

11. Research Enhancement Strategy Office

The Research Enhancement Strategy Office (RESO) was founded in October 2013, and three University Research Administrators (URAs) were assigned. Under the Research Planning Task Group, the following four Task Groups were organized.

- (1) IR(Institutional Research)/Evaluation Task Group
- (2) Public Relations Enhancement Task Group
- (3) Collaboration Research Enhancement Task Group
- (4) Young Researchers Development Task Group

The IR/Evaluation Task Group was newly established in FY2017 as a new emphasis.

(1) The collaborative research activities

- 1) Enhancing international collaborative research in the stellarator-heliotron (S-H) plasma, and steady-state operation (SSO) toward a fusion reactor

The second helical plasma experiment (OP1.2a) for Wendelstein 7-X (W7-X), which is promoted by Max Planck Institute of Plasma Physics (IPP) in Greifswald, Germany, was carried out from Aug. to Dec. 2017. Several scientists in NIFS were assigned to IPP to initiate collaboration. In order to accelerate the collaborations, the Annexes to the NIFS-IPP Agreements were modified.

Collaborative research was also enhanced with PPPL and the University of Wisconsin in the United States, CIEMAT in Spain, CEA in France, CONSORZIO RFX in Italy, Culham Centre in the United Kingdom, and Southwest Jiaotong University (SWJTU) in China.

2) International research network for integrated plasma physics

NINS promotes the international research networks with Princeton University and Max-Planck Research Institutes for the integrated plasma physics. Following the Memorandum of Understanding (MoU) with Princeton University made in 2017, three MoUs for the international collaborations within the integrated plasma physics framework were made with three Max-Planck institutes, namely, Max-Planck Institute for Plasma Physics (IPP), Astrophysics (MPA), and Solar System Research (MPS).

A postdoctoral fellow was employed for a term of two years and was involved in the international collaborations between NINS and Princeton University.

3) Promoting establishment of Agreements with institutes in East Asia to accelerate collaborative research

In order to enhance helical and stellarator research in East Asian countries, NIFS concluded a new general agreement with SWJTU in 2017, under which a joint-experimental project was started. Young researchers of SWJTU visited NIFS to obtain experience for designing magnetic coils. The target parameters of the joint-experiments were determined through several headquarter meetings.

(2) Supporting young researchers

In the activities for supporting young researchers, international collaboration activities of young researchers were encouraged, enhancing their basic research skills. RESO supported the international collaboration plans proposed by young researchers in NIFS. Applications were reviewed by the Young Researchers Development Task Group. Two programs were supported in FY2017 as follows.

1. Development of flow monitoring of multi-isotopes in the atmosphere for establishing precise monitoring method of tritium diffusion.
2. Simulation code benchmark study for the energetic particle driven instabilities of EGAM and TAE in the ASDEX-U and LHD devices.

In addition, RESO supported the basic research plans of young scientists for the purpose of enhancing their fundamental scientific skills. Two programs were supported in FY2017 as follows.

1. Experimental study of the effect of double sheath structure of plasma-wall surface on negative ion beam production.

2. Improvement of automatic physics modeling analysis system of LHD experimental data by enforcing the magnetic surface database.

RESO also assisted the applications of young scientists to the “Grants-in-aid Scientific Research” program. Approximately 70 application documents were reviewed and suggestions were given to the authors for improvement.

(3) Enhancing public relations

1) Dissemination of research achievements through EurekAlert!

Five topics were released : i) “Clarifying the Mechanism for Suppressing Turbulence through Ion Mass: Theoretical Research Develops Significantly towards Improved Performance in Fusion Plasmas,” ii) “How Do Impurities Move in Tungsten?: Automatic and High-speed Search on Migration Paths by Using a Supercomputer,” iii) “Ion Temperature of One Hundred Million Degrees Achieved: Important Progress toward Feasibility of Helical Plasma Fusion,” iv) “Success in Enhancing Performance of the Cryogenic Adsorption Pump Used in the Divertor: Making Possible the Effective Evacuation by Installing in the Vacuum Vessel,” and v) “A New Discovery that Makes Possible Prediction Immediately Before Plasma Loss: Contributions to the Prediction of Volcanic Eruptions and Other Sudden Phenomena.” These topics were released to the media in Japan, too. Some topics attracted attention from international media.

2) Improvement of Web page for foreign researchers

The Web page in English was enriched by uploading “Research Update” for dissemination of research activities to readers overseas. English translation of guides for recruiting collaborative research was upgraded.

3) Outreach activities based on the fusion community

One of the outreach activities is to join the organization of ITER/BA Projects annual report meeting. RESO exhibited panels showing NIFS research activities at the meeting.

4) Others

RESO introduced interesting science topics to citizens on the occasion of the science café at the Open House of NIFS shown in Figure 1.

The NINS symposium entitled “Infinite Possibilities to be Developed by Plasma – Energy, Medical, Industry and Space” was held by NIFS at Sakata-Hirata Hall in Nagoya University on March 11, 2018. RESO was the core of the host organization. Figure 2 shows a photo of an exhibition of NINS activities, held jointly with the Symposium.

(4) IR/Evaluation activities

A new task group for the IR (Institutional Research) and evaluation was started in 2017 in order to make systematic analyses of the present research activities of the institute and for giving proposals to improve the research management of the institute. A systematic review was undertaken for recognizing what are important issues in managing efficient research collaborations of NIFS and in enhancing high level research. Two reports were given to the director general of NIFS.

(T. Muroga)



Fig. 1 The science café at the Open House of NIFS.



Fig. 2 Exhibition of NINS activity jointly held with NINS Symposium at Nagoya University.