

JAEA Committee Discusses Japan Material Testing Reactor

On December 6, the Japan Atomic Energy Agency (JAEA) held the second meeting of its committee to study the use of the JMTR (Japan Material Testing Reactor) at its O-arai Research and Development Center. The members discussed several topics, including (1) the evaluation of JMTR by its various users, (2) radioisotope production, and (3) industrial applications for research reactors, including silicon doping. (See the November 10 article entitled "JAEA Discusses Future of JMTR.") The committee is headed by Vice Chairman Masao Takuma of the Japan Atomic Industrial Forum (JAIF).

At the start of the meeting, Vice Chairman Akira Kawahara of the Atomic Energy Society of Japan presented the results of an investigation on the use of irradiation testing facilities. The report consolidated JMTR-related items extracted from a questionnaire on the use of testing reactors, distributed in March by the society's special committee to the members of its subcommittees on nuclear fuel, materials and nuclear fusion engineering.

According to the questionnaire, a large gap exists between the perception of private-company users and those from universities and national organizations in their evaluation of the JMTR, with the former being relatively severe. For example, they said that not enough space was available for use, with long turnaround times (as a result of the long time it took after applying for use to obtain data on test results), and they also complained about the high charges for the use of the facilities, as well as the strict statutory regulations surrounding the use, not to mention the insufficient technical support given by the staff at the facility.

They also drew unfavorable comparisons between JMTR and similar irradiation testing facilities overseas, saying that (1) JMTR's technical support system for testing was insufficient, (2) the application of safety regulations to research reactors (i.e., JMTR) to the same degree as commercial reactors makes it hard to implement innovative studies, and requires lengthy times to obtain approvals, and (3) the high cost of JMTR's user fees.

Another topic discussed at the meeting was the need for silicon doping – the irradiation of silicon in reactors to produce semiconductors. Managing Director Masahiko Isshiki of the Radiation Application Development Association (RADA) explained that while 70% of the world's neutron doping transmutation silicon (NDT-Si) is produced by Japanese companies, only 3% of such irradiation is done in Japan. Demand for NDT-Si is expected to increase in the future, partially attributable to the expansion in the use of hybrid cars. Isshiki noted that JMTR's current annual handling capacity of just five tons could be increased to as much as 46 tons by the year 2011, as long as it was modified for 8-inch diameter silicon irradiation and linked with the JRR-3 (Japan Research Reactor-3).

Finally, at the meeting, Director Nobuhiro Takeuchi of Chiyoda Technol Corporation gave an explanation about the current state of radioisotope production and its future prospects. He requested the following steps be taken regarding the use of JMTR and other research reactors: (1) ensuring appropriate operational cycles using multiple reactors for a stable supply of homogeneous products; (2) assuring the stable operation of reactors; (3) reducing the facilities' usage charges; (4) building more flexible irradiation programs and operational systems; and (5) creating a mechanism to remove material halfway through an operation. He also asked for greater flexibility in carrying out irradiation applications, which currently require three months.

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