

## The International Conference on Tritium Science & Technology (Tritium 2019) took place



Tritium 2019 held on April 22, 2019

The National Fusion Research Institute (NFRI) held the 12th International Conference on Tritium Science and Technology (Tritium 2019) in Haeundae Grand Hotel in Busan, Korea, from April 22 to 26, 2019.

More than 300 experts and industry officials in the field of hydrogen isotopes and tritium gathered from around the globe to attend the International Conference on Tritium Science and Technology, which has been served as a forum for the exchange of information on tritium measurement, processing and materials, safety, environmental effects, and future R&D strategies. The conference takes place every three years and this was the first time for Korea to host the event.

“Taking this event as an opportunity, we will increase the exchange of tritium technology necessary to facilitate the commercialization of fusion energy. With more joint research with advanced research institutes, we will make every effort to enhance our technological competence for the development of fusion fuel cycle”, said Yoo Suk Jae, President of NFRI, at the opening ceremony.

Tritium, an isotope of hydrogen, is fuel for fusion reactors and a next-generation energy source. The most efficient way to make nuclear fusion, the way the sun creates its energy, on Earth is the fusion reaction between deuterium and tritium. Unlike deuterium, which is abundant in seawater, tritium is rarely present in nature, therefore, studies for extracting and storing tritium are actively being carried out.

One of the active research fields is the utilization of tritium produced in the operation of some nuclear power plants including the Wolsong nuclear power plant. In particular, Korea is expected to be able to lead the supply of tritium used in the ITER operation as it owns one of the two tritium removal facilities that exist in the world(Canada has the other).



President of NFRI Yoo Suk Jae (April 22, 2019)

The NFRI, which participates in both KSTAR and ITER projects, has achieved excellent outcomes in tritium research such as preliminary design for developing the TBM system and evaluation of large-volume hydrogen adsorption performance of tritium extraction system.

Besides, the institute is responsible for the procurement of tritium storage and supply system (SDS), an important facility for storing and supplying tritium for the ITER device.

It strives for the engineering design and tritium storage container development in cooperation with the Korea Atomic Energy Research Institute (KAERI), industry, and universities to make the world's first SDS design and manufacture possible.

Also, research on foundation technologies for handling tritium, such as exhaust gas treatment in the ITER tritium plant and hydrogen isotope separation system, is actively underway through industry-academia-research cooperation.

“As there has been a lack of activities of spreading and distributing tritium, I expect this year's International Conference on Tritium Science and Technology will help raise the awareness of the necessity and importance of tritium, leading to an expansion of R&D base and a change of recognition in Korea”, said Cho Seungyon, Head of System Technology Division, NFRI.



Guided Tour at WTRF(Wolsong Tritium Removal Facility) on April 24, 2019

Tritium 2019 includes oral and poster presentations, which were based on 260 abstracts submitted by participating researchers from 15 countries. The conference facilitated the exchange of R&D strategies and latest research results related Topics. Also, exhibition booths were set up for tritium technology companies from home and abroad, and the tritium removal facility (TRF) of the Wolsong nuclear power plant and the Korea Radioactive Waste Agency were toured.

Keynote lectures were addressed under the theme of 'safety' and 'nuclear fusion power', the two major topics in the field of tritium research.

The first keynote speaker was Dr. Toshihiko Yamanishi, the leader of the tritium group, National Institutes for Quantum and Radiological Science and Technology (QST), who explained how tritium-contaminated coolant treatment methods and safety regulations were developed after the Fukushima nuclear accident. Dr. Damian Brennan, head of H3AT(Tritium Advanced Technology), United Kingdom Atomic Energy Authority (UKAEA), was the second keynote speaker. He introduced the technological significance and research status of H3AT, a newly-built tritium research facility built at the UKAEA Culham Research Institute in the UK. The following session provided an opportunity to identify the current status of the ITER, the construction of DEMO devices after the ITER, and ongoing research in Europe where related research is actively being carried out as tritium is becoming more significant in various research fields.

## The 15th Korea-Japan Joint Coordinator's Meeting (JCM) took place in Nagoya, Japan (July 2-3, 2019)



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The 15th Korea-Japan Joint Coordinator's Meeting was held in Nagoya, Japan for two days from Tuesday, July 2 to Wednesday, July 3, 2019. The representatives of the two countries discussed research cooperation between Korea's KSTAR and Japan's LHD projects in the field of heating/diagnostics and cooperation in the production of ITER procurement items. They also agreed to continue to promote human resource exchange and research cooperation.

## The 7th Korea-China Joint Coordinating Meeting(JCM) took place in Harbin, China (July 10-11, 2019)



The 7th Korea-China Joint Coordinating Meeting (July 10-11, 2019)

The 7th Korea-China Joint Coordinating Meeting was held in Harbin, China for two days from Wednesday, July 10 to Thursday, July 11, 2019. In the meeting, the committee shared the results of last year's cooperation in seven different themes (KSTAR/EAST, ITER, and human resource exchange) and cooperation plan for 2019. In particular, there was an in-depth discussion on research cooperation between KSTAR and EAST projects, cooperation in the production of ITER procurement items, and new cooperation agenda. The representatives of the two countries agreed to continue cooperation on Tokamak and DEMO research.