

No.34/72/2009-EO(F)
Government of India
Ministry of Personnel, P.G. and Pensions
Department of Personnel & Training


North Block, New Delhi-1
Dated the 13th August, 2009

TRAINING CIRCULAR

Subject : Group Training Course in Research on Biomass Technology to be held in Japan from 25th October, 2009 to 11th September, 2010.

The undersigned is directed to state that the Japan International Cooperation Agency (JICA), under the Technical Cooperation Programme of the Government of Japan have invited applications for a Group Training Course in Research on Biomass Technology to be held in Japan from 25th October, 2009 to 11th September, 2010. The details of the programme and the application forms may be drawn from Ministry of Personnel, Public Grievance and Pensions website (www.persmin.nic.in)

2. The programme aims that participants master appropriate technologies and skills, and to develop leading researchers in the field of biomass utilization.
3. The applicants should be researcher in the field of biomass technology for industry in public researching institutes or universities; be proficient in written and spoken English; should have master's degree or equivalent qualification; be proficient in MS Word, Excel and Power Point; be under 40 years of age; should have 3 years of research experience on the topic that the applicant has selected for individual research; be in good health both physically and mentally to undergo the training and not be serving in any form of military service.
4. The fellowship award covers a round trip ticket between an international airport designated by the JICA and Japan; travel insurance from the time of arrival to departure in Japan, allowances for (accommodation, living expenses, outfit and shipping) expenses for study tours and free medical care for participants who may fall ill after reaching Japan. The participants are not allowed to take any family member during the training course.
5. It is requested that the nomination of the suitable candidates may please be forwarded to this Department in accordance with the eligibility criteria and the terms and conditions of the JICA's circular dated 6th August, 2009.
6. The nomination details should be submitted to the JICA's prescribed proforma (A2A3 Forms), duly authenticated by the Department concerned.
7. The applications should reach this Department through proper channel latest by 25th September, 2009.


(Trishajit Sethi)
Director

1. M/o New & Renewable Energy, C.G.O. Complex, Lodhi Road, New Delhi
2. M/o Environment & Forest, Paryavaran Bhavan, Lodhi Road, New Delhi
3. All the State Governments/Union Territories
- ✓ 4. Sr. Tech. Director, NIC(DOPT), North Block, with the request to post the circular alongwith the JICA's circular on the Department's website.



37/72/2009-EO(F)

①

Japan International Cooperation Agency
(Government of Japan)

No. 75/GT-CP/2009

6th August, 2009

Dear Mr. Kharb,

A Group Training Course in Research on Biomass Technology will be held in Japan from 25th October, 2009 to 11th September, 2010 under the Technical Cooperation Programme of the Government of Japan.

We are forwarding herewith two copies of the General Information Booklet on the above offer. It is requested that the following documents of the selected candidate may please be submitted to this office by 3rd September, 2009:-

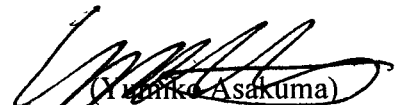
- (1) The Application Form together with the medical history questionnaire,
- (2) The desired Research Proposal

Further details are available in the General Information Booklet. It may be noted that the completed Inception Report is essential for screening of applications.

It is further informed that 4 slots are available globally for the said course and it would be much appreciated if you could take further necessary action and submit the nomination(s) of suitable candidate(s) to this office by the designated date.

With regards,

Yours sincerely,


(Yuzuko Asakuma)
Senior Representative

Encl: As stated above.

Mr. R.K. Kharb
Desk Officer
Department of Personnel and Training
Ministry of Personnel, Public Grievances and Pensions
North Block
New Delhi

by 11/09/09

W.D. No. 62049/09
C-673/EO(F)/09
11/08/09



TRAINING AND DIALOGUE PROGRAMS

GENERAL INFORMATION ON

RESEARCH ON BIOMASS TECHNOLOGY

集団研修「バイオマス有効利用技術」

JFY 2009

<Type: Leaders Training / 中核人材育成型>

NO. J09-00912

Project No. 0980034

From September 2009 to September 2010

Phases in Japan: From October. 25, 2009 to September.11, 2010

This information pertains to one of the Training and Dialogue Programs of the Japan International Cooperation Agency (JICA), which shall be implemented as part of the Official Development Assistance of the Government of Japan based on bilateral agreement between both Governments.

I. Concept

Background

Fossil fuel as resource is obviously limited, and it is the main source of CO₂ emission, which causes climate change effects. In this regard we need to look for newer and more environment-friendly resources. Biomass is regarded as one of the promising resources in all over the world. However, there are a lot of fields to be developed for the effective disposal of biomass.

In Japan we have established “General Strategy of Biomass Nippon” in December 2002. In line with this strategy, we are making big efforts to promote biomass utilization, such as development of biomass energy technology, bio-refinery technology, biomass collecting technology, LCA of biomass and so forth. At the same time the promotion of public awareness for utilizing biomass is essential. Awareness raising in industrial sector, as well as that of consumers is under being promoted. Consequently biomass is broadly accepted in Japanese society from small households to bigger industrial factories.

Through this course participants will be exposed to the latest technology of biomass utilization and have chance to make research activities through laboratory works under the supervision of Japanese cutting edge researchers. At the same time they are introduced to Japanese activities to promote biomass utilization in order to acquire tips to promote it in their respective countries, so that we could mitigate climate change, as well as conserve limited resources. Participants are also expected to make a suggestion of mainstreaming of biomass utilization to policymakers in order to make the collaboration between scientists and policymakers easier in this field.

For what?

This program aims that participants master appropriate technologies and skills, and to develop leading researchers in the field of biomass utilization.

For whom?

This program is offered to the researchers in the field of biomass utilization in public researching institutes or universities.

How?

Participants shall have opportunities in Japan to identify approaches and strategies to overcome constraints of respective countries in the field of biomass utilization through learning appropriate technologies and skills which is completely research-oriented and based on the laboratory work under the advice of the host-researchers. Hence participants will submit the technical report at the end of this training course as a result of individual research work. In addition, participants also formulate essays describing both the evolution of research subjects and what the participants do after they go back to home countries putting the knowledge and ideas acquired and discussed in Japan among others into their on-going activities. (Participants will also be encouraged to submit the report to the relevant international academic journals and/or conferences.)

II. Description

1. Title (J-No.): Research on Biomass Technology (J0900912)

2. Period of program

Duration of whole program: September 2009 to September 2010

(1) Preliminary Phase: September 2009 to October 2009
(in a participant's home countries)

(2) Core Phase in Japan: October25, 2009 to September11, 2010

3. Target Regions or Countries:

Four (4) participants from Bangladesh, Brazil, India and Viet Nam

4. Eligible / Target Organization :

This program is designed for a **researcher** in the field of biomass technology for industry **in public researching institutes or universities.**

5. Total Number of Participants :

Four (4) participants

The number of participants from each country will be one (1) **in principle.**

6. Language to be used in this program : English

7. Program Objective:

Participants suggest the method how to apply the acquired scientific knowledge to the effective and efficient utilization of biomass in respective countries.

8. Overall Goal:

Biomass utilization technology is advanced in respective countries which is essential for sustainable development with preserving the earth environment.

9. Expected Module Output and Contents:

This program consists of the following components. Details on each component are given below:

(1) Preliminary Phase in a participant's home countries
 (September 2009 to October 2009)
Participating organizations make required preparation for the Program in the respective countries.

Expected Module Output	Activities
Research proposal of individual research work will be discussed and presentation will be prepared.	1) Discussion on the contents of the individual research works based on the research proposal with prospective host researchers of the training institution, AIST by email or FAX.
	2) To prepare presentation materials of the individual research subjects, related problems in their respective countries and brief introduction of the organizations where participants work.

(2) Core Phase in Japan
 (October 25, 2009 to September 11, 2010)
Participants dispatched by the organizations attend the Program implemented in Japan.

Expected Module Output	Subjects / Agendas	Methodology
1) To obtain the latest information about the biomass utilization in Japan, especially to understand the policy 'General Strategy of Biomass Nippon' and the related research trend activities that contributes to the policy, so that the participants will be able to explain their research objectives based on those information.	1-1) General orientation and lectures on AIST (first two-week) 1-2) Group Study Tour (once) 1-3) Field Research(individually) (depend on the laboratory) 1-4) Academic conference attendance (once)	Lectures, observations and practical trainings
2) To make and modify a Research Plan for this training course to utilize biomass effectively in their research field under the direction of the host researcher.	2-1) General orientation and lectures on AIST (first two-week) 2-2) Research-oriented laboratory work under the advice of the host-researchers. (third to last week) 2-3) Effective way of Report writing (one day) 2-4) Presentation and Discussion (3times)	Lectures, observations, practical trainings, Making reports and discussion

<p>3) To acquire the fundamental methods of research, that are indispensable for research implementation, under the direction of the host researcher.</p>	<p>3-1) General orientation and lectures on AIST (first two-week)</p> <p>3-2) Research-oriented laboratory work under the advice of the host-researchers. (third to last week)</p> <p>3-3) Presentation and Discussion (3times)</p>	<p>Lectures, observations, practical trainings, Making reports and discussion</p>
---	---	---

III. Conditions and Procedures for Application

1. Expectations for the Participating Organizations:

- (1) This project is designed primarily for organizations that intend to address specific issues or problems identified in their operations. Applying organizations are expected to use the Program for those specific purposes.
- (2) In this connection, applying organizations are expected to nominate the most qualified candidates to address the said issues or problems, carefully referring to the qualifications described in section III-2 below.
- (3) Applying organizations are also expected to be prepared to make use of knowledge acquired by the nominees for the said purpose.

2. Nominee Qualifications:

Applying organizations are expected to select nominees who meet the following qualifications.

(1) Essential Qualifications

- 1) Current Duties: **Researchers** in the field of biomass technology for industry in **public researching institutes or universities**;
(Researchers from private companies and administrative officers are not qualified for this course)*
- 2) Experience in the relevant field: have a minimum of three (3) years of research experience (five (5) years for Bachelor's degree holders) on the topic that the applicant has selected for individual research;
- 3) Educational Background: have **master's degree** or equivalent qualification;
- 4) Language: be proficient in spoken and written English; Desired level: minimum TOEFL score; 82 (Internet-Based Testing), 550 (Paper-Based Testing), TOEIC score; 730 or equivalent;
- 5) Computer skill: be proficient in MS Word, Excel and Power Point;
- 6) Age: be **less than forty (40) years** of age in principle;
- 7) Health: must be in good health, both physically and mentally, to participate in the Program in Japan; and

[Note] *Pregnancy: Pregnant participants are strictly requested to complete the required procedures before departure in order to minimize the risk for their health. The procedures include (i) letter of the participant's consent to bear economic and physical risks; (ii) letter of consent from the participant's supervisor; (iii) letter of consent from your Embassy in Japan; and (iv) medical certificate. Please ask National Staffs in JICA office for the details.*

- 8) Must not be serving any form of military service.

** For this condition in cases where the nominee comes from a non-governmental institution, it must be confirmed that the duties of the nominee are the same as those of nominees from the governmental institutions mentioned above through the submission of the statement shown in Annex-IV.*

3. Required Documents for Application

(1) **Application Form:** The Application Form is available at the respective countries' JICA office or the Embassy of Japan.

(2) **Research Proposal:** to be submitted with the Application Form. Fill in ANNEX-III of this General Information, and submit it along with the Application Form.

*Applicants should select up to three (3) topics on the list in the ANNEX-II, list them in order of priority in the Research Proposal attached as the ANNEX-III and submit it with the Application Form. The Research Proposal should be typed on A4-sized paper with the format indicated in the ANNEX-III. It is requested to make a clear and detailed research proposal of each of selected subjects listed in the ANNEX-II in not less than 800 words. The proposal will be used for screening the applicants. **The Application Form without the proposals will be rejected.***

(3) **Nominee's English Score Sheet:** to be submitted with the Application Form. If you have any official documentation of English ability (e.g., TOEFL, TOEIC, IELTS), please attach it (or a copy) to the application form.

4. Procedure for Application and Selection :

(1) Submitting the Application Documents:

Closing date for application to the JICA Center in JAPAN: **September 9, 2009.**

Note: Please confirm the closing date set by the respective countries' JICA offices or Embassies of Japan of your countries to meet the final date in Japan.

(2) Selection:

After receiving the documents through due administrative procedures in the respective governments, the respective countries' JICA offices (or Japanese Embassies) shall conduct screenings, and send the documents to the JICA Center in charge in Japan, which organizes this project. Selection shall be made by the JICA Center in consultation with the organizations concerned in Japan based on submitted documents according to qualifications.

The organization with intention to utilize the opportunity of this program will be highly valued in the selection.

Remarks:

- (i) JICA Tsukuba, the JICA Center in charge in Japan, and AIST, the implementing institution request for respective JICA offices (or Japanese Embassies) to nominate plural applicants as candidates.
- (ii) After AIST receives the Application Forms and Research Proposals through JICA, prospective host researchers of AIST may contact the applicants by E-mail or FAX to obtain additional information and confirm the details of individual research works for the screening processes. This communication

will avoid any misunderstandings on the contents of individual research works between the applicants and host-researchers.

(iii) Applicants may not always be allotted the subject of their first priority.

(3) Notice of Acceptance

Notification of results shall be made by the respective countries' JICA offices (or Embassies of Japan) to the respective Governments by **not later than September 25, 2009.**

5. Conditions for Attendance:

- (1) to observe the schedule of the program;
- (2) not to change the program subjects or extend the period of stay in Japan;
- (3) not to bring any members of their family;
- (4) to return to their home countries at the end of the program in Japan according to the travel schedule designated by JICA;
- (5) to refrain from engaging in political activities, or any form of employment for profit or gain;
- (6) to observe the rules and regulations of the implementing institution, AIST, and their place of accommodation;
- (7) not to change the accommodation designated by JICA; and
- (8) to participate the whole program including a preparatory phase prior to the program in Japan. Applying organizations, after receiving notice of acceptance for their nominees, are expected to carry out the actions described in section II -9 and section III-1.

IV. Administrative Arrangements

1. Organizer:

(1) **Name:** JICA Tsukuba

2. Implementing Partner:

(1) **Name:** National Institute of Advanced Industrial Science and Technology (AIST)

(2) **URL:** http://www.aist.go.jp/index_en.html

(3) **Remark:** National Institute of Advanced Industrial Science and Technology (AIST) is not a government institution, although funded by Japanese government to a large extent. AIST is a rather new research organization established in 2001, however, AIST and its ancestors have been contributing society through continuous advancement in technologies and supports to Japanese industries since 1876. Headquarters of AIST are located in Tsukuba and Tokyo. AIST has over 50 autonomous research units in various innovative research fields and the units are located at 9 research bases and several sites all over Japan. About 2500 research scientists and well over 3000 visiting scientists, post doctoral fellows and students are working in AIST. About 700 permanent administrative personnel and many temporary staff supports research works of AIST. Missions of AIST are as follow, and AIST members are making efforts to accomplish the missions.

- Contribution to a sustainable society,
- Contribution to industrial competitiveness,
- Contribution to local industrial development, and
- Contribution to industrial technology policies.

3. Travel to Japan:

(1) **Air Ticket:** The cost of a round-trip ticket between an international airport designated by JICA and Japan will be borne by JICA.

(2) **Travel Insurance:** Term of Insurance: From arrival to departure in Japan. *the traveling time outside Japan shall not be covered.

4. Accommodation in Japan:

JICA will arrange the following accommodations for the participants in Japan:

JICA Tsukuba International Center (JICA TSUKUBA)

Address: 3-6 Koyadai, Tsukuba, Ibaraki 305-0074, Japan

TEL: 81-29-838-1111 FAX: 81-29-838-1790

(where "81" is the country code for Japan, and "29" is the local area code)

If there is no vacancy at JICA TSUKUBA, JICA will arrange alternative accommodations for the participants.

Remarks:

The place of accommodation may differ according to the individual research subject

selected by each participant. Some of the individual research works will not be taken place in AIST in Tsukuba, but in other research bases of AIST located in other prefectures (see ANNEX-I).

5. Expenses:

The following expenses will be provided for the participants by JICA:

- (1) Allowances for accommodation, living expenses, outfit, and shipping
- (2) Expenses for study tours (basically in the form of train tickets).
- (3) Free medical care for participants who become ill after arriving in Japan (costs related to pre-existing illness, pregnancy, or dental treatment are not included)
- (4) Expenses for program implementation, including materials

For more details, please see p. 9-16 of the brochure for participants titled “KENSU-IN GUIDE BOOK,” which will be given to the selected participants before (or at the time of) the pre-departure orientation.

6. Pre-departure Orientation:

A pre-departure orientation will be held at the respective country’s JICA office (or Japanese Embassy), to provide participants with details on travel to Japan, conditions of the workshop, and other matters.

ANNEX

- I Course Curriculum**
- II Research Topics of Individual Research Works**
- III Research Proposal**
- IV Letter of Declaration (only for those who work in private companies and whose status is the same as governmental officials)**
- V List of Organizations**

ANNEX I Course Curriculum

Instruction Method

The training course is completely research-oriented and based on the laboratory work under the advice of the host-researchers in AIST. The individual research work is basically conducted on the topic selected by each participant, and participants are expected to do research by their own creativity and responsibility.

Curriculum

- 1) Orientation and Japanese Language Lessons in JICA (in group) ----- 2 weeks
- 2) Introductory Lectures in AIST (in group) ----- 2 weeks
The following lectures are given to provide participants with fundamental knowledge of the biomass technology.
 - A. Introductory Lectures
 - Introduction of the present situation and technology trend in Japan and the world (Biomass energy thchnology (gasifying/BDF production etc.), Material Production from Biomass, Global Environmental Issues, etc.)
 - Lectures of host researchers on research subject to be conducted by each participant
 - B. Observation tour of the Research Institutes in Tsukuba city and neighborhood
- 3) Individual Research ----- approximately 10 months
Topics prepared for individual research works during the training course are shown in ANNEX-II. It is basically conducted on **one of the subjects under the research topics** selected by each participant. All participants will **not be always allotted the subject of their first priority**. Arrangements of individual research works will be made according to his/her own specialty and proposal written in the Research Proposal (see ANNEX-III).
- 4) Oral Presentation ----- 3 times
 - (i) Presentation of Individual Research Proposal
At the beginning of the training program in AIST, participants are requested to give 20-25 min. presentations on the individual research subjects, related problems in their respective countries and brief introduction of the organizations where participants work. It is recommended to prepare computer-aided presentation format (Microsoft Power Point) before departure from their respective countries.
 - (ii) Presentation of Interim Report
An interim technical report must be prepared at the middle of the training course, presented at the presentation session and submitted to JICA and AIST. It is also strongly encouraged to submit the report to an international academic journal and/or a conference by the end of the course.

(iii) Presentation of Technical Report and Essay

A technical report must be prepared at the end of the training course, presented the research results at the presentation session and submitted to JICA and AIST. An essay is a paper on how the research subject will be evolved in his/her respective organizations and will contribute for solving the issue in the field of biomass technology in his/her countries.

- 5) Study Tours (in group) ----- approx. 5 days x 1 time
Group Study Tour related to facilities of biomass technology such as local governmental institutions and private manufacturing factories, etc. is conducted occasionally during the training course.

Remarks:

- a. JICA and AIST may give an award to a participant who completes the best performance at the end of the course.
- b. Individual lectures, conference and visits to relating facilities will be arranged, accordingly.
- c. **The place of accommodation may differ** according to the individual research subject selected by each participant. Some of the individual research works will not be taken place in AIST in Tsukuba, but in other research bases of AIST located in other prefectures[#].
- d. The curriculum may be subject to minor changes.

AIST has nine research bases including AIST Tsukuba --- AIST Hokkaido (Sapporo, Hokkaido); AIST Tohoku (Sendai, Miyagi); AIST Tsukuba (Tsukuba, Ibaraki); AIST Tokyo Waterfront (Koto, Tokyo), AIST Chubu (Nagoya, Aichi); AIST Kansai (Ikeda, Osaka); AIST Chugoku (Kure, Hiroshima); AIST Shikoku (Takamatsu, Kagawa) and AIST Kyushu (Tosu, Saga)

[cf. http://www.aist.go.jp/aist_e/guidemap/index.html]

Tentative Schedule of the course

October 25 (Sun), 2009	Arrival in Japan
October 26 (Mon) November 2 (Mon)	Briefing, Program Orientation, General Orientation Japanese Class, Medical Check at TBIC
November 4 (Wed) November 17 (Tue)	Opening Ceremony/ Presentation/ Welcome Ceremony at AIST (11/4) at AIST Visit to elementary school (11/11) Common Lectures (11/5~11/17) at AIST
November 18 (Wed) – 20 (Fri) November 24 (Mon)	“6th Biomass-Asia Workshop” at Hitoshima http://www.biomass-asia-workshop.jp/ Individual training starts*
April 8 (Thu) -9 (Fri), 2010 April 19 (Mon) – 24 (Sat)	Site visits / Presentation / Interim Evaluation at AIST Study Tour
September 9 (Thu)	Final Presentation at AIST
September 10 (Fri)	Evaluation Meeting / Closing Ceremony at TBIC
September 11 (Sat)	Departure from Japan

*A presentation at an academic conference will be encouraged to implement once during the Course.

ANNEX II *Research Topics of Individual Research Works*

The following topics are offered for the individual research work, in which a participant conducts laboratory work under the advice of the host-researcher(s). Applicants should **select up to three (3) subjects** on the list in the ANNEX-II and list them **in order of priority** in the Research Proposal attached as the ANNEX-III. Some of the individual research works will not be taken place in AIST in Tsukuba, but in other research bases of AIST located in other prefectures as mentioned on page 12.

Please do not hesitate to contact a focal staff in AIST, the Implementing Partner, at <handa-keiji@aist.go.jp>, if applicants would request to contact prospective host researcher(s) to refer further information of research activities for your selection and/or decision of the subject

Topic 1 Assessment, Evaluation & Process Design

1.1 Application of Life Cycle Assessment Method for Biomass Utilization

Many methods to utilise biomass resources are proposed and some of them are actually applied. They are expected to contribute to reduce greenhouse gas (GHG) emission. However, GHG is released at its cultivation, transportation, conversion and consumption stages. Hence lifecycle GHG emission should be analysed.

The participant will study methodology of Life Cycle Assessment (LCA) to evaluate environmental impacts of system. Adopting this method, environmental burden, mainly lifecycle GHG emission of specific biomass utilisation system will be assessed. Discussion for beneficial biomass utilisation system will be done using the results of the assessment.

[Specific requirement for application] Applicant, who has experiences on LCA, environmental assessment, biomass resources production/utilization and/or energy system analysis, is preferable.

Topic 2 Fuel Production from Biomass

2.1 Upgrading of Biodiesel Fuel derived from Fishery Oils

Harmonious utilization of biodiesel fuel (BDF) in the diesel marketplace is getting important to reduce greenhouse gas emissions and to promote a new business opportunity in the agricultural and fishery sectors. Food biomass, such as palm and rape seeds, has been successfully used as a feedstock for BDF. On the other hand, waste fishery oils, which is a potential feedstock for BDF and abundant in the amounts in some coastal areas, are not successfully used due to the

presence of polyunsaturated components of low oxidation stability. Successful use of this waste fishery oil derived BDF as transport fuel requires the development of specification and standards, which should be satisfied by engine producers, refineries and customers, in addition to the development of biodiesel upgrading technologies. In this program, the following research topics will be included:

*Acquisition of measurements of the fuel components and fuel properties, standardization of biodiesel fuel quality, and in depth standardization for securing the biodiesel fuel quality in oxidation and thermal stabilities.

*Development of biodiesel upgrading technologies for increasing the oxidation and thermal stabilities.

[Specific requirement for application] *Applicant needs to have an experience on **biodiesel production and/or utilization**, and background related to **chemistry and chemical engineering**.*

2.2 Catalyst Development for Ethanol Synthesis from Biogas

The present proposal is aimed at catalyst development for the thermo-chemical ethanol production from biogas. Catalytic conversion into ethanol using non-food biomass is more efficient than fermentation process.

[Specific requirement for application] *Applicant is expected to have research activities on **chemical engineering** including **catalyst research**.*

Topic 3 Material Production from Biomass

3.1 Establishment of New System for High-valued Functional Lipids Production – New System for Polyunsaturated Fatty Acids Production using Modified Microorganisms and its Addition of Extra Value to Biomass Resource

Polyunsaturated fatty acids, PUFA, have come to attract attention for its specific physiological activities. The sole source of PUFA supply depends on marine resources, which may be limited in the near future. The research objective is to establish the efficient and stable system of PUFA production using the oleaginous and genetically modified microorganisms from biomass such as plant oils. The novel supply system of PUFA that are rarely found in natural resources will be established by the application of this technology. This work will bring about a large profit to give extra value to plant oils biomass by producing functional lipids and also provide more valuable utilization of marine resources which have been consumed for the production of fish oils. The basic techniques

for microbiology, lipid analysis, and genetic engineering, etc. will be learned through research activities.

[Specific requirement for application] *Applicant with basic knowledge on analytical chemistry, biochemistry or microbiology is suitable.*

3.2 Development of Environmentally Compatible Biodegradable Composite Materials derived from Biomass and Evaluation of their Mechanical Properties

Training for development of biodegradable polymer composites consisting of biodegradable plastics and biodegradable fillers such as cellulose and natural fibers derived from biomass and evaluation of their physical properties such as mechanical properties.

[Specific requirement for application] *Simple synthesis of polymers and measurements of physical properties such as thermal analysis and mechanical tests will be studied in this training course. It is necessary for applicant to have fundamental knowledge for above studies.*

3.3 Research on Chitin and Chitosan toward Development of Functional Materials

The participants are requested to learn knowledge and techniques for preparation and evaluation of chitin and chitosan in order to develop functional materials.

Suggested topics are as follows:

- (1) Preparation of chitin from crab or shrimp shells
- (2) Preparation of chitosan from chitin
- (3) Characterization of chitin and chitosan thus obtained
- (4) Enzymatic hydrolysis of chitin and chitosan and analysis of products thus obtained
- (5) Preparation of chitin and chitosan by chemical modification

Hardware and Software Environment : FT-IR, NMR, GPC, HPLC, DSC, incubator, mill, PC with Windows system

[Specific requirement for application] *Applicant is expected to have basic knowledge and experimental techniques on polymer chemistry, organic synthetic chemistry and enzymology.*

3.4 Research for Industrial Waste Treatment and Production of Bioplastic with

microalga *Spirulina platensis* and Alkaliphile bacteria

Alkaliphile bacteria easily make mono culture in a high pH condition. As the production of biodiesel promoted, we have to clean much amount of high pH waste water. We suppose it is effective to use alkaliphile bacteria as a first and microalga *Spirulina* as second clean up stage of high pH waste water treatment. The later one also donates for carbon deoxidizes reduction. In the future the wastewater treatment should be coupled with mass production of chemicals materials from these alkaliphile bacteria and microalgae. For this purpose, mutation and genetic engineering will be key technologies in order to improve production efficiency.

In this subject the participants are requested to learn basic techniques for handling, screening and cultivating alkaliphile bacteria and commercially important microalgae *Spirulina*, and to learn mutation and genetic transformation techniques for waste water treatment.

[Specific requirement for application] *Applicant is expected to have basic knowledge of **molecular biology** and experiences to **culture bacteria**, especially *E.coli* and microalgae.*

[Note] *This subject is conducted at the **AIST Kansai** located in **Ikeda, Osaka**.*

3.5 Bio-refinery of Biomass and Development of Biobased Materials

Bio-refinery from biomass (starch, sugar, glutamic acid etc.) to useful chemicals and production of plastics by polymerization of the chemicals are planned. It is needed to select from the following menu of choices.

a) Production of poly (lactic acid):

Production of lactic acid from biomass, polymerization, evaluation of mechanical and thermal properties of poly (lactic acid), evaluation of biodegradability will be carried out.

Production of D-lactic acid, in addition to "popular" L-lactic acid, and preparation of stereocomplex which has excellent thermal properties compared to poly (lactic acid) will be available, if trainees wish.

b) Production of bio-nylon:

Preparation of starting chemicals of polyamide 4 by bio-chemo process, polymerization, evaluation of mechanical and thermal properties of the polyamide will be carried out. Because polyamide 4 is the only biodegradable polyamide, biodegradability will be also examined.

c) Others

We study various bio-based and biodegradable materials, such as glycerol-based polymers, amino acid-based urethanes, highly elastic biodegradable polymers etc., and also we study biodegrading microorganisms. Therefore, we can make another theme for training by participant side's proposal. In this case, discussion and agreement is needed before program start through e-mail.

Our lab team is made up of researchers from polymer chemists, and biochemists. Therefore, the contents of training menu can be focused on a biochemical or polymer-chemical study, in addition to both, if participants wish.

[Specific requirement for application] *Applicant is expected to have basic knowledge of **polymer chemistry** or **biochemistry**.*

[Note] *This subject is conducted at the **AIST Kansai** located in **Ikeda, Osaka**.*

3.6 Effective Utilization of Renewable Biomass into Chemical Feedstock

Oil will be depleting in near future and oil-based materials, i.e., petrochemicals have caused emission of environmental hormone and global environmental problems whereas they are convenient, economical and comfortable. In contrast, biomass (cellulosic materials) such as wood and used paper is renewable resources and bio-based products can be reused and/or recycled easily compared with oil-based plastics. In order to prevent global warming and to realize green-sustainable society, establishment of biorefinery system from oil-based society is demanded. Thus, effective utilization of renewable biomass is essential to green chemical feedstock as well as alternative energy source.

We have focused on effective depolymerization methods of renewable biomass leading to selective low-molecular weight compounds like anhydrosugars. The key point is to prevent undesired secondary degradation and polymerization of them leading to gaseous and solid products. We have studied selective depolymerization methods of renewable biomass using microwave-assisted heating or hydrothermal heating.

[Specific requirement for application] *It is desirable that applicant has basic knowledge on **chemistry**.*

[Note] *This subject is conducted at the **AIST Hokkaido** located in **Sapporo**.*

ANNEX III Research Proposal

For the Training Course “RESEARCH on BIOMASS TECHNOLOGY”

(To be submitted with Application Form)

1. Name of Applicant *(as in your Passport; **underline your Family Name**)*
2. Country
3. Contact address *(E-mail address, Fax number, etc.)*
*Prospective host-researcher(s) **may make a direct inquiry to applicants** about the research proposal by E-mail or FAX during the screening process.*
4. Organization and your position
*Please attach the **organization chart** and indicate **your present position** on the chart.*
5. Number and Title of the research subjects selected from ANNEX-II

Priority	Subject Number and Title
1 st	
2 nd	
3 rd	

6. Description of the research proposal
*Applicants are requested to describe **problems relevant to these subjects** in their countries and the **reason for their selection**. It should be **typed on A4-size paper and not less than 800 words for each selected topic**.
Prospective host researchers of AIST may contact applicants by E-mail or FAX to obtain additional information and confirm the details of individual research works for the screening processes. This communication will avoid any misunderstandings on the contents of the individual research between applicants and the host-researchers.
*At the beginning of the training program in AIST, participants are requested to give 20-25 min. presentations on individual research subjects based on the research proposal and brief introduction of the organizations where participants work. It is recommended to prepare visual aids such as computer-aided presentation format (Microsoft Power Point) **before departure** from their respective countries.**
7. Current situation of biomass utilization in your country
8. Research activities that you have done during the past five years
9. Major Publications --- *Please **attach the abstract** of the publication or essay to this form*
10. Detailed description of the research activities that you are carrying out at present
11. Primary objectives to be achieved by the participation in this course

12. Application and transfer of the acquired knowledge and techniques to your institute

*Note: 1) You must **fill out every item** in this Form and **attach abstracts** of your major publications.*

2) Application Form without the Research Proposal will not be accepted.

ANNEX IV *Letter of Declaration*

This training course is basically open to officials in central or provincial government or in local bodies of their respective countries.

Those from private companies whose status is the same as that of officials mentioned above should draw up and forward to JICA a statement using the following format, which should be endorsed by the applicant's government.

The contents of the statement are as follows:

- (1) Name of country
- (2) Name of applicant
- (3) Name of organization
- (4) Concrete description of the activities of the applicant's organization
(Please describe as concretely as possible)

If the organization takes the form of a stock company, please explain:

- a) Names of investors,
 - b) Respective investors' share of the total capital of the organization, and
 - c) Company's share of the market
- (5) Relationship between the organization (or the applicant) and the National Development Plan/Program of the Government.

For example, if the organization (or the applicant) is

- a) an advisory or consultative organization (advisor),
- b) a model of the national project of the government, or
- c) other

then please explain the nature of the organization and the applicant's duties as concretely as possible.

- (6) The document should be concluded with the statement below, and contain the signature, position, and name of the applicant, as well as the name of the organization of the official responsible for international/technical cooperation between the Government of Japan and the government of the applicant. The document should also indicate the date.

"I certify that I have examined this document and that I am satisfied the information presented is authentic. I hereby nominate Mr./Ms. xxx xxx as a candidate for the course on Research on Biomass Technology on behalf of the Government of xxx."

ANNEX V **List of Organizations**

List of the organizations where this GI should be distributed (it is not limited to distribute besides the organizations listed below).

Bangladesh

- Institute of Fuel Research Development (IFRD),
Bangladesh Council of Scientific and Industrial Research

Brazil

- Universidade de Sao Paulo (USP)
- Universidade de Brasilia (UnB)
- Universidade Estadual de Campinas (Unicamp)
- Universidade Federal do Rio de Janeiro (UFRJ)
- Petrobras Research Center (Cenpes) [*]
- Centro de Tecnologia Canavieira (CTC) [*]

[*] *Letter of Declaration (ANNEX IV) is required for application.*

India

- Council of Scientific and Industrial Research (CSIR)

Vietnam

- Vietnamese Academy of Science and Technology (VAST)

For Your Reference

JICA and Capacity Development

The key concept underpinning JICA operations since its establishment in 1974 has been the conviction that “capacity development” is central to the socioeconomic development of any country, regardless of the specific operational scheme one may be undertaking, i.e. expert assignments, development projects, development study projects, training programs, JOCV programs, etc.

Within this wide range of programs, Training Programs have long occupied an important place in JICA operations. Conducted in Japan, they provide partner countries with opportunities to acquire practical knowledge accumulated in Japanese society. Participants dispatched by partner countries might find useful knowledge and re-create their own knowledge for enhancement of their own capacity or that of the organization and society to which they belong.

About 460 pre-organized programs cover a wide range of professional fields, ranging from education, health, infrastructure, energy, trade and finance, to agriculture, rural development, gender mainstreaming, and environmental protection. A variety of programs are being customized to address the specific needs of different target organizations, such as policy-making organizations, service provision organizations, as well as research and academic institutions. Some programs are organized to target a certain group of countries with similar developmental challenges.

Japanese Development Experience

Japan was the first non-Western country to successfully modernize its society and industrialize its economy. At the core of this process, which started more than 140 years ago, was the “*adopt and adapt*” concept by which a wide range of appropriate skills and knowledge have been imported from developed countries; these skills and knowledge have been adapted and/or improved using local skills, knowledge and initiatives. They finally became internalized in Japanese society to suit its local needs and conditions.

From engineering technology to production management methods, most of the know-how that has enabled Japan to become what it is today has emanated from this “*adoption and adaptation*” process, which, of course, has been accompanied by countless failures and errors behind the success stories. We presume that such experiences, both successful and unsuccessful, will be useful to our partners who are trying to address the challenges currently faced by developing countries.

However, it is rather challenging to share with our partners this whole body of Japan’s developmental experience. This difficulty has to do, in part, with the challenge of explaining a body of “tacit knowledge,” a type of knowledge that cannot fully be expressed in words or numbers. Adding to this difficulty are the social and cultural systems of Japan that vastly differ from those of other Western industrialized countries, and hence still remain unfamiliar to many partner countries. Simply stated, coming to Japan might be one way of overcoming such a cultural gap.

JICA, therefore, would like to invite as many leaders of partner countries as possible to come and visit us, to mingle with the Japanese people, and witness the advantages as well as the disadvantages of Japanese systems, so that integration of their findings might help them reach their developmental objectives.



CORRESPONDENCE

For enquiries and further information, please contact the JICA office or the Embassy of Japan. Further, address correspondence to:

JICA Tsukuba International Center (JICA TSUKUBA)
Address: 3-6 Koyadai, Tsukuba, Ibaraki 305-0074, Japan
TEL: +81-29-838-1111 FAX: +81-29-838-1790

Guidelines of Application Form for the JICA Training and Dialogue Program

The attached form is to be used to apply for the training and dialogue programs of the Japan International Cooperation Agency (JICA), which are implemented as part of the Official Development Assistance Program of the Government of Japan. Please complete the application form while referring to the following and consult with the respective country's JICA Office - or the Embassy of Japan if the former is not available - in your country for further information.

1. Parts of Application Form to be completed

1) Which part of the form should be submitted?

It depends on the type of training and dialogue program you are applying for.

>Application for Group and Region Focused Training Program

Official application and Parts A and B must be submitted.

>>Application for Country Focused Training Program including Counterpart Training Program

Part B will be submitted. Official application and Part A need not to be submitted

2) How many parts does the Application Form consist of?

The Application Form consists of three parts as follows;

Official Application

This part is to be confirmed and signed by the head of the relevant department/division of the organization which is applying.

Part A. Information on the Applying Organization

This part is to be confirmed by the head of the relevant department/division of the organization which is applying.

Part B. Information About the Nominee

This part is to be completed by the person who is nominated by the organization applying.

The applicants for Group and Region Focused Training Program are required to fill in every item. As for the applications for Country Focused Training Program including Counterpart Training Program and some specified International Dialogue Programs, it is required to fill in the designated “**required**” items as is shown on the Form.

Please refer to the General Information to find out which type the training and dialogue program that your organization applies for belongs to.

2. How to complete the Application Form

In completing the application form, please be advised to:

- (a) carefully read the General Information (GI) for which you intend to apply, and confirm if the objectives and contents are relevant to yours,
- (b) be sure to write in the title name of the course/seminar/workshop/project accurately according to the GI, which you intend to apply,
- (c) use a typewriter/personal computer in completing the form, of which the electronic

version is available on the web site: <http://www.jica.go.jp/> _____, or write in **block letters**,

- (d) fill in the form in **English**,
- (e) use or “x” to fill in the () check boxes,
- (f) attach a picture of the Nominee,
- (g) attach additional page(s) if there is insufficient space on the form,
- (h) prepare the necessary document(s) described in the General Information (GI), and attach it (them) to the form,
- (i) confirm the application procedure stipulated by your government, and
- (j) submit the original application form with the necessary document(s) to the responsible organization of your government according to the application procedure.

Any information that is acquired through the activities of the Japan International Cooperation Agency (JICA), such as the nominee’s name, educational record, and medical history, shall be properly handled in view of the importance of safeguarding personal information.

3. Privacy Policy

1) Scope of Use

Any information used for identifying individuals that is acquired by JICA will be stored, used, or analyzed only within the scope of JICA activities. JICA reserves the right to use such identifying information and other materials in accordance with the provisions of this privacy policy.

2) Limitations on Use and Provision

JICA shall never intentionally provide information that can be used to identify individuals to any third party, with the following three exceptions:

- (a) In cases of legally mandated disclosure requests;
- (b) In cases in which the provider of information grants permission for its disclosure to a third party;
- (c) In cases in which JICA commissions a party to process the information collected; the information provided will be within the scope of the commissioned tasks.

3) Security Notice

JICA takes measures required to prevent leakage, loss, or destruction of acquired information, and to otherwise properly manage such information.

Application Form for the JICA Training and Dialogue Program

OFFICIAL APPLICATION

(to be confirmed and signed by the head of the relevant department / division of the applying organization)

1. Title: (Please write down as shown in the General Information)

--

2. Number: (Please write down as shown in the General Information)

J	0		-				
---	---	--	---	--	--	--	--

3. Country Name:

--

4. Name of Applying Organization:

--

5. Name of the Nominee(s):

1)	3)
2)	4)

Our organization hereby applies for the training and dialogue program of the Japan International Cooperation Agency and proposes to dispatch qualified nominees to participate in the programs.

Date:		Signature:	
Name:			
Designation / Position			Official Stamp
Department / Division			
Office Address and Contact Information	Address:		
	Telephone:	Fax:	E-mail:

Confirmation by the organization in charge (if necessary)

I have examined the documents in this form and found them true. Accordingly I agree to nominate this person(s) on behalf of our government.

Date:		Signature:	
Name:			
Designation / Position			Official Stamp
Department / Division			

Part A: Information on the Applying Organization

(to be confirmed by the head of the department / division)

1. Profile of Organization

1) Name of Organization:

2) The mission of the Organization and the Department / Division:

2. Purpose of Application

1) Current Issues: Describe the reasons for your organization claiming the need to participate in the training and dialogue program, with reference to issues or problems to be addressed.

2) Objective: Describe what your organization intends to achieve by participating in the training and dialogue program.

3) Future Plan of Actions: Describe how your organization shall make use of the expected achievements, in addressing the said issues or problems.

4) Selection of the Nominee: Describe the reason(s) the nominee has been selected for the said purpose, referring to the following view points; 1) Course requirement, 2) Capacity /Position, 3) Plans for the candidate after the training and dialogue program, 4) Plan of organization and 5) Others.

Part B: Information about the Nominee

(to be completed by the Nominee)

NOTE>>>The applicants for Group and Region Focused Training Program are required to fill in "Every Item". As for the applications for Country Focused Training Program including Counterpart Training Program and some specified International Dialogue Programs, it is required to fill in the designated "required" items as is shown below.

1. Title: (Please write down as shown in the General Information) **(required)**

2. Number: (Please write down as shown in the General Information) **(required)**

J	0		-						
---	---	--	---	--	--	--	--	--	--

Attach the nominee's photograph (taken within the last three months) here
Size: 4x6
(Attach to the documents to be submitted.)

3. Information about the Nominee(nos. 1-9 are all required)

1) Name of Nominee (as in the passport)

Family Name

First Name

Middle Name

2) Nationality (as shown in the passport)		5) Date of Birth (please write out the month in English as in "April")				
3) Sex	() Male	() Female	Date	Month	Year	Age
4) Religion						

6) Present Position and Current Duties

Organization							
Department / Division							
Present Position							
Date of employment by the present organization	Date	Month	Year	Date of assignment to the present position	Date	Month	Year

7) Type of Organization

() National Governmental	() Local Governmental	() Public Enterprise
() Private (profit)	() NGO/Private (Non-profit)	() University
() Other ()		

8) Outline of duties: Describe your current duties

9) Contact Information

Office	Address:	
	TEL:	Mobile (Cell Phone):
	FAX:	E-mail:
Home	Address:	
	TEL:	Mobile (Cell Phone):
	FAX:	E-mail:
Contact person in emergency	Name:	
	Relationship to you:	
	Address:	
	TEL:	Mobile (Cell Phone):
	FAX:	E-mail:

10) Others (if necessary)

--

4. Career Record

1) Job Record (After graduation)

Organization	City/ Country	Period		Position or Title	Brief Job Description
		From Month/Year	To Month/Year		

2) Educational Record (Higher Education)(required)

Institution	City/ Country	Period		Degree obtained	Major
		From Month/Year	To Month/Year		

3) Training or Study in Foreign Countries; please write your past visits to Japan specifically as much as possible, if any.

Institution	City/ Country	Period		Field of Study / Program Title
		From Month/Year	To Month/Year	

5. Language Proficiency (required)

1) Language to be used in the program (as in GI)					
Listening	() Excellent	() Good	() Fair	() Poor	
Speaking	() Excellent	() Good	() Fair	() Poor	
Reading	() Excellent	() Good	() Fair	() Poor	
Writing	() Excellent	() Good	() Fair	() Poor	
Certificate (Examples: TOEFL, TOEIC)					
2) Mother Tongue					
3) Other languages ()		() Excellent	() Good	() Fair	() Poor

¹ Excellent: Refined fluency skills and topic-controlled discussions, debates & presentations. Formulates strategies to deal with various essay types, including narrative, comparison, cause-effect & argumentative essays.

¹ Good: Conversational accuracy & fluency in a wide range of situations: discussions, short presentations & interviews. Compound complex sentences. Extended essay formation.

¹ Fair: Broader range of language related to expressing opinions, giving advice, making suggestions. Limited compound and complex sentences & expanded paragraph formation.

¹ Poor: Simple conversation level, such as self-introduction, brief question & answer using the present and past tenses.

6. Expectation on the applied training and dialogue program

1) **Personal Goal:** Describe what you intend to achieve in the applied training and dialogue program in relation to the organizational purpose described in Part A-2.

--

2) **Relevant Experience:** Describe your previous vocational experiences which are highly relevant in the themes of the applied training and dialogue program. (required)

--

3) **Area of Interest:** Describe your subject of particular interest with reference to the contents of the applied training and dialogue program. (required)

--

*7. Declaration (to be signed by the Nominee) (required)

I certify that the statements I made in this form are true and correct to the best of my knowledge.

If accepted for the program, I agree:

- (a) not to bring or invite any member of my family (except for the program whose period is one year or more),
- (b) to carry out such instructions and abide by such conditions as may be stipulated by both the nominating government and the Japanese Government regarding the program,
- (c) to follow the program, and abide by the rules of the institution or establishment that implements the program,
- (d) to refrain from engaging in political activity or any form of employment for profit or gain,
- (e) to return to my home country at the end of the activities in Japan on the designated flight schedule arranged by JICA,
- (f) to discontinue the program if JICA and the applying organization agree on any reason for such discontinuation.
- (g) to consent to waive exercise of my copyright holder's rights for documents or products that are produced during the course of the project, against duplication and/or translation by JICA, as long as they are used for the purposes of the program.

Date:	Signature:
	Print Name:

MEDICAL HISTORY AND EXAMINATION

1. Present Status

(a) Do you currently use any drugs for the treatment of a medical condition? (Give name & dosage.)

() No	() Yes >> Name of Medication (_____), Quantity (_____)
--------	---

(b) Are you pregnant?

() No	() Yes (_____ months)
--------	--------------------------

(c) Are you allergic to any medication or food?

() No	() Yes >>> () Medication	() Food	() Other:
--------	----------------------------	----------	------------

(d) Please indicate any needs arising from disabilities that might necessitate additional support or facilities.

(_____)

Note: Disability does not lead to exclusion of persons with disability from the program. However, upon the situation, you may be directly inquired by the JICA official in charge for a more detailed account of your condition.

2. Medical History

(a) Have you had any significant or serious illness? (If hospitalized, give place & dates.)

Past:	() No	() Yes>>Name of illness (_____), Place & dates (_____)
Present:	() No	() Yes>>Present Condition (_____)

(b) Have you ever been a patient in a mental hospital or been treated by a psychiatrist?

Past:	() No	() Yes>>Name of illness (_____), Place & dates (_____)
Present:	() No	() Yes>>Present Condition (_____)

(c) High blood pressure

Past:	() No	() Yes
Present:	() No	() Yes>>Present Condition (_____) mm/Hg to (_____) mm/Hg

(d) Diabetes (sugar in the urine)

Past:	() No	() Yes
Present:	() No	(_____) Yes>>Present Condition (_____)
Are you taking any medicine or insulin?		() No () Yes

(e) Past History: What illness(es) have you had previously?

() Stomach and Intestinal Disorder	() Liver Disease	() Heart Disease	() Kidney Disease
() Tuberculosis	() Asthma	() Thyroid Problem	
() Infectious Disease >>> Specify name of illness (_____)			
() Other >>> Specify (_____)			

(e') Has this disease been cured?

() Yes	() No (Specify name of illness) (_____)
() Yes	Present Condition: (_____)



3. Other: Any restrictions on food and behavior due to health or religious reasons?

--

I certify that I have read the above instructions and answered all questions truthfully and completely to the best of my knowledge.

I understand and accept that medical conditions resulting from an undisclosed pre-existing condition may not be financially compensated by JICA and may result in termination of the program.

Date:	Signature:
	Print Name: