC, discovery of tetra neutron, gluon polarization in polarized proton determined at RHIC, hint for bound $K^{-}pp$ states discovered in J-PARC, and more. I was in awe to see many prominent researchers in the field of nuclear physics from research institutions abroad participate in the experiment not as a commander but as a mere soldier. Such is the "magnetism" of the experiment that can only be conducted at RIBF.

Another event worthy of special mention is the official inauguration of the KEK Wako Nuclear Science Center. With the closing of the Institute for Nuclear Study (INS) located in Tanashi in 1997, the "troops" of nuclear physicists have gone their separate ways to either KEK or CNS, U-Tokyo. After 18 years, they are again reunited at RIKEN RIBF.

In April 2015, RIKEN was reborn as a National Research and Development Institution. The year 2016 will see RIKEN evolve even further under the new initiatives and management.

Hideto En'yo

A handwritten signature in black ink, appearing to read 'H. En'yo'.

Director,
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