

Approach to planning “futuristic medium size (3-GeV) synchrotron radiation facility with high brilliance in East Japan”

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This document gives a brief account of the background, planning and preparation of the prospectus on the energy-saving innovation support type synchrotron radiation facility (abbreviation: East Japan 3-GeV SR facility”).

As is well-known, Tohoku district in north eastern Japan, especially Fukushima, Miyagi, and Iwate prefectures suffered significant damage from great East Japan earthquake and tsunami that happened on 11 March 2011. For example, Tohoku University is an example of an institution that was seriously affected. Fortunately, our laboratories in the Institute of Multidisciplinary Research for Advanced Materials (IMRAM) escaped crippling damage. However, we spent a lot of time for cleaning up a heap of rubble caused by the earthquake and making repairs of damaged equipments, so that we did not start any discussion about the plan for the synchrotron radiation facilities immediately after the disaster. It should be noted that the president and the executive staff members of each university in Tohoku district energetically managed the reconstruction plan directly.

During the reconstruction phase, towards the end of June 2011, some professors had unofficial meetings for discussing a reconstruction plan which is an alternative to the the presidents’ plan. After obtaining valuable advice from specialists, discussions focused on "the energy-saving innovation support type synchrotron radiation facilities with about 3-GeV", which is believed to contribute significantly to innovative development of science and technology in the whole area of north eastern Japan (Tohoku area) and its surroundings. We tentatively formed East Japan (Tohoku) synchrotron radiation facility committee with Dr. Waseda as the corresponding secretary. The plan of East Japan 3-GeV SR facility was explained to the president and executive directors of seven national universities in northeast area. We were pleased to obtain their agreement for the basic direction of the plan. A contact person from each university was also identified so that full plan review could continue.

References :

Dr. Osamu Nittono, President of Fukushima University, National University Corporation (5 August 2011)

Dr. Katsumi Fujii, President of Iwate University, National University Corporation

(23 August 2011)

Dr. Noboru Yoshimura, President of Akita University, National University Corporation (24 August 2011)

Dr. Akio Yuki, President of Yamagata University, National University Corporation (29 August 2009)

Dr. Masahiko Endo, President of Hirosaki University, National University Corporation (30 August 2011)

Dr. Kosuke Takahashi, President of Miyagi University of Education, National University Corporation (5 September 2011)

Dr. Akihisa Inoue, Chancellor of Tohoku University, National University Corporation (4 October 2011)

In the past, there was a synchrotron radiation plan of Tohoku University alone. However, the present plan is not an extension the previous one. Instead, the present plan is intended for a joint project of seven universities in the north eastern area.

Futuristic medium size (3-GeV) synchrotron radiation facility (East Japan 3-GeV SR facility) is planned to provide a new top-level application-orientated SR facility to various technological subjects and great contributions are definitely expected not only for giving innovative technology promotion in the whole area of north eastern Japan and its surroundings but also for strengthening / developing industries for producing valuable high-tech products and many advanced materials in the whole of Japan. This new plan is also thought to be quite essential from a viewpoint of risk management that we definitely learned from the disasters on 11 March 2011. Since another huge earthquake is predicted with sufficiently high probability in both western and southern parts of the Japanese main island in near future, SR facilities geographically distributed would provide better hazard management.

It is appropriate to state here that the plan of "East Japan 3-GeV SR facilities" was not conceived secretly and prepared in a hurried and sloppily manner. The plan is the result of good collaboration of several volunteers who want to promote innovative development of science and technology in East Japan over a relatively longer period. The present plan is essentially a joint proposal of seven National Universities in the north eastern district of Japan. The plan was initially intended for inclusion in the special governmental budget for recovery from damage of great East Japan earthquake. However, at that time, sufficient discussion among specialists had not taken place about the concept of East Japan 3-GeV SR facility. Some more time was required for

dialogue and debate in the scientific and technological communities about mutual interests. For this reason, in the chaos of earthquake recovery, we did not want to burden the affected communities and explain such an important concept to as many parties concerned as possible and obtain support from a large number of specialists and non-specialists. This is one of the reasons why formal presentation of the prospectus (the first proposal) was made in December 2011, about six months from the start of consultations.

We are aware that there are several intricate problems in realization of the " East Japan 3-GeV SR facility" and tasks ahead for the corresponding secretary is quite difficult. However, we are encouraged by the support and approval of many concerned professors from the seven national universities, the public institutions and people working in industries in East Japan area. The plan will catalyze cooperation between industry and academia. The joint use of the synchrotron radiation facility makes "close cooperation of basic science and industrial application" possible. It will also contribute to "the expansion and development of the synchrotron radiation community" nationwide as well as in the asian bloc.

A special committee the Japanese Society for Synchrotron Radiation Research (Chairman: Jun'ichiro Mizuki) that was established for discussing the conceptual plan of "East Japan 3-GeV SR facility" in January 2012. We are sure that the public evaluation will be given by specialists and it will include all aspects such as validity and usefulness of the facility, performance, construction, management and public utilization from both the scientific and technical points of view.

The present plan of East Japan 3-GeV SR facility may have a relation with other plans such as the "international linear collider (ILC)" or "ERL plan/design" of KEK. However, we believe that these three plans are complementary and a synergistic effect is also expected for development and innovation of science and technology in our country. Although the " East Japan 3-GeV SR facility" is conceived directly from the viewpoint of reconstruction and recovery of Tohoku district in north eastern Japan from the great East Japan earthquake that happened on 11 March 2011, it is well integrated with the concept of the risk management and for maintaining the global COE base in the region, where there are many excellent factories for supplying high-tech materials such as car components and many institutions for advanced materials research. It is a defense against the future disasters such as East Nankai great earthquake which is predicted with high probability.

Comments and suggestions for improving the concept and implementation are most welcome. Your support and collaboration are very much appreciated.