

## **Atomic Energy Society of Japan**

### **The 12th General Meeting Proposal 1**

#### **Business Report for FY2021**

Taking seriously the fact that the nuclear community in Japan was unable to prevent the accident at the TEPCO's Fukushima Daiichi Nuclear Power Station (TEPCO Fukushima Accident), the Society, in accordance with the Articles of Incorporation revised in 2013, continues to place the safety of the public above all else and to advance the science and technology of nuclear energy and radiation in peaceful purpose. We have been promoting the utilization and dissemination of the results of our activities, thereby contributing to the preservation of the environment and the development of society.

With regard to the decommissioning of the Fukushima Daiichi Nuclear Power Plant, we are engaged in activities to make academic proposals, etc., mainly through the "Fukushima Daiichi Nuclear Power Plant Decommissioning Review Committee (Decommissioning Committee)". In addition, we have continued the activities of the "Fukushima Special Project" and have actively promoted support for residents in the surrounding areas, symposiums, etc., in cooperation with the national government and related domestic and international organizations. In FY2021, from the perspective of preventing the transmission of new coronavirus, we are planning to establish an environmental restoration plaza (former Environmental Restoration Plaza) to support understanding activities regarding environmental restoration, interim storage, radiation, etc. in Fukushima. However, On the other hand, we continued to exchange information with NPOs and provide cooperation and support for school education in Fukushima Prefecture as part of our cooperation for the revitalization and reconstruction of Hamadori, which remains a difficult-to-return zone, which we started last fiscal year. We will continue these activities in the future, taking into account social conditions and other factors.

In the area of annual meetings and congresses, due to the impact of the new coronavirus, the Fall 2021 and Spring 2022 Annual Meetings were held online, respectively, and many sessions were planned and organized, resulting in a successful event. In addition, we made the program and proceedings available to the public via Confit, and provided information services to participants.

In the area of awards, we presented the Society Award, Fellow Award, and Section and Chapter Awards, and awarded the title of Fellow to members who have made outstanding contributions to the development of the Society, as well as special commendations.

Activities to improve the efficiency of the Society's operations, to improve its financial situation, and to maintain and increase its membership have continued under the leadership of the Special Division for

Management Improvement, which reports directly to the Board of Directors. In order to promote the dissemination and utilization of the results of academic and technical surveys and research conducted by the Society, we considered the establishment of a new alumni system. This system will be launched in fiscal year 2022 to provide objective information and opportunities to interact with experts to as many people as possible who have some interest in nuclear energy, as well as to stimulate interest in the Society's activities and increase membership. In addition, we started round-table discussions with the mass media to actively disseminate information and exchange opinions.

Compared to the previous year, the number of regular members decreased by 181 to 5,707, educational members remained unchanged, student members increased by 4 to 439, and supporting members decreased by 5 companies and increased by 5 units to 201 companies and 924.2 units.

The following is a report on the FY2021 business.

## 1. Academic and technical research on peaceful uses of nuclear energy, research and establishment of standards for peaceful uses of nuclear energy

### (1) Academic and technical surveys and research

We established the Research Expert Committee, the Survey Expert Committee, and the Special Expert Committee, and continued to conduct academic and technical surveys and research on peaceful uses of nuclear energy. From the viewpoint of preventing the spread of the new coronavirus, many of these activities were conducted through online conferences, etc. Annual reports were prepared and published in the journal, on the website, and in lectures and reports at the annual meeting and conference.

#### 1. Research Expert Committee

- Feasibility of Nuclear Fuel Cycle (Isamu Sato, Chair; 28 members)
- Reprocessing Technologies for Future Nuclear Energy Systems (Leader: Tatsuya Suzuki, 29 members)
- Thorium Nuclear Energy System (Chairman: Naoyuki Takagi, 33 members)
- Evaluation Technologies for Mechanistic Critical Heat Flux in Nuclear Reactors (Tomio Okawa, Chair; 22 Committee Members)
- Treatment and Disposal of Radioactive Waste and Separation and Transmutation Technologies (Yaohiro Inagaki, Chair; 14 Committee members)
- V&V study of shielding analysis methods (So Kamada, Chair; 35 members)

In addition, the following research divisions were newly established and conducted activities.

- Fission product behavior for decommissioning of Fukushima Daiichi Nuclear Power Plant (Leader: Yosuke Katsumura, 51 members)
  - Mechanistic analysis techniques for severe accidents of nuclear reactors (Leader: Koji Morita, 32 members)
2. Survey Expert Committee
- SIGMA (Tokio Fukahori, Chair; 25 members)
  - Nuclear Agora (Ken Nakajima, Chair, 17 members)

### 3. Special Technical Committee

The following special technical committees were newly established and have been engaged in activities.

- Study of methods to promote understanding of the safety case for geological disposal among various stakeholders (Chief Director: Takayuki Sasaki, 10 members)

### (2) Fukushima Daiichi Nuclear Power Plant Decommissioning Study Committee

The decommissioning of the Fukushima Daiichi Nuclear Power Plant is an extremely long-term project involving unprecedented technical challenges. In 2014, the "Fukushima Daiichi Nuclear Power Plant Decommissioning Study Committee" (hereinafter referred to as "Decommissioning Committee"; Chair: Hiroshi Miyano, Vice Chair: Naoto Sekimura, Koji Okamoto) was established to address this issue on a long-term basis, make technical and professional contributions to ensure safe and smooth progress in decommissioning the accident reactor, and continue to follow up on the recommendations and issues raised by the AESJ Investigation Committee. The Decommissioning Committee includes the Ministry of Economy, Trade and Industry (METI), Agency for Natural Resources and Energy, the Nuclear Damage Liability and Decommissioning Corporation (NDF), the International Research Institute of Decommissioning (IRID), the Japan Atomic Energy Agency (JAEA), the Society of Chemical Engineers, the Robotics Society of Japan and other organizations to facilitate discussion and information sharing.

The year 2021 marks 10 years since the Fukushima Daiichi accident and 8 years since the establishment of the Decommissioning Commission. The Society held a symposium on March 11, 2021, to report on the implementation of the lessons learned compiled by the AESJ Investigation Committee. Following this, on June 12, the Decommissioning Committee held a decommissioning symposium "Challenges and Prospects in the 10th Year of Decommissioning - Toward Safer Decommissioning -" on the web. The symposium introduced the challenges and prospects in each field that the Decommissioning Committee is working on, and invited commentators from the mass media and sociological researchers to engage in

a broad exchange of opinions with society. In the activities of the divisions, the Waste Division (lead by Satoshi Yanagihara) newly started to study the ideal way of waste volume management, the Robotics Division (lead by Taku Yoshimi) discussed further deepening the use of robots in decommissioning, and the Division on Strength Standards (lead by Shunichi Suzuki) discussed how structural strength standards for accidental reactors should be developed.

In addition, the Decommissioning Committee held five meetings during the fiscal year as an activity for information sharing and communication within the Society. Through these activities, we have received information from the Agency for Natural Resources and Energy on the 1F decommissioning initiative, from NDF on the issues in the "Strategic Plan for Decommissioning 2021," and from TEPCO on the status of ALPS treated water disposal. In addition, the FP Research Expert Committee of the Society provided information on its activities in FY2021. At the fall meeting, under the theme of "Current Status of Technological Development for 1F Decommissioning," JAEA introduced the Eichi Project and the study of debris generation process, and IRID introduced the current status of debris detection and removal technology development. At the annual spring meeting, the activities of the various divisions of the Decommissioning Committee were reported and discussed with members.

The Chairman presented certificates of appreciation to the recipients of the "Decommissioning Contribution Award" established in FY2020 at the Decommissioning Symposium on June 12, 2021, to those whose activities were particularly remarkable and deserving of the highest award.

### (3) Activities of the Fukushima Special Project

The Fukushima Special Project was established in June 2012 to mobilize all of the Society's resources in repairing the nuclear disaster caused by the TEPCO Fukushima accident from a local perspective. In order to serve as an interface between the residents of Fukushima and the national government and the Ministry of the Environment so that they can return to their homes as soon as possible, we have been providing necessary information accurately and in an easy-to-understand manner as a group of nuclear experts from the standpoint of the residents. This year, we had planned to hold an exchange event in Namie Town and other locations, but decided to forego local activities in order to prevent the transmission of the new coronavirus. Dispatch of experts to municipalities and the Environmental Restoration Plaza (former Decontamination Information Plaza) has also been suspended. Rice cultivation trials in Minamisoma City, which have been ongoing since FY2012, were conducted this year as well, and we continued to investigate the behavior of Cs. As for activities to respond to the interests and needs of local people, which were discussed last year as activities required for the project in the future, we continued to exchange information with NPOs to support the revitalization and reconstruction of Hamadori, which remains a difficult return zone, and to cooperate with and support school education

in Fukushima Prefecture. In addition, we have been working with NPOs to support school education in Fukushima Prefecture. As part of these activities, we also conducted a questionnaire survey of local residents to determine whether the government's measures for reconstruction and revitalization of Fukushima are meeting the expectations of local residents, and analyzed and summarized the results of the survey. These activities were reported at the fall conference in 2021 and the annual meeting in the spring of 2022.

#### (4) Establishment of Standards

In connection with the Fukushima accident at TEPCO, a new Nuclear Regulation Authority was established and new regulatory standards went into effect in July 2013. In response to the establishment of new regulatory standards and operational guidelines related to nuclear safety in Japan, the Standards Committee has been reviewing the positioning of existing standards and examining the standards that must be newly established, and has been working on the backfit of the new standards, voluntary safety improvement, severe accidents, safety improvement assessment and risk assessment, waste treatment and disposal, and decommissioning. In addition, since the role of the Society's standards is to formulate those related to "nuclear safety," the Society established the "Nuclear Safety Study Group" in FY2011 to promote analysis of the TEPCO Fukushima accident in cooperation with the Society's research activities and to study the basic concept of "nuclear safety," and is conducting research and study activities that contribute to the formulation of standards. The activities of the committee are as follows. Each activity is widely disclosed at the planning lectures of annual meetings and conventions to contribute to the dissemination of standards and understanding of the activities.

In FY2021, four technical divisions (1) Risk, 2) System Safety, 3) Fundamental Application and Decommissioning Technology, and 4) Nuclear Fuel Cycle) formulated draft standards, and the Nuclear Safety Study Group examined the basis of nuclear safety, which were discussed by the Standards Committee (chaired by Mr. Yamamoto) and established as follows

1. Risk Expert Group (Chairperson: Mr. Takada)
  - Implementation criteria for probabilistic risk assessment of nuclear power plants due to fault displacement
  - Implementation criteria for probabilistic risk assessment of nuclear power plants under output operating conditions (Level 2 PRA) (established and issued in the last fiscal year)
2. System Safety Technical Division (Chairperson: Mr. Okamoto)
  - Implementation standards for measures against aging of nuclear power plants
  - Criteria for evaluation of nuclear thermal-hydraulic stability of BWRs
  - Criteria for implementation of statistical safety assessment
3. Technical Division on Fundamental Application and Decommissioning Technology (Chairperson:

Mr. Ishikawa)

- None this year
- 4. Expert Committee on Nuclear Fuel Cycle (Chairman: Mr. Takahashi)
  - Safety design and inspection standards for metal casks for intermediate spent fuel storage facilities
- 5. Nuclear Safety Study Group (Mr. Takada)
  - Basic approach to nuclear safety against external events
- Fall Conference Planning Lecture in 2021
  - Basic Policy and Future Strategy of the Standards Committee
- Planning Lecture for the Spring 2022 Annual Meeting
  - Roles and Relationships in Standards and Criteria - Inter-organizational Collaboration for Utilization of Risk Information
  - Case Studies and Requests for Utilization of Water Chemistry Standards (co-sponsored by the Water Chemistry Division)
- Workshop
  - IRIDM Standards Seminar (July 28)
  - Risk Assessment and Understanding Technical Report Seminar (November 12)
  - Probabilistic risk assessment due to fault displacement workshop (January 12)
  - Aging countermeasure implementation standard workshop (January 26)

## 2. organization of annual meetings, conventions, symposiums, lectures, etc.

### (1) General Meeting

The 11th General Meeting

Date: June 18, 2021

Number of participants: 100 (2) Annual Meeting, Convention, Symposiums, Lectures, etc.

### (2) Annual Meeting and Convention

#### (1) Japan Atomic Energy Society "2021 Fall Meeting

Date: September 8-10, 2021

Form of meeting: Online

Number of participants: 1,309 Number of abstracts: 560

(2) Annual Meeting of the Atomic Energy Society of Japan "Spring Meeting 2022

Date: March 16-18, 2022

Form of meeting: Online

Number of participants: 1,200 Number of abstracts: 487

(3) Symposiums, etc.

1. Nuclear Energy Symposium

A comprehensive symposium on nuclear energy, organized by the Science Council of Japan and cosponsored by AESJ (the organizing society) and 44 other academic societies, was held online on January 17 under the theme of "Thinking Now, 10 Years after the Accident at Fukushima Daiichi Nuclear Power Station" (200 participants).

2. 1F Treated Water Webinar (1/8, online)

3. The 12th Professional Engineer System and Examination Seminar (2/19, online)

(4) Lectures, etc.

1. Chapter Activities

- Hokkaido Chapter The 11th Chapter Convention (deliberated by e-mail), special academic lectures (2), academic lectures (14), field trips (December 3), research presentations (February 22, including the 2nd special academic lecture), Chapter Executive Committee meetings, etc. were held. The first Open School was held online, and the second and third Open Schools were cancelled to prevent the spread of the new coronavirus. (Chapter Director Masayuki Aikawa, 132 members/companies)
  
- The 11th Tohoku Chapter Convention (May 31, 2 special lectures, online) and the 45th Research Exchange Meeting (January 13, special lectures: the commemorative lecture for the Tohoku Chapter Achievement Award 2020 and the 12th Southern Tohoku Nuclear Energy Symposium session, online) were held. A total of 12 open schools were planned and 10 were held, with the format changing to face-to-face, online or hybrid depending on the status of the spread of new coronavirus infection. The AESJ Tohoku Café (4 sessions) was held online. Awards were also presented for the Tohoku Chapter Achievement Award and the Encouragement Award. Due to the spread of infectious diseases, the 14th Tohoku Atomic Energy Symposium and the site visit were cancelled. (Chapter Director, Yuichi Niibori, 446 members/companies)

- The 11th Chapter Convention was cancelled due to the spread of the new type of coronavirus, and a report on activities was posted on the website. Open School (October 17, Tokai-mura), Remote Young Researchers and Engineers Presentation Meeting (January 26), and Remote Chapter Lecture Meeting (February 4) were held, and the Technical Merit Award was presented. (Chapter Director, Tetsuo Nishihara, 1,602 members/companies)
- The Kanto/Kouetsu Chapter held the 2021 Convention (deliberated by e-mail), the 2020 Chapter Award Ceremony in web format, the Nuclear Energy Open School (Science Museum in Tokyo (November 6 and 7), Science Museum in Yamanashi (November 13, 11 and 14)), the 20th Discussion Meeting for Young Researchers and Engineers (November 29), and the 15th Student Research Presentation Meeting (November 29). ), and the 15th Student Research Presentation (March 1). The planned facility tour was cancelled to prevent the spread of the new coronavirus. (Chapter Director, Tetsuaki Takeda, 2,461 members/companies)
- The Chubu Chapter held the 11th Chapter Convention (in writing), the 53rd Research Presentation Meeting (December 16 and 17; 3 awards for encouragement: face-to-face), and the Nuclear Energy System Research Committee Meeting (November 11 open symposium, March 2 committee meeting, both online).(Chapter Director, Chiyoharu Kurata, 343 members/companies)
- The Kansai Chapter held the 1st and 2nd Online Lectures (November 19 and March 10) and the 17th Research Presentation by Young Researchers (March 10). In addition, due to the effects of the new coronavirus, the 11th Chapter Convention was held as an e-mail deliberation with on-demand video distribution, and the field trip was cancelled. (Chapter Director Isao Murata, 943 members/companies)
- The Chugoku/Shikoku Section held the 11th Chapter Convention (June 12, online), the 15th Research Presentation (October 30, online, 3 awards for excellent presentations), Open School (4 times), Lecture Meeting (June 12, October 30, online), and others. In addition, awards were presented for the Chapter Distinguished Service Award and the Chapter Academic Award. (Chapter Director, Satoru Endo, members/companies)
- The Kyushu Chapter held the 11th Chapter Convention (May 12, discussed via e-mail), Energy Lecture Meeting (October 19), the 40th Research Presentation Lecture Meeting (December 11, held online), Open School (10 times), and other events. The tour of Kyushu Electric Power Company's Genkai Nuclear Power Station and Sendai Nuclear Power Station and special lectures, which have been held every year, were cancelled due to the corona disaster. (Chapter Director, Yasuhiko Inoue, 200 members/companies)



## 2. Cosponsored Events

- The 58th Isotope and Radiation Research Conference (July 7-9, online)
- The 20th Symposium on Cavitation (December 9-10, online)
- The 7th Symposium on Theoretical and Applied Mechanics (March 11, Tokyo & online)

## 3. publication of journals, research and technical reports and materials, and other publications

### (1) Monthly publication of "Journal of the Atomic Energy Society of Japan/ATOMO Σ

| Date of Publication | Volume | Number | Copies       |
|---------------------|--------|--------|--------------|
| April 2021          | 63     | 4      | 6,750 copies |
| May 2021            | 63     | 5      | 6,700 copies |
| June 2021           | 63     | 6      | 6,700 copies |
| July 2021           | 63     | 7      | 6,800 copies |
| August 2021         | 63     | 8      | 6,500 copies |
| September 2021      | 63     | 9      | 6,550 copies |
| October 2021        | 63     | 10     | 6,600 copies |
| November 2021       | 63     | 11     | 6,600 copies |
| December 2021       | 63     | 12     | 6,700 copies |
| January 2022        | 64     | 1      | 6,750 copies |
| February 2022       | 64     | 2      | 6,800 copies |
| March 2022          | 64     | 3      | 6,800 copies |

In March 2021, 10 years will have passed since the accident at the TEPCO's Fukushima Daiichi Nuclear Power Station, and from the second half of FY2020 to the first half of FY2021, we published a special feature on the accident and the issues surrounding nuclear power, written by local governments, experts, nuclear power companies, academic societies, and others. In addition, special features and commentary articles were published on radiation applications, safety of light water reactors, development trends of new reactor types such as SMRs, decommissioning trends, utilization of risk information, high-level waste management, resilience engineering, nuclear and radiation education, human resource issues, dialogue with society, global trends, science, and other topics. In addition, we continued to introduce the latest status of each division, the front lines of research by domestic research institutes, and a series of columns by a variety of authors. In addition, we are continuing to conduct a questionnaire survey of all members in order to evaluate the articles in the journal and to provide reference for future projects. In addition, the latest issue of the journal has been fully available to members via J-STAGE since the February 2021 issue.

(2) Regular publication of the monthly Journal of Nuclear Science and Technology (JNST) (English-language journal)

| Date of publication in the electronic version | Volume | Number | Number of Articles |
|---|--------|--------|--------------------|
| April 2021                                    | 58     | 4      | 11                 |
| May 2021                                      | 58     | 5      | 10                 |
| June 2021                                     | 58     | 6      | 10                 |
| July 2021                                     | 58     | 7      | 10                 |
| August 2021                                   | 58     | 8      | 8                  |
| September 2021                                | 58     | 9      | 10                 |
| October 2021                                  | 58     | 10     | 8                  |
| November 2021                                 | 58     | 11     | 9                  |
| December 2021                                 | 58     | 12     | 9                  |
| January 2022                                  | 59     | 1      | 10                 |
| February 2022                                 | 59     | 2      | 13                 |
| March 2022                                    | 59     | 3      | 10                 |
| Date of publication in Print                  | Volume | Number | Number of Articles |
| April 2021                                    | 58     | 3-4    | 21                 |
| June 2021                                     | 58     | 5-6    | 20                 |
| August 2021                                   | 58     | 7-8    | 18                 |
| October 2021                                  | 58     | 9-10   | 18                 |
| December 2021                                 | 58     | 11-12  | 18                 |
| February 2022                                 | 59     | 1-2    | 23                 |

The printing and publication of the English-language journal has been outsourced to Taylor & Francis in the U.K. starting with volume 49. The total number of institutions reading the journal in 2020 is approximately 2,700 worldwide. 1,355 pages were printed in 2020 (Volume 58), with 123 papers published.

JNST's 2020 Impact Factor was 1.599, the highest ever, higher than that of any ANS journal. The Most Cited Article Award for articles published in 2015 was awarded to the authors of four articles, and the Most Popular Article Award for articles published in 2020 to the authors of six articles. The number of full-text downloads for FY2020 was approximately 520,000, up approximately 20% from the previous year. Electronic versions of papers are made available early before print publication.

(3) Regular publication of the quarterly "Nihon Genshiryoku Gakkai Wabun Ronbunshi" (Transactions

of the Atomic Energy Society of Japan in Japanese)

| Date of Publication | Volume Number |   | Copies     |
|---------------------|---------------|---|------------|
| June 2021           | 20            | 2 | 350 copies |
| September 2021      | 20            | 3 | 350 copies |
| December 2021       | 20            | 4 | 350 copies |
| March 2022          | 21            | 1 | 350 copies |

The full text of the Japanese-language journal is made available free of charge on J-STAGE at the same time as the print edition is published. The electronic version of the journal is made available early in advance of the print publication. The number of full-text downloads per month in FY2020 ranged from 4,000 to 6,700.

(4) Irregular publication of "Progress in Nuclear Science and Technology" (collection of papers from international conferences)

The English-language journal "Progress in Nuclear Science and Technology" has been newly launched in FY2011 to publish papers from international conferences hosted and cosponsored by AESJ. Currently, Vol. 6 has been published. In addition, an international paper identifier (CrossRef DOI) has been assigned to all published papers to improve accessibility. The full text is available free of charge on the Society's website.

(5) Special Projects

As part of the 60th anniversary project of the Society, we have been working on the publication of English translations of commentary articles published in  $\text{ATOMO}\Sigma$ , the Journal of the Atomic Energy Society of Japan, and papers published in Japanese language journals related to the Fukushima Daiichi Nuclear Power Plant accident from immediately after the accident to five years after the accident. In 2021, all volumes from Vol. 1 to Vol. 4 were completed. The printed version was distributed to domestic and foreign nuclear-related organizations and universities, etc. The electronic version was made available free of charge on the website of the Society.

#### 4. Encouragement of research and commendation of research achievements (Article 4, Item 5 of the Articles of Incorporation) and other awards

(1) Awards for research achievements

The 54th Atomic Energy Society of Japan Award (FY2021)

Paper Awards (4)

[5401] JENDL/DEU-2020: deuteron nuclear data library for design studies of accelerator-based neutron sources

(Japan Atomic Energy Agency) Shinsuke NAKAYAMA, Osamu IWAMOTO

(Kyushu University) Yukinobu WATANABE

[5402] Fukushima Daiichi fuel debris retrieval: results of aerosol characterization during laser cutting of non-radioactive corium simulants

(Institut de Radioprotection et de Sûreté Nucléaire) Emmanuel Porcheron, Claire Dazon, Thomas D. Dazon

Claire Dazon, Thomas Gelain

[5403] Features of a control blade degradation observed in situ during severe accident conditions in boiling water reactors

(Japan Atomic Energy Agency) Pshenichnikov Anton, Yuji Nagae, Masateru Kurata

[5404] Adjoint flux calculation of natural mode equation by time dependent neutron transport

(Central Research Institute of Electric Power Industry) Yasushi NAUCHI

Special/Technical Award (1)

[5405] Development of a neutron multigroup cross section generation function in FRENDY, the next generation nuclear data processing system in Japan

(Nagoya University) Akio YAMAMOTO

(Japan Atomic Energy Agency) Ken-ichi TADA

(Hokkaido University), Go CHIBA

Encouragement Award (1)

[5406] Measurement of neutron capture cross section of Np-237

(Japan Atomic Energy Agency) Gerard Rovira Leveroni

Technology Development Award (1)

[5407] Development of an Advanced Simulation Code for Complex Two-Phase Flow in Steam Generators

Mitsubishi Heavy Industries, Ltd.

(Purdue University) Takashi Hibiki

Contribution Award (2)

[5408] Development of a Self-Made Kit of Air GM Tube Radiation Analyzer and Activities for Better Understanding of Radiation

(Chubu Atomic Energy Advisory Group "Radiation Watching")

Chizuo Mori, Takahiko Aoyama, Takao Iida, Shinobu Goi, Kazumasa Hayakawa, Yutaka Sago, Hitoshi Kamiya, Kenji Tsuge

[5409] Practice of the World's Best Probabilistic Seismic Hazard Assessment Project and Contribution to the Utilization of Risk Information in Japan

Shikoku Electric Power Co.

## 1. Chapter Awards

- Hokkaido Chapter: 2 awards for distinguished service and 2 awards for encouragement
- Tohoku Chapter: 1 Meritorious Service Award and 2 Encouragement Awards
- North Kanto Chapter: 1 Award for the Best Presentation, 6 Awards for the Best Presentation, and 2 Awards for Technical Merits at the Presentation Meeting for Remote Young Researchers and Engineers
- Kanto/Kouetsu Chapter: 1 Award for Technical Contribution, 1 Award for Contribution to Dissemination of Nuclear Knowledge and Technology, 6 Awards for Encouragement of Research at the 20th Discussion Meeting for Young Researchers and Engineers, 2 Awards for Excellence and 16 Awards for Encouragement at the 1st Student Research Presentation Meeting
- Chubu Chapter: 3 Encouragement Awards for the 53rd Research and Presentation Meeting
- Kansai Chapter: 4 Young Researcher Encouragement Awards
- Chugoku/Shikoku Chapter: 1 Meritorious Service Award, 1 Academic Award, and 3 Excellence Award for the 15th Research Presentation of the Section
- Kyushu Chapter: 3 Awards for Encouragement of Students and Young Researchers, 3 Awards for Excellent Poster Presentation by Students at the 40th Research Presentation

## 2. Division Commendations

- Reactor Physics Division: 2 Encouragement Awards
- Fusion Engineering Division: 1 Encouragement Award
- Nuclear Fuel Division: 3 lecture awards
- Nuclear Fuel Cycle and Environment Division: 1 Meritorious Achievement Award, 1 Achievement Award, 2 Best Presentation Awards, 2 Best Student Presentation Awards, 2 Poster Awards (Summer Seminar), 1 Best Paper Award
- Thermal Hydraulics Division: 1 achievement award, 1 encouragement award, 6 best presentation awards, 1 best presentation award (young researchers' study group)
- Radiation Science and Technology Division: 1 academic award, 3 encouragement awards
- Subcommittee on Particle Accelerator and Beams Science: 1 academic award
- Social and Environment Division: 1 prize for outstanding presentation and 1 prize for outstanding activity

- Nuclear Data Division: 3 Encouragement Award
- Health Physics and Environmental Science Division: 1 paper award, 3 academic contribution awards, 2 lecture awards, and 3 encouragement awards
- Materials Science and Technology Division: 1 Meritorious Achievement Award, 2 Young Scientist Excellence Awards, and 2 Best Figure Awards
- Reprocessing and Recycle Technology Division: 1 Meritorious Achievement Award, 1 Research Achievement Award, and 3 Best Presentation Awards
- Computational Science and Engineering Division: 1 Meritorious Achievement Award, 1 Achievement Award, 1 Encouragement Award, 2 CG Awards, 3 Outstanding Student Presentation Awards, and 1 Meritorious Service Award
- Water Chemistry Division: 1 Encouragement Award, 2 Presentation Awards
- Nuclear Safety Division : 5 lecture awards, 2 student poster awards (trial)
- Advanced Reactor Division : 2 Best Presentation Awards
- Risk Science and Technology Division: 5 Encouragement Awards

### 3. Fellow Award

The 15th Fellow Award of the Atomic Energy Society of Japan (FY2021)

Thirty-five students were awarded for their academic excellence in the fields of nuclear and radiation science, including fourth-year undergraduate students, second-year students of technical college majors, and second-year students of graduate school master's programs.

### 4. . Communication among members for research and study, as well as communication and cooperation with related domestic and foreign academic organizations

Liaison and cooperation with domestic and international academic organizations, etc.

#### (1) Activities of Divisions

1. Reactor Physics Division: The 55th and 56th regular meetings were held online and the bulletin "Research on Reactor Physics" (Vol.74) was published. The summer seminar on "Fundamentals of Neutronics Calculations in Small Light Water Reactors," the fall conference planning lecture on "Future of Reactor Physics Research by Experimental and Research Reactors," and the spring annual meeting Planning Lecture on "Completion of JENDL-5 and Prospects for its Application to Numerical Analysis" (jointly with the Nuclear Data Division and the SIGMA Survey Expert Committee) were held online. The WG for Utilization of Test and Research Reactors was established to collect the requests from the Reactor Physics Division regarding the test and research reactors planned to be constructed in Fukui Prefecture, and the results were reported at the fall conference planning lecture and the 55th regular meeting. (Chairperson : Kazufumi Tsujimoto, 374 members)
2. Fusion Engineering Division: The 57th and 58th Plenary meetings were held. The session planned for the fall meeting was "Current Status of JT-60SA Project" and the session planned for the spring

annual meeting was "Fusion Research with Private Funds".

(Chairperson: Yuji Hatano, 297 members)

1. Nuclear Fuel Division: The 49th Plenary meeting was held. The fall annual meeting planning lecture was held on "Future Prospects of Nuclear Fuel - Discussion Version." The spring annual meeting planning lecture was held on "Application of Simulation Technology in Nuclear Fuel Development. In addition, a summer seminar was held jointly with the Materials Division and the Water Chemistry Division. The division bulletin "Nuclear Fuel" (No.56, 57-1) was published.

(Chairperson: Masato Kato, 349 members)

2. Division of Nuclear Fuel Cycle and Environment: The 55th and 56th Plenary meetings were held and the division journal "Nuclear Backend Research" (Vol.28-No.1, No.2) was published. In addition, a summer seminar and a weekend basic course were held. In particular, the summer seminar featured a symposium in collaboration with the Society for Environmental Radioactivity Decontamination, Japan, entitled "Technological Development and Research Direction for Realization of Final Disposal of Removed Soil and Waste Outside of the Fukushima Prefecture." At the conference and annual meeting, the sessions "Safety Communication on Geological Disposal" and "Current Status of Waste from Research Facilities and Other Facilities and Efforts Toward LLW Disposal Projects" were held. In addition, the Divisions of Nuclear Fuel Cycle and Environment and of Reprocessing and Recycling Technology co-hosted the General Lecture and Report of the Research Special Committee on "Radioactive Waste Management with Partitioning-Transmutation Technology" under the title "Application of Partitioning and Transmutation Technologies to Waste Treatment and Disposal: Comprehensive Performance Evaluation of Advanced Nuclear Fuel Cycle" . The Division of Reprocessing and Recycling Technology session " International Year of Glass 2022: The Role of Glass in Reprocessing Processes and Future Prospects" was co-hosted by the Divisions of Nuclear Fuel Cycle and Environment and of Reprocessing and Recycling.  
(Chairperson: Daisuke Sugiyama, 568 members)

3. Thermal Hydraulics Division: The 58th and 59th plenary meetings were held. The 2nd and 3rd "Young Researchers' Study Sessions" were held online in March and November to promote research exchange among students and young researchers. At AESJ 2021 fall meeting and 2022 annual meeting, planning lectures on "The latest developments regarding thermal-hydraulic analysis" and "Recent Technology Trends in Severe Accident Simulations and Experiments" were held. We have prepared for the 12th Korea-Japan Symposium on Nuclear Thermal Hydraulics and Safety (NTHAS-12), which was postponed from November 2020 to November 2022 due to the COVID-19. The 100th issue of the Thermal Hydraulics Division Newsletter was published.(Chairperson: Hiroyuki Oshima, 322 members)

4. Radiation Science and Technology Division: 55th and 56th Plenary meetings, Newsletter (No.682-710), "Next Generation Radiation Symposium 2021", "6th Workshop on Radiation Shielding Design Methods", "7th Workshop on Radiation Shielding Design Methods", and planning and organizing sessions for the annual meeting and conference were done. The committee also planned and organized the Environmental Monitoring WG, Measurement Technology WG, Simplified Shielding Analysis Code Review WG, Domestic Code V&V WG for basic numerical calculation of radionuclides, and Shielding Group Constants ISO Standardization Study WG. These were continued to invigorate the activities of the divisions and strengthen their contributions to society. (Chairperson: Hiroyuki Takahashi, 285 members)
5. Subcommittee of Human-Machine Systems Research: The 63rd and 64th Plenary meetings of Human-Machine Systems Research were held. A planned session "Current Status and Issues of Human Reliability Analysis in PRA" at the 2022 Spring Annual Meeting was held. In addition, a winter seminar "Considering the Relationship with Human Factors from the Perspective of Security" was held. (Chairperson: Makoto Takahashi, 87 members)
6. Subcommittee on Particle Accelerator and Beam Science: The 47th and 48th Plenary meetings on Accelerator and Beam Science, "Recent Topics on Accelerator Development and Beam Application in Hokkaido" as an fall meeting planning lecture and "Development of Polymer Materials in Quantum Beam Science" as a spring annual meeting planning lecture were held. (Chairperson: Kai Masuda, 171 members)
7. Social and Environmental Division: The 45th and 46th Plenary meetings were held. At the 2021 Fall Meeting, planning lecture "Commemorative Lecture for the FY2020 Social and Environmental Division Award - Trends of Public Opinion to Nuclear Energy" was held, and at the 2022 Annual Meeting, planning lecture "Rethinking 'FUHYO (rumor)' and 'FUHYO-Higai' – Case of Treated Water Ocean Discharge at the Fukushima Dai-ichi Site" was held. (Chairperson: Shoji Tsuchida, 186 members)
8. Health Physics and Environmental Science Division: 43rd and 44th plenary meetings, annual meeting and planning lecture were held. In the fall meeting, a planning lecture entitled "Evaluation of Atmospheric Dispersion Models with Environmental Data of Nuclear Power Plant Accidents and Its Emergency Application" was held. At the spring annual meeting, a planning lecture entitled "Society Collaboration Activities on Radiological Protection and Future Developments" was held. The Newsletter was distributed 16 times. (Chairperson: Tomoyuki Takahashi, 227 members)



9. Nuclear Data Division: The 44th and 45th plenary meetings were held. The "SIGMA" Survey Expert Committee 2019, 2020 Activity Report" was held jointly with the "SIGMA" Survey Expert Committee as a fall meeting planning lecture and the "Completion of JENDL-5 and Prospects for its Application to Numerical Analysis" was held with the "SIGMA" Survey Expert Committee and the Reactor Physics Division as a spring annual meeting planning lecture. In addition, the Nuclear Data Workshop was organized, and newsletters were distributed (3 times) and Nuclear Data News was published (8 times).

(Chairperson: Katsuhisa Nishio, 240 members)

10. Materials Science and Technology Division: The 43rd and 44th plenary meetings, planning lectures at the annual and fall meeting (the fall meeting "Current status of R&D related to irradiation reactor utilization and the necessity of domestic irradiation reactors (2)" and the spring annual meeting "DX utilization and issues in nuclear materials"), etc. were held and the division bulletin (July and December 2021 issues) was published. In addition, a "Study Session on Material Irradiation and Activation Analysis of Medium-Sized Test Reactors" was held by the Materials Division prior to the fall meeting to deepen understanding of the planned sessions. Furthermore, expectations and requests for fuel and material irradiation research using the medium-size reactor were collected in the form of a questionnaire to all the members of the division, and a proposal was compiled to show the requests and expectations for material irradiation at the Monju Site Test Reactor as the Materials Division. This proposal was submitted to the consortium of the Monju Site Test Reactor. A workshop on "Current status of research and development related to the utilization of irradiation reactors and the necessity of domestic irradiation reactors" was held under the auspices of the Materials Division to follow up on the planning lectures that had been conducted so far.

In the summer seminar, a joint tri-session seminar was held online together with the Nuclear Fuel Division and the Water Chemistry Division. The Japan-Korea seminar (hosted by the Korean Atomic Energy Society) was postponed to the Korean Atomic Energy Society in the fall of 2022.

We sponsored, participated and cooperated in the "Workshop on Accident Resistant Fuel Development" organized by the University of Tokyo and JAEA.

(Chairperson: Mitsuhiro Kodama, 270 members)

11. Operation and Power Division: The 40th and 41st plenary meetings were held. At the fall meeting, a planning lecture entitled "Voluntary Efforts by Industry to Improve Safety in Light of the Revision of the Basic Energy Plan" was held, and at the spring annual meeting, a planning lecture entitled "Nuclear Power Business Development Activities by Plant Manufacturers in Light of the Revision of the Basic Energy Plan" was held. In addition, a working group (Phase 2) on "Examination of Technical Requirements for Next Generation Light Water Reactors" was established and started its investigation and research.

(Chairperson: Mitsuhiro Yasuda, 325 members)

12. Reprocessing and Recycle Technology Division: The 41st and 42nd plenary meetings were held. At the Spring Annual Meeting, a planning lecture, "International Year of Glass 2022: The Role of Glass in Reprocessing Processes and Future Prospects," was held. We continue the review of safety assessment of reprocessing facilities in the "Severe Accident Research Working Group Phase 3". A seminar of the Reprocessing and Recycle Technology Division was held on March 14, with a lecture and discussion on the theme of "Nuclear Fuel Cycle and Zero Carbon Energy."  
(Chairperson: Takashi Matsuda, 367 members)
13. Computational Science and Engineering Division: The 30th and 31st plenary meetings were held. At the fall meeting, a planning lecture "Application of Virtual Space in Nuclear Energy" was held. In the spring annual meeting, a planning lecture "Application of Simulation Technology in Nuclear Fuel Development" was held jointly with the Nuclear Fuel Division. We also sponsored ICFD2021. In addition, we renewed our website and published newsletters (Nos. 36 and 37).  
(Chairperson: Yoshio Suzuki, 225 members)
14. Water Chemistry Division: The regular research meetings were held on the web due to the effects of the new coronavirus but three times as in the past. In addition, the 20th (extraordinary) and 21st plenary meetings were held. The joint summer seminar of the three divisions (Nuclear Fuel Division, Materials Division, and Water Chemistry Division) was held in August. At the 2022 spring annual meeting, we planned a session titled "Towards utilization and revision of water chemistry standards" and discussed examples of water chemistry standards utilization and opinions and requests for future revisions of it. At the same time, we cooperated in the planning lecture of the Research Special Committee on "Fission Product Behavior Related to 1F Decommissioning." In the area of international cooperation, it was decided that the "Asian Water Chemistry Symposium 2022 (AWC2022)" (host country: Japan/on the web) will be held in September 2022, and an executive committee has been established within the division to prepare for the event. The International Conference on Water Chemistry has been postponed again and will be held in the fall of 2023. The Handbook on Reactor Water Chemistry published in 2000 is being reviewed and updated to reflect the findings from the accident at the Fukushima Daiichi Nuclear Power Plant, and is scheduled to be published next year. As technical activities, a technical report entitled "Current Status and Issues on Evaluation Methods for Corrosion Environment of Primary Cooling System of Boiling Water Reactor" was published, and as public relations activities, the division bulletin (No. 13) was published and posted on the website.  
(Chairperson: Yutaka Watanabe, 194 members)
15. Nuclear Safety Division: The 26th and 27th plenary meetings were held. In June, the follow-up seminar on "Continuous Safety Performance Improvement: Significance and Role of Stakeholders"

was held as a follow-up to the discussion at the previous year's spring annual meeting. At the fall meeting, the [organized session] on "Nuclear Power Plant Safety Measures and Risk Management against External Events" was held, and its follow-up seminar was held in December. In the spring annual meeting, we organized [an organized session] on "Concepts and Issues on Evaluation of Severe Accident Countermeasures". In addition, the online seminar on "Preventions against Natural and Nuclear Disasters" was held in November. Two working groups, "Nuclear Safety for External Events" and "Investigation on New Inspection Procedure of Nuclear Facilities in Japan", have continuous activities. The workshops on "Accident Progress Analysis of the Fukushima Daiichi Nuclear Power Plant Accident" were held three times in collaboration with the Nuclear Regulation Authority (NRA). Materials used in the [organized sessions] and seminars, notes of proceedings, reports of working groups, and so on, are available on our website to widely circulate information on nuclear safety.

(Chairperson: Akio Yamamoto, 441 members)

16. Advanced Reactor Division: The 23rd and 24th plenary meetings were held. In the fall annual meeting, a planning lecture "Status of the Latest New Reactor Development for Supporting Nuclear Innovation" was held. In the spring annual meeting, a planning lecture "International Cooperation on Generation IV Nuclear Energy Systems and Status of R&D in Japan" was held. The presentations of the session are available on our website. In February, a lecture on fast reactor system design was held on the web. The presentation materials and videos of the lecture are provided free of charge to educational institutions and others. (Chairperson: Takaya Ito, 281 members)

17. Risk Science and Technology Division: The 9th and 10th plenary meetings were held. In the fall meeting, a session entitled "For continuous application of PRA to future - Suggestions from Research committee of Risk application and research trend in future" was held. In the spring annual meeting, a session entitled "The Latest Trends in Dynamic PRA" was held. Seminar entitled "Risk-Informed Systems Analysis (RISA) Activities and Future Directions" was held on November 24. The division bulletin No.8 and the Newsletter No.4 (ASRAM 2021 Special Feature) were published.

(Chairpersons: Akira Yamaguchi and Yoshiyuki Narumiya, 326 members)

## (2) Liaison Committee Activities

1. International Nuclear Information Network: The 65th and 66th Plenary meetings were held. To discuss domestic and international trends, we organized total four lectures; "Where is the Love? Why isn't Nuclear Power Embraced as THE Clean Energy Source? (Chairperson of ANS, Mary Lou Dunzik-Gougar), "Activities and Future Direction of the Generation IV International Forum (GIF)" (Dr. Hideki Kamide, JAEA), "Current Status of Nuclear Energy Utilization and Radioactive Waste Disposal in Canada"(Prof. Shinya Nagasaki, McMaster University, Canada), "Overseas Trends in Nuclear Innovation and JAEA's International Strategy" (Mr. Taijyu Shibata and Mr. Kentaro Funaki

of JAEA). In addition, as the Japan Chapter of ANS, we reported to ANS on the status of our activities in Japan. In addition, we published a bulletin (Report 46) on its activities, and exchanged information and liaison and coordination among its members.

(Liaison Chairperson: Hiroshi Ksanazaki, 169 members)

2. Student Network: The 38th plenary meeting was held. Continuing from the previous year, the Student Poster Session was held online at the fall meeting and spring annual meeting to deepen academic exchange mainly among students. Both the number of student poster session presentations and the number of attendees continued to increase over the previous year, with a record 54 students and more than 170 attendees registering to present or attend the spring annual meeting. However, the rapid increase in the number of presentations caused a problem at the spring annual meeting due to the excessive number of zoom breakout rooms, which resulted in the cancellation of the first day session. However, due to subsequent countermeasures, we were able to provide presentations and review sessions to most of the students who requested them. In collaboration with YGN, we also held an online dialogue between young nuclear professionals and students. The main theme of the dialogue was career paths in the nuclear field. In addition, an online study session on SNW and geological disposal was held, and several volunteers visited the JAEA Horonobe Underground Research Center for a field trip. After sharing important issues in online activities with the steering committee members, we will continue to focus on various activities and contribute to exchange among students and other activities. (Liaison Chairperson: Takanori Fukuda, 439 members)

3. Young Generation Network (YGN): The 21st and 32nd plenary meetings (November, March), the 17th - 26th Study Sessions for Young Nuclear Scientists ("Disruptive Innovation: Early Realization of Fusion" (June), "Is it Possible to Achieve the 2030 Greenhouse Gas Reduction Target of 46%?" (June), "Understanding the Media" (June), "Interview with Young Japanese Officials at the OECD/NEA. (August), "Overview of the Electric Power System and Challenges for Carbon Neutrality" (September), "Interview with a Science Education Professional. (September), "The Role of Nuclear Reactors in Medical and Life Sciences. (September), "Nuclear Power in Japan from the U.S. Perspective" (December), "What is Necessary for a Healthy Nuclear Fuel Cycle" (February), "Predicting the Future Nuclear Industry by Yourself! ~ (March), and a dialogue meeting between students and young professionals (December) were held online. In addition, the 8th Young Scientists' Discussion Meeting (November) was held as a hybrid of online and face-to-face meetings. As described above, we adopted online holding as a response to the Corona Disaster to promote self-development and mutual exchange among members. Information on these activities is disseminated to members through the YGN e-mail magazine and the YGN website. (Liaison Chairperson: Naoto Hagura, 344 members)

4. Senior Network (SNW) Liaison Committee: The 17th plenary meeting was held. The meeting with

university students and others named "Dialogue between Students and Seniors" recovered from the last Corona disaster year, however most of the meeting was held on the web. The seventeen meetings were held for the 24 participating universities and technical colleges, attended 360 students. We were unable to hold meeting with educators (middle and high school teachers), which had been held in the past. A public symposium titled "Toward the Realization of a Decarbonized Society in 2050" was held on the web on September 15 with approximately 250 participants. Although we did not hold a planning lecture for the fall meeting. But the spring session was held under the theme of "Global Decarbonization Trend and Influence on Students". On this session, it was presented and discussed how the decarbonization trend is bringing about a change in students' attitudes toward energy and nuclear power.

(Liaison Chairperson: Takao Tsuboya, 176 members)

5. Committee on Nuclear Non-Proliferation, Safeguards and Security: The 26th and 27th plenary meetings were held during the fall meeting and the spring annual meeting. At the fall meeting, a session was held on the theme of efforts for further contribution of Japan in the international community and experience as the staff of international organization in the field of nuclear nonproliferation and others, which had many participants, mainly young people and students who wish to work in international organizations. In the spring annual meeting, we held a planned session on the application of artificial intelligence technologies in the field of nuclear security, and discussed with participants the development and technical challenges regarding AI-based nuclear security technologies in the area of physical protection of nuclear facilities.

(Liaison Chairperson: Unesaki Hironobu, 82 members)

### (3) International Cooperation

#### (1) International Conferences

- International Conference on Nuclear Plant Water Chemistry 2020 (NPC2020) (2021/9/27-10/1, France (hybrid))
- Asian Symposium on Risk Assessment and Management (ASRAM2021) (2021/10/24-28, online)
- 2020 Joint Symposium of STSS (International Symposium on Socially and Technically Symbiotic Systems)/ISOFIC (International Symposium on Future I&C for Nuclear Power Plants)/ISSNP (International Symposium on Symbiotic Nuclear Power Systems)(2021/11/15-17, Okayama).
- OPTICS & PHOTONICS International Congress 2021 (OPIC2021)(2021/4/19-22, online)
- The 7th International Conference on Advanced Mechatronics (ICAM2021) (2021/7/1-2, online)
- The 28th International Conference on Nuclear Engineering (ICONE28) (2021/8/4-6, online)
- The 7th Asia-Pacific symposium on Radiochemistry 2021 (APSORC21) (2021/9/19-24, Fukushima)
- ALC'21 Online (13th International Symposium on Atomic Level Characterizations for New Materials and Devices, Online)(2021/10/19-20, Online) (10/19-20, 2021, Online), and other international

conferences in Japan and overseas.

## (2) International Exchange

- Due to the spread of the new coronavirus, the International Nuclear Student Exchange Program between Japan, the U.S., and Europe in FY2021 was cancelled.
- The 11th Japan-Korea Joint Summer School of the four divisions (Accelerator, Nuclear Data, Radiation Engineering, and Reactor Physics) was scheduled to be held in Korea, but it was postponed to 2022.
- The 8th Japan-Korea Student and Young Researcher Seminar on Nuclear Thermal Hydraulics and Safety was scheduled to be held in conjunction with the 12th Japan-Korea Symposium on Nuclear Thermal Hydraulics and Safety (NTHAS12) as an exchange program for students and young researchers on nuclear energy in Japan and Korea, but the event was postponed to 2022.
- The International Activities Committee is working to revitalize international activities, and is also involved in the activities of the International Nuclear Societies Council (INSC) and the Pacific Nuclear Council (PNC), which are international federations of nuclear societies. We also participated in the activities of the International Nuclear Societies Council (INSC) and the Pacific Nuclear Council (PNC), which are international federations of nuclear societies, as a representative of Japan, and used these international forums to communicate our ideas and promote initiatives to ensure nuclear safety, prevent nuclear proliferation, and address climate change issues. In addition, the 2020 INSC Global Award was presented to Professor Emeritus Shunsuke Kondo of the University of Tokyo for his many years of contributions to nuclear energy (nominated by the Society. (The award ceremony in Vienna in September 2021, which was postponed due to COVID-19, was cancelled.)
- The International Agreement WG was established within the International Activities Committee to promote the development within the Society of cooperation with overseas academic societies.

## (4) Liaison and cooperation with various organizations

### 1. Liaison Committee of Academic Societies Contributing to Fukushima Recovery and Decommissioning Promotion

In order to further effectively implement and promote activities contributing to Fukushima restoration and decommissioning, the Society made a proposal to academic associations with which it has contacts, and on May 20, 2016, the "Association of Academic Associations Contributing to Fukushima Restoration and Decommissioning Promotion" (hereinafter referred to as ANFURD) was established. ANFURD serves as the executive committee, and currently 36 science and engineering academic associations are

participating (<http://www.anfurd.jp/>). ANFURD aims to contribute to the post-accident reconstruction and decommissioning of Fukushima by bringing together the wisdom of the academic associations and disseminating information on the current situation and issues related to Fukushima and sharing information among academic associations.

This year, in addition to the regular plenary meeting to share information and exchange opinions on ANFURD's future activities, online seminars (6/12 and 1/18) were held as activities related to 1F treated water, one of the three important issues that this liaison group has identified as a challenge. In addition, to include understanding of radioactive waste and its management, we conducted 13 weekly webinars over a period of 3 months, which were well received. This webinar was a precursor to the weekly webinars for divisions and liaison groups that will be held in FY2022, and we will pass on our experience and know-how in the operation of these webinars.

## 2. Liaison and Cooperation Activities with Other Organizations

- The 54th Air-Conditioning and Refrigeration Union Lecture Meeting (The Society of Air-Conditioning and Sanitary Engineers of Japan)
- • The 33rd Symposium on Electromagnetic Force Related Dynamics (SEAD33) (The AEM Society of Japan)
- The 6th Symposium on Multiscale Mechanics of Materials (The Materials Science Society of Japan)
- The 58th Symposium on Heat Transfer in Japan (Heat Transfer Society of Japan)
- The 25th Symposium on Power and Energy Technology (The Japan Society of Mechanical Engineers)
- Symposium on Multiphase Flow 2021 (The Japan Society of Multiphase Flow Engineers)
- The 6th Symposium on Theoretical and Applied Mechanics (Science Council of Japan, Committee on Engineering Science, Committee on Mechanical Engineering)
- The 193rd Symposium on Corrosion Protection (Japan Society of Corrosion Protection)
- The 49th Symposium on Visualization Information (Visualization Information Society of Japan)
- The 37th Symposium on Fuzzy Systems (Japan Society for Fuzzy Informatics)
- Human Interface Symposium 2021 (Human Interface Society of Japan)
- SPring-8 Symposium 2021 (SPring-8 Users Community (SPRUC), Japan Synchrotron Radiation Research Institute, RIKEN)
- The 55th Symposium on X-ray Strength of Materials (The Materials Society of Japan)
- The 46th Symposium on Composite Materials (The Society of Composite Materials, Japan)
- The 42nd Symposium on Thermophysical Properties of Materials (The Japan Society of Thermophysical Properties)
- The 59th Symposium on Combustion (Combustion Society of Japan)
- The 35th Symposium on Computational Fluid Dynamics (Japan Society of Fluid Mechanics)
- The 30th Symposium on Atomization (The Liquid Atomization Society of Japan)
- The 30th Symposium on Radiation Application (Osaka Nuclear Science Society)

· The 29th Symposium on Nondestructive Evaluation by Ultrasonic Waves (Japan Society for Non-Destructive Inspection)

In addition, we co-sponsored, supported, and cosponsored other related academic meetings, including cooperation with the Japan Society of Industrial Engineers, of which we are a member. We also cooperated in soliciting and recommending candidates for awards requested by other organizations.

## 6. Other activities necessary to achieve the objectives of the Society

### (1) Management Improvement and Member Service Improvement Activities

The Society continues to implement management improvement activities. As in the previous fiscal year, travel and meeting expenses were reduced through the wide use of online conference, resulting in a nearly break-even financial statement for the current fiscal year. We will continue to actively promote the use of online conferencing while paying attention to the revitalization of the society's activities.

In addition, we are working to maintain and increase the number of members in light of the recent downward trend in membership. As a measure to reduce the number of senior members withdrawing from membership, we plan to introduce a membership fee discount system from FY2022, and we made preparations for the introduction of the system this fiscal year. In addition, we are working to improve member services in order to attract new members as well as keep them as members. As part of these efforts, we identified current issues with the member login page on the website and organized items for improvement. In addition, we have launched an information provision service via weekly webinars.

We have decided to establish a free registration alumni system starting next year, which will provide objective information and opportunities to interact with experts to as many people as possible who have some interest in nuclear energy, and we will also work to increase the number of members by stimulating interest in the activities of the Society.

### (2) Public relations and information activities

In order to actively disseminate information to society, we issued a "Statement of Protest Against the Russian Military Attack on the Zabolitsiya Nuclear Power Plant in Ukraine" (March 4) and seven other press releases to inform the media of the Society's activities and other information. The President's Press Conference, which coincided with the inauguration of the new President, the Fall Congress, and the Spring Annual Meeting, was held online rather than in person to prevent the transmission of the new coronavirus. A new roundtable meeting between the President and the media was held (November 11) to provide timely information to the press and promote exchanges. The Extreme Event Explanation Team (Team 110), which provides explanations in response to requests to the Society from local governments and the media, conducted normal activities in accordance with the guidelines established in FY2020. In



addition, the website operation working group studied the revision of the English website and decided on a policy and specific process, while at the same time studying the structure of the member login page and creating a test page in cooperation with the Member Services Committee. The Position Statement Working Group examined ways to improve the system and structure for issuing PS, with the aim of ensuring that PS is issued in a timely manner and with a clear message. We will continue to study improvements, and after reviewing the regulations, we aim to implement the system in FY2022. In addition, we actively implemented an e-mail distribution service for members.

### (3) Planning Activities

In response to the follow-up to the recommendations of the Society's Accident Independent Investigation Committee last fiscal year, we formulated regulations to review the Society's Code of Conduct at least once every five years, and discussed ways to confirm the contents of the current Code of Conduct and to promote its penetration and dissemination, and organized future issues with the cooperation of the Board of Directors. In addition, we discussed overarching responses to issues to be addressed by the Society identified last year from the follow-up to the recommendations of the Society's accident investigation, proposed the establishment of a task force to the Board of Directors, and contributed to the compilation of recommendations for future Society activities on a cross-organizational basis.

Furthermore, as part of its activities in the 10 years since the accident, the WG for the Future of Nuclear Energy (led by Kenta Murakami), organized mainly by young and mid-career members of the Society, presented its final report, "Issues to be addressed to make nuclear energy more attractive and recommendations for their solution." In addition, the "Next Generation Information Dissemination WG (lead by Jun Nishiyama)," which was established in the same manner as the aforementioned WG, began continuous outreach activities through video distribution using the Society's official YouTube "ATOMIRU" channel.

As in previous years, we planned and organized Board of Directors sessions at the fall meeting and the spring annual meeting. At the fall meeting, we discussed the direction of nuclear energy and our society for the next era from both internal and external perspectives, against the backdrop of discussions on the revision of the Basic Energy Plan, as part of the "Re-thinking the Value of Nuclear Energy and the Role to be Fulfilled by the Society" session. At the spring annual meeting, experts from within and outside the Society discussed how to apply the Society's "knowledge" to the new energy index "energy well-being" identified in the discussion, and panel discussions were held to deepen the discussion.

### (4) Ethics Activities

The Ethics Committee has been working on the revision of the Code of Ethics in earnest since 2019, taking into consideration the TEPCO Fukushima Daiichi Nuclear Power Plant accident, the KEPCO money and goods transfer problem, the frequent quality fraud problems of manufacturers, and the organizational culture issues common to these problems. Based on the opinions received from the public,

the Ethics Committee approved the final draft at the May 2021 in the Board of Directors meeting. The revised Code of Ethics was made public on our website and published in our journals to inform our members.

As a consideration of ethics-related issues, the nuclear security case of the TEPCO Kashiwazaki-Kariwa Nuclear Power Station was taken up, and a discussion on fostering a nuclear security culture was held in the planning lecture of the fall meeting in 2021. We decided to express our view as the Ethics Committee based on this matter and proceeded with the discussion.

In the planning lecture for the spring annual meeting 2022, the discussion was based on a lecture from the perspective of wellbeing, which is the goal of positive ethics "oriented ethics".

In light of the 20th anniversary of the establishment of the Society's Code of Ethics and the Ethics Committee in 2001, we are proceeding with the publication of articles contributed by experts on ethics in the Society's journal (scheduled for one year from the December 2021 issue), and in the fall of 2022 we will hold a symposium to look into the future regarding ethical activities. Preparations are also underway for a symposium on the future of ethics activities to be held in the fall of 2022.

We continue to follow up on issues related to ethics, such as the organizational culture of research institutions and discussions using AI technology as an example, in light of changes in society.

We dispatched lecturers to member organizations' technical ethics training (7 times) and cooperated with universities and other organizations by giving lectures at their request. We also continued to participate in technical ethics councils and other meetings to share information.

#### (5) Fellow System and Activities

The Society conferred the title of Fellow to regular members who have made outstanding contributions to the development of the Society, in order to honor them and encourage them to contribute to the further development of the Society.

At the spring meeting in 2022, we held a ceremony to certify new Fellows and a "Gathering of Fellows," and gave a lecture titled "Japan's Nuclear Energy Policy and Current Situation. In addition, we supported the participation fee for one student member to present at an international conference.

#### (6) Diversity Promotion Activities

A poster session was held at the fall meeting in 2021 as an attempt to build broad-based connections beyond the boundaries of affiliation and occupation. Approximately 30 engineers and students working in the nuclear field participated in the session. Although it was in web format, the poster session utilized breakout rooms and provided an opportunity for everyone to gather and exchange ideas, resulting in

lively discussions and networking.

We participated in the "Girls' Summer School 2021" held online on August 8 and 9, 2021. This year, in addition to the traditional poster and career counseling, we participated in an experimental event for the first time as a society; with the cooperation of QST, we worked with young students on the various functions of radiation using radiation cross-linked polylactic acid resin.

The Gender Equality Academic Society Liaison Committee actively participated in the steering committee meeting and symposium, which were also held on the web, to investigate about gender equality activities of other organizations and to promote the efforts of our society.

The Committee's website was greatly improved in terms of readability, and in addition to posting activity reports in a timely manner and disseminating information on related events, SNS was also introduced to actively disseminate information on the promotion of diversity.

(<http://www.aesj.or.jp/~gender/>)

#### (7) Educational Activities

Activities related to support for nuclear-related school education, support for engineer education, and support for nuclear human resource development in collaboration with related organizations in other fields were continued.

The Division on Elementary and Secondary Education established the Textbook Survey WG, continuing on from last year, to conduct a survey of energy/environment- and nuclear-related descriptions in junior high school social studies, science, health and physical education, and technology and home economics textbooks edited based on the Courses of Study revised in 2017 and in use from FY2021, and submitted a report to the Ministry of Education, Culture, Sports, Science, and Technology, textbook companies, etc.

In higher education, we collaborated with the Advanced Nuclear Energy Consortium for Future Society (ANEC) of the International Nuclear Human Resource Development Initiative of the Ministry of Education, Culture, Sports, Science and Technology (MEXT), and planned the session "Toward the Construction of a Cross-organizational Nuclear Education Infrastructure; International Nuclear Human Resource Development Initiative Project" as the Education Committee at the spring annual meeting 2022. Initiative Project" at the Spring 2022 meeting. In cooperation with the YGN and the Student Liaison Committee, the committee requested notification of the Liaison Committee and other events to the Council of Nuclear University Teachers.

With regard to engineer education, we continued our efforts to support the acquisition of professional engineer qualifications through the Working Group for Supporting Preparation for the Professional

Engineer Examination, which was established in FY2019. Specifically, the working group members and their collaborators (volunteers) prepared explanations of the questions for the Professional Engineer Examination conducted in 2021, and held the 12th Professional Engineer System and Examination Seminar online in February 2022. In addition, we registered the programs recommended by the committees, divisions, and liaison groups of the Society as "Continuous Professional Development (CPD) Programs for Nuclear Engineers and Researchers" recommended by the Education Committee, issued certificates in the name of the Education Committee Chairman to those who attended the programs, and registered CPD achievements of our members. In FY2021, there were 9 registered programs, 129 certificates of implementation were issued, and 53 new registrants were registered. In total, 1,095 certificates were issued and 648 people were registered, exceeding 10% of the total membership. In light of the recent increase in the number of registrations, the Society is studying and experimenting with ways to improve the efficiency of the CPD registration system. In addition, we are also working to collaborate with related organizations by posting on the Society's website, distributing AESJ news and other activities to increase the establishment and recognition of CPD, and participating in the CPD Council.

As part of our efforts to promote sales of "Nuclear Energy Today and Tomorrow," a sister book to "The Century Opened by Nuclear Energy," which was published in October 2019 with a reprint of 2,000 copies, we awarded the 2021 Fellow Award winners (35) and student poster session winners (13 at the fall meeting 2021 and 14 at the spring annual meeting 2022) by providing the sister book as the supplementary prize.

The Network of Senior Members of the Society conducts dialogue activities with university students and others who will lead the next generation in order to contribute to the transfer of technology and human resource development. The Network makes every effort to prepare nuclear engineering students to become engineers who will be responsible for nuclear power in the future, to provide education students with accurate guidance on energy, including nuclear power, and to help liberal arts students understand the importance of nuclear power in their energy choices. This year, as in the previous year, most of the sessions were web-based, but the number of sessions increased from the previous year due to the improvement of the dialogue environment. Seventeen dialogue sessions were held for the 24 participating universities and technical colleges, and 360 students participated. As in the previous year, we were unable to hold dialogues with educators (middle and high school teachers).

### 7. Membership Transfers Status

|  | End of previous year Memberships | Joined | Resigned Transfers | End of current year |
|--|----------------------------------|--------|--------------------|---------------------|
| Regular members<br>(including recommended members) | 5,888                            | 293    | 469                | 5,707               |
| Student Members                                    | 435                              | 233    | 169                | 439                 |

|                     |               |             |     |               |             |
|---------------------|---------------|-------------|-----|---------------|-------------|
| Educational Members | 6             | 2           | 2   | 0             | 6           |
| Total               | 6,329         | 528         | 640 | 65            | 6,152       |
| Supporting members  | 206 companies | 919.2 units |     | 2 companies   | 2 units     |
| Increase            | 3 companies   | 12 units    |     | 7 companies   | 9 units     |
| Decrease            | 0 company     | 0 units     |     | 201 companies | 924.2 units |

8. Annexed schedules to the business report for fiscal year 2021

The Business Report for FY2021 will not be prepared because there are no "important matters that supplement the contents of the Business Report" that should be included as supplementary schedules as stipulated in Article 34, Paragraph 3 of the "Enforcement Regulations for the Law Concerning General Incorporated Associations and General Incorporated Foundations".