

9. Research Enhancement Strategy Office

The Research Enhancement Strategy Office (RESO) was established on November 1, 2013, to strengthen the research activities of the Institute by planning various support programs for the researchers and conducting public relations programs for making fusion science more understandable in society. Three University Research Administrators (URAs) are working in the following five Task Groups:

- (1) IR (Institutional Research)/Evaluation Task Group
- (2) Young Researchers and their Career-path Development Task Group
- (3) Collaboration Research Enhancement Task Group
- (4) Public Relations Enhancement Task Group
- (5) Financial Basis Strengthening Task Group

(1) IR/Evaluation

The task group for the IR and evaluation continued its role to make systematic analyses of the present research activities of NIFS. Statistical data of publications and scientific reports were collected using the NIFS article information system (NAIS) with complementary data obtained through the Scopus and WoS public research resource supplying companies. The following candidates for unique indicators that can demonstrate the strength of the research capabilities of NIFS were investigated.

1. Total number of journals publishing NIFS articles
2. Percentage of internationally co-authored papers among total published papers
3. Total number of papers mentioning NIFS in acknowledgments
4. Increase in papers using keywords from different fields (examined through Text Mining)
5. Number of journals that publish papers citing NIFS papers

An IR Report No. 7 was edited and distributed, in which the evaluation indicators for NIFS specified in the Fourth Mid-term Goals and Plans were explained, and a policy to satisfy the indicators was proposed.

(2) Supporting Young Researchers

In the activities for supporting young researchers, their startup research was supported to enhance basic research skills. Applications were reviewed by the Young Researchers Development Task Group, and the following programs were supported in FY2022:

1. *Investigation of electron cyclotron (EC) motion and its resulting radiation processes* (Yuki Goto),
2. *Understanding and creation of applications for migration phenomena of supersaturated hydrogen in materials due to super-permeation of hydrogen* (Makoto Kobayashi),
3. *Creation of innovative forming method using Transformational Superplasticity* (Hiroyuki Noto).

A debriefing meeting was held in April 2022 for the three people who received support in FY2021.

RESO also assisted with the applications of young scientists to the ‘Grants-in-aid Scientific Research’ programs and other competitive external fundings.

(3) Supporting Enhanced Collaboration Research

NIFS has concluded international exchange agreements with many world-class research institutes. RESO supported the implementation of these international joint research activities.

W7-X of the Max-Planck Institute for Plasma Physics (Germany) is a modular stellar device and RESO supported joint research on common issues of helical devices. With Southwest Jiaotong University (China), we supported the construction of CFQS, a helical type quasi-axisymmetric magnetic field configuration confinement device, and supported research on differences in magnetic field configuration. RESO supported the implementation of joint research on helical devices at the University of Wisconsin (USA) and the CIEMAT Institute (Spain).

RESO dispatched researchers to explore new potential for joint research. NIFS researchers also actively par-

participated in international research activities such as ITER, and supported the strengthening of the presence of NIFS. Based on the Plasma Wall Interaction(PWI) Agreement, a multilateral compact of the International Energy Agency, we supported the implementation of joint research to understand plasma-wall interactions in nuclear fusion devices.

Through cooperation between Japan and China, RESO supported the implementation of joint research and personnel exchanges aimed at promoting nuclear fusion research. As a Japan-Korea nuclear fusion cooperation project, RESO supported a mutual exchange between KSTAR and the LHD, technical cooperation on measuring and heating equipment, implementation of workshops in each research field, and implementation of researcher exchanges.

(4) Enhancing public relations

- 1) Dissemination of research achievements through EurekAlert!

Six topics were released: (i) “Successful improvement of plasma thermal insulation layer with deuterium”, (ii) “Discovery of high-speed moving plasma turbulence for the first time in the world”, (iii) “The process of waves carrying plasma heat is observed for the first time in the world”, (iv) “Development of high-time-resolution measurement of electron temperature and density in a magnetically confined plasma”, (v) “Cooling 100 million degree plasma with a hydrogen-neon mixture ice pellet”, and (vi) “Simplified calculations reproduce complex plasma flows”. These topics were released to the media in Japan, too. Some topics attracted attention from the international media.

- 2) Information release about NIFS and fusion science

Sixteen research results were released in the press and disseminated on SNS (twitter and facebook) .

- 3) Outreach activities based on the fusion community

RESO joined a discussion on fusion science outreach headquarters with QST, universities and the Ministry of Education, Culture, Sports, Science and Technology.

- 4) Others

RESO introduced interesting science topics to the public on the occasion of the Science Talk at the Open Campus Online of NIFS, as shown in Figure 1. RESO produced movies briefly introducing researchers’ activities.

(5) Strengthening Financial Basis

Activities are being carried out with the aim of strengthening the financial base of the institute. Support activities were carried out by holding briefing sessions to obtain competitive research funds such as Grants-in-Aid for Scientific Research (KAKENHI), JST, and NEDO, and by supporting the preparation of application forms.

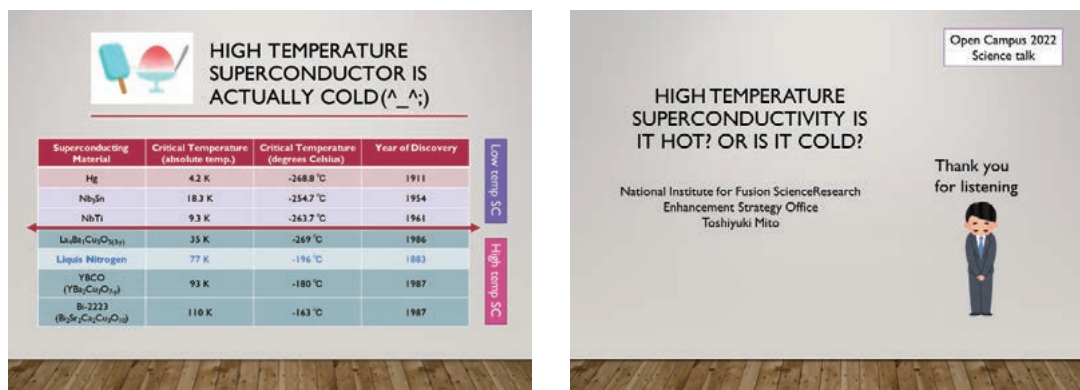


Fig. 1 Science Talk at Open Campus Online of NIFS. Prof. Mito talked about superconductivity to the public online.

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