

## Summary of Proposal

Host institution name	Tohoku University
Head of host institution	Akihisa Inoue, President, Tohoku University
Center director	Yoshinori Yamamoto Professor, WPI Advanced Institute for Materials Research
Administrative director	Toshio Sakurai Professor, WPI Advanced Institute for Materials Research
Title of center project	The WPI Research Center for Atom · Molecule · Materials
Center name	WPI Advanced Institute for Materials Research
Project Summary	The aims of the WPI research center for atom · molecule · materials are (1) to create new materials and substances through deep understanding and control at atomic and molecular level, (2) to construct the processes and devices through those materials, and (3) to construct new systems using those devices and materials leading to social welfare. Cooperation and unification of the existing institutes on individual discipline (physics, chemistry, material science, and engineering) at Tohoku University, whose activities are already at world-top level, together with incorporating world top-class researchers from abroad and from domestic institutes, must organize a dream team for material science. Through this WPI research institute, we create entirely new materials and substances with innovative functions, contributing the welfare of mankind.
Research fields	Atom · Molecule · Material Science  Integration of the five research fields on Physics, Chemistry, Material Science, Electronic / Informational Engineering, and Precision Mechanical Engineering
Research objectives	The main objective of the Center is to promote the development of new materials under a world-leading organization for interdisciplinary research in functional materials, by use of an innovative method of atomic and molecular control, departing from the typical approaches and moving towards the next generation. In addition to basic research, the Center will pursue (1) to create new compounds and materials with innovative functions which exceed existing ones, (2) to construct devices based upon a new fundamental paradigm, and (3) to promote applied research projects on materials and system architecture that will generate direct societal impacts. In addition, the Center will establish innovations in understanding diverse material functions through the creation of new basic materials and compounds which brings significant benefits for the future of humanity.
Outline of management	In the bid for a rapid and flexible decision making process, we do not launch a decision making organization, but set up a top-down command system governed by our center director. Aimed for the support of a center director's top-down decision making system, an "International Advisory Board" which includes Nobel Laureate board members, is to be established directly under the center director position. We will also prepare strong staff backup functions for accounting, personnel, research support, liaison and public relations works so that the researchers can devote themselves to research. To secure the independence of the center administration, the host institution will limit its authority to extremely important items such as the appointment and dismissal of the Center Director, and leave all other personnel, budget execution and other items effectively under the discretion of the Center Director. Also, the university will activate environmental improvements concerning flexible approaches, revisions and betterment of the university's system upon the center director's request.

<p>Researchers and other center staffs</p>	<ul style="list-style-type: none"> <li>• 30 PIs (including 12 People from abroad); the number of total researchers is 120 including 36 foreign people; the number of total people of the Center is 213 at the final goal.</li> <li>• The final goal is set in October, 2008.</li> <li>• Major PIs; Akihisa Inoue, Takashi Takahashi, Masashi Kawasaki, Masaki Esashi, Toshio Nishi, Tomihiro Hashizume, A.R.Yavari, A.L.Greer, Q.K.Xue, Paul S. Weiss</li> </ul>
<p>Outline of research environment</p>	<p>As to administrative tasks, we will prepare strong staff backup functions for accounting, personnel, research support, liaison and public relations works so that the researchers can devote themselves to research, and also prepare an environment which permits researchers to carry out their work duties in English. A Program Officer, Project Manager, and other senior positions will be occupied by excellent and experienced personnel from various fields including researcher evaluation, international research coordination, activating expansion and public relation of research results, planning and support of research workshops.</p> <p>The performance of center researchers will be strictly evaluated and the researchers' salary assessments will be determined based on the evaluation results. Employment of researchers including PIs will be basically determined by international recruitment once every 5 years. The necessary start-up funds will be provided in cases when the invited researchers require funds to vigorously continue their own research when they are initially transferred to the center.</p> <p>In the recruitment of post-doctoral researchers, we will secure personnel via international recruitment. The term of employment is 1 year in principle and the researchers will be strictly evaluated at renewal time. We will provide the researchers with research support from senior mentors and otherwise promote the organic development of research.</p> <p>In addition to the existing research space of our university, we will operate a new core facility (building) for the center's activities.</p> <p>To introduce a compensation system that reflects researchers' abilities, we will introduce new systems including a "Fellow Professor" (tentative name) system for professors playing leading roles in the research, as well as a system for preparations payments or contract conclusion payments when absolutely necessary for the invitation of Nobel Prize class researchers, etc. We plan to establish an international advisory board, including Nobel Prize recipients as members, which will report directly to the Center Director to support top-down type decision making by the Center Director.</p> <p>We will advance international development via researcher and other personnel exchanges and institutional relations for international joint research by positively utilizing Tohoku University's overseas offices and bases, and via liaison with global universities which have academic exchange agreements with Tohoku University, and members of university consortia.</p>
<p>Outline of indicators for evaluating a center's global standing</p>	<p>We evaluate each PI and researcher by the following indicators; publication in internationally well-recognized top-class journals, citation number of those papers, invited and plenary lectures at the well-recognized international symposiums, receiving international awards, and acquisition of research funds. As possible as we can, we want to use numerical and objective factors for evaluation. The center's global standing is primarily evaluated by the ranking of institutions of each discipline, based on citation analysis made by ESI. Besides, other factors, such as visible contribution to society by providing really useful materials, are used for evaluation.</p>
<p>Securing research funding</p>	<p>Further, the fund for research, setting up instruments and equipments necessary for research at the Center, renovation of research space and laboratory, and smooth management of the Center will be supported by TU. For this purpose, TU will prepare approximately 1700000 US \$ annually. Besides the supports from TU mentioned above, the PIs joining from TU have obtained the research funds of approximately 11000000 US \$ from outside in 2006 fiscal year, so we expect that similar amounts of research funds (or even greater amounts) will be obtained by them in future.</p>

<p>Summary of host institution's commitment</p>	<p>Tohoku University will clearly stipulate the advance of research and organizational development based on this program as a priority in its interim plan. The Tohoku University action plan "Inoue Plan 2007 (Toward Becoming a World Leading University)" released in April 2007 already clearly stipulates that the university will apply for the World Premier International Research Center (WPI) Initiative as a measure for strengthening Tohoku University's research foundations as a research-centered university.</p> <p>The host institution will provide the necessary space in accordance with the advance of the research and the expansion of the center's research organization by operating a new core facility for the center's activities and research space will also be secured within the host institution's existing facilities. Additionally, the host institution will pay the personnel expenses, other required items as research expenses and other researcher support, the installation of apparatus required for research at the center, the refurbishing of research space.</p> <p>To secure the independence of the center administration, the host institution will limit its authority to extremely important items such as the appointment and dismissal of the Center Director, and leave all other personnel, budget execution and other items effectively under the discretion of the Center Director.</p> <p>In applying for this program, Tohoku University established a coordinating committee within the university to assemble researchers from within the host institution, and this council has fully completed the coordination within the host institution.</p> <p>After Tohoku University is selected for this program, the committee will continue to actively support the Center Director, as needed to secure the cooperation of the related departments for the greater vitality of the center research activities.</p> <p>We plan to establish an international advisory board, including Nobel Prize recipients as members, which will report directly to the Center Director to support top-down type decision making by the Center Director. To these ends, the president of the host institution will make the necessary requests for cooperation from Nobel laureates and establish the necessary environment.</p> <p>Also, so that work at the center can be conducted smoothly in English, we will assign staff with superior English skills, in addition to expertise in such fields as accounting, personnel and research assistance, as administrative staff on a priority basis.</p> <p>To introduce a compensation system that reflects researchers' abilities, we will urgently examine the introduction of new systems including a "Fellow Professor" (tentative name) system for professors playing leading roles in the research, as well as a system for preparations payments or contract conclusion payments when absolutely necessary for the invitation of Nobel Prize class researchers, etc. A standing task team will also be established with the office of the President taking the lead of it for rapid examinations and responses in cases when the Center Director requests the flexible administration, revision, improvement or adjustment of the host institution's systems, and the host institution will otherwise prepare an environment for the smooth conduct of top management by the Center Director.</p>
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