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**MEMORANDUM OF UNDERSTANDING
ON SCIENTIFIC AND TECHNOLOGICAL COOPERATION
BETWEEN
THE DEPARTMENT OF SCIENCE AND TECHNOLOGY, GOVERNMENT
OF INDIA
AND
THE HIGH ENERGY ACCELERATOR RESEARCH ORGANIZATION
(KEK), JAPAN**

The Department of Science and Technology, Government of India (hereafter "DST") and the High Energy Accelerator Research Organization (hereafter "KEK"), hereinafter referred jointly as "the Parties",

in order to strengthen the cooperation between the scientists and other concerned people in the two countries,

in accordance with the Letter of Intent signed by the Parties on 24th July 2007 in Tsukuba,

have agreed the following articles to establish a relationship and co-operation in the field of high energy accelerator research including setting up a beamline at the Photon Factory (hereafter "PF"), KEK Tsukuba, for the use of Indian Scientific community.

Article I

Setting up Beamline

- 1) DST will draw up the Detailed Project Report (hereafter "DPR") through consultation with KEK, and set up a beamline at PF based on the DPR.
- 2) KEK will lease a part of the beamline BL-18B downstream of the beryllium window that separates the vacuum of the beamline from that of the storage ring. The part is in accordance with the DPR, and the detail will be fixed separately.
- 3) DST will be responsible for the maintenance and operation of the beamline. KEK will be responsible for the maintenance and operation of the front-end and the interlock system of the beamline.
- 4) DST will set up the necessary equipment for experiments based on the DPR.

- 5) DST will provide the financial support for the beamline based on the DPR.
- 6) At the end of the term, in principle, DST will be responsible for the removal of the experimental equipment installed in the beamline by DST.
- 7) Upon the Parties' agreement, DST may modify the beamline. At the end of the term of this MOU, upon KEK's agreement, the obligation to restore the beamline to the original condition might be exempted.

Article II

Beamline Operation

- 1) DST will organize a team of Indian scientists, engineers and technicians (hereafter "Indian Team"), and the Indian Team will be responsible for the operation and maintenance of the beamline and the equipment including safety measures and the support of the operation cost. At least two members of the Indian Team will reside at KEK and KEK will lease an office for the team.
- 2) KEK will provide electricity, circulating cooling water, pressurized air and liquid nitrogen required for conducting the experiments on the beamline within the limit of the existing facility at PF.
- 3) KEK may use the end-station including the equipment installed by DST for user experiments up to a limit of 50% of available user beam time in consultation with the Indian Team. The experiments using the equipment installed by DST will be supported by the Indian Team. Upon the Parties' agreement, other experimental apparatuses can be brought to the end-station.
- 4) DST will review the proposals through experts' committee for experiments to be carried out by the Indian side users and report to the Director of Institute of Materials Structure Science about the details of the proposals. KEK can give advice and instructions for the safety control.
- 5) The results arising from research conducted using the beamline should be publicly announced through scientific papers etc. Non-proprietary experiments as mentioned will not be charged. The proprietary experiments will be processed and be charged according to the KEK rules.
- 6) KEK may give the Indian Team technical advice and instructions at their request, specifically for the leased part of the beamline.

- 7) The Indian side users may use the dormitory and other research environment such as library, network etc. as domestic users.

Article III

Steering Committee

- 1) A Steering Committee (hereafter "Committee") comprising of experts nominated by DST and KEK will be set up to oversee the smooth progress of the beamline construction and operation.
- 2) An Experts Committee can be set up under the Committee

Article IV

Regulations

- 1) The researchers from the Indian side who conduct experiments under this Memorandum must follow the KEK guidelines for the safety control as well as keep to the rules on radiation, chemicals, hazardous materials designated by KEK and regulations of the Japanese Government.

Article V

Lease of the Beamline

- 1) Duration of the lease of the beamline is from April 1st, 2009 to the expiration of this Memorandum. The lease cost will be 15,000,000JPN Yen per year including the consumption tax, an office fee for the team and the utility fee.
- 2) DST will pay the lease cost to the KEK's bank account every fiscal year upon KEK's request.
- 3) In case of extending the term of validity of this Memorandum, the lease cost shall be discussed again for each extension.

Article VI

Intellectual Property

- 1) In the event of inventions resulting from the research using the beamline, the parties will hold consultations on how to deal with the said inventions.

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- 7) Upon the Parties' agreement, DST may modify the beamline. At the end of the term of this MOU, upon KEK's agreement, the obligation to restore the beamline to the original condition might be exempted.

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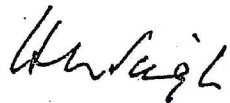
Article VII

Others

- 1) Only peace and nonmilitary research can be carried out at the beamline according to the KEK's policy. And the research outcome should be used for only peace and nonmilitary purposes.
- 2) The Memorandum will come into effect on the date of its signing and will be valid until March 31, 2015. The amendment of this Memorandum may be discussed by request from the Parties or one party, and becomes effective upon the Parties' agreement.
- 3) An external review of the beamline operation and research activities will be carried out at least 6 months before the end of this period. The Memorandum can be extended by the Parties subject to the mutual agreement and consent in writing, based on the evaluation by the external evaluation committee.
- 4) The Party shall discuss and find solutions by mutual consultation in the event not described in this memorandum.

Signed in Tokyo, the 22nd day of October 2008 in two originals both in English.

On behalf of
The Department of Science and
Technology,
Government of India



(H.K. Singh)
Ambassador Extraordinary and
Plenipotentiary of India to Japan

On behalf of
The High Energy
Accelerator Research
Organization (KEK), Japan



(Osamu Shimomura)
Director
Institute of Materials
Structure Science, KEK