

Beijing International Center for Theoretical and Applied Mechanics

Progress Report of BICTAM

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The Chinese Society of
Theoretical and Applied Mechanics

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Progress Report of BICTAM

Beijing International Center for Theoretical and Applied Mechanics

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Foreword

In 2002, the Council of CSTAM recognized the necessity of making progress in international exchange of mechanics in Asia and Pacific region. The general idea of building up an International Center for Mechanics in Beijing, China, for the scientists and students in the region, had been formulated for the first time by CSTAM at the meeting with the support of Professor Guanhua Xu, the Chinese Minister of Science and Technology (2001-2007) in December of 2002.

From 2003 to 2006, CSTAM made efforts to push the preparatory establishment.

At the meeting of the Bureau of IUTAM in August of 2006, CSTAM made an initial proposal to establish an International Center for Theoretical and Applied Mechanics in Beijing, China. The Bureau of IUTAM discussed the proposal and gave some positive feedbacks. In October of 2006, Professor Dick van Campen, Secretary-General of IUTAM (2004-2008), wrote to Professor Nordin Hasan, Director of ICSU Regional Office for Asia and the Pacific, to express *full support on behalf of IUTAM regarding the proposal to establish the Center in Beijing*. For seeking the views of the ICSU Regional Office for Asia and the Pacific about the proposal, CSTAM keeps in touch with Professor Nordin Hasan, who also expressed support for the proposal, as mentioned in his reply to Professor Jiachun Li, President of CSTAM, *“We are supportive of your initiative and through the centre we are hopeful that science and technology will further flourish”*.

With the positive responses from the Adhering Organizations of IUTAM in the Asia and the Pacific, CSTAM held the meeting on the Center on August 17, 2007, in Beijing, China. The representatives from Australia, India, Israel, Japan, Korea, Singapore and China, including Professor Nordin Hasan, Professor Keith Moffat and Professor Dick van Campen, participated in the discussion on the statutes of the Center and formulated the proposal to the IUTAM. *This successful meeting is a historic event, which marks the birth of the Center*. Since then, the Center formally named as Beijing International Center for Theoretical and Applied Mechanics, referred to as BICTAM.

Following the meeting, CSTAM made great efforts to start off the activities of the Center including summer schools, symposia and mini-courses during this preparatory period. News of activities and academic programs issued on the Center’s web site, periodically delivering newsletters and progress reports are the important means of keeping the members of the International Advisory Panel (IAP) informed the new development of the Center. In the meantime, we further completed the infrastructure work of the Center including IAP and the Local Organizing Committee (LOC). In this regard, three

more counties and regions have agreed to join the Center as members of IAP. Meanwhile, eight Chinese universities and instructions have promised to support the Center as sponsors. Secondly, the documents such as the Statutes of BICTAM were further updated. And finally the financial status on a longer term is now cleared up. In a word, CSTAM had made great progress in operation of the Secretariat, organizations of activities and fund-raising for the Center, which was reported to IUTAM Bureau meeting for discussion in August of 2009 in Beijing. Therefore, the Bureau of IUTAM assumed that the application of BICTAM as an Affiliated Organization of IUTAM was mature and can be submitted to GA in July of 2010 in Paris for decision.

Based on the foregoing considerations, we have prepared a formal progress report of BICTAM during 2007-2010 as one of the documents of GA, in which the Center's goals, functions, roles and the structure of the organization have been defined clearly. This report summarizes the progress of the Center's establishment and major activities from 2007 to 2010, consisting of the following five parts:

1. Introduction of the Center: background, objectives.
2. Brief introduction of major activities from 2007 to 2010.
3. Organizational structure of the Center.
4. Statutes of BICTAM.
5. Current financial status and potential resources.

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Part I : Introduction

1. Background

1.1 Mechanics in 21st Century

The 21st century is a new era, during which the transition of the world from industry growth to “knowledge-based economies”, more possibilities and opportunities for science to benefit society. With globalization of trade and the relative ease of international travel and communication, our globe is becoming a smaller world with shared needs and common concerns. In the meanwhile, the solution of problems faced by scientists and engineers, such as climate change, environmental pollution, natural and man-induced hazards, etc., requires much greater international cooperation than ever before. This creates a strong need to establish international dialogue, cooperation and consensus in many areas of science and technology.

Mechanics constitutes the backbone of many engineering disciplines. Emergence of Newtonian mechanics represented the origin of modern natural sciences. Subsequent development of mechanics was further promoted by the industrial revolution, and in the last fifty years was to a large extent propelled by power generation, air transportation, space exploration, disaster reduction and understanding of diseases, etc. The enabling effect of mechanics on engineering and new technologies is a prominent phenomenon of the 20th century. Mechanics will undoubtedly continue to contribute to the well-being of society in the 21st century. In addition, the integration of mechanics and computers enormously enhances our ability to resolve challenging problems.

In spite of the remarkable progress many fundamental issues in mechanics critical to the well-being of mankind still remain unsolved. The improvement and encouragement of engineering education are also a task commonly concerned by universities and governments in many countries. Greater attention needs to be paid to new directions and territories which are critical for the advancement of science and technologies.

1.2 Needs in Asian and Pacific Region

More than 60% of the world population resides in more than 50 countries with diverse historical and cultural background, most of which belong to developing countries. A

common aspiration of these countries is development, peace and stability. In this region we also find both advanced economy as well as the fastest growing economies. This sets a stage for cooperation and exchange of experience in which mechanics can play an important and unique role in the advancement of science, technology, education and economy in Asia and the Pacific countries. For example, the following are some of the scientific issues, identified in the Strategic Plan 2006 - 2011 of ICSU, where mechanics community can and should take joint actions toward providing guidelines and solutions.

1.2.1 Environment and natural disasters

The negative impacts caused by changes in environment are felt world-wide. Every year environmental hazards, such as hurricanes, floods, tsunamis, landslides, megacity subsidence, volcanoes and earthquakes claim thousands of lives and cause extensive damage to livelihoods and property. For example, the 2004 tsunami in the Indian Ocean killed more than 300,000 people and made millions of refugees homeless. The situation is further aggravated by increasing in human-induced hazards, from pollution to desertification triggered by deforestation. Like the disasters themselves, scientific research on hazards crosses national borders and is inherently international in nature. For example, the sand storms occurring in the north-east Asia requires the scientific communities of Mongolia, China, Korea and Japan to develop an international program to initiate a truly regional and interdisciplinary research to understand, predict, assess and mitigate them. As indicated in the Strategic Plan 2006-2011 of ICSU, *geohazards are a theme that is of considerable scientific interest to several unions and was the major focus of the ICSU Committee on Disaster Reduction*. As a matter of fact, many natural and human-induced hazards that threaten the whole world are essentially processes of mechanics. For example, earthquakes involve processes of movements of plates, accumulation of stress, multi-scale damage and fracture of faults. Convective motion of fluids and concurrent mass, momentum and energy transfer at the air-sea/land interface govern climate change. At present, human's understanding and prediction of these complicated natural phenomena primarily rely on the advances in many branches of mechanics. Among various scientific unions, mechanics community can and should definitely take actions in dealing with these hazards.

1.2.2 Human health

The protection of human health is one of the central concerns of modern society and a major focus of scientific research. In the past century, medical science has made tremendous progresses, yet there remains a wide array of human health problems that are potentially preventable based on in-depth scientific understanding. Recent

outbreaks of infectious diseases such as H5N1 have illustrated the global or regional nature of many emerging health threats. In addition, there is a growing awareness that human health is linked inextricably to the “health” of our planet and environmental change. Today, blend of mechanics and life science constitutes the contents of biomechanics and biomedical engineering, in which researches are carried out at cell-molecule level, including bone mechanics, blood hydrodynamics, and tissue engineering, etc.

Many physiological phenomena in human’s health are inherently related to mechanics as well. It is well recognized that stress governs the growth process and functions of organisms. Biomechanics has found many applications in better understanding of human’s normal and pathologic processes in cells, tissues, bones, bloods, etc., in the development of medical therapy procedures and devices. Therefore, there is a need to establish a platform as to more clearly define how mechanics might contribute more to medical science for human being.

1.2.3 Sustainable development and energy

Sustainable development is now regarded as one of the most daunting challenges that humanity has ever confronted. At all scales, from local to global, scientific and technological knowledge can help provide guidance and new solutions to the economic, social and environmental problems that may make current development unsustainable.

Meeting the energy needs with minimum negative environmental impact is one of the major challenges to sustainable development in Asia and the Pacific. It is widely accepted that the further development of existing and new scientific knowledge and renewable energy technologies must be a vital component of any long-term strategy to meet the energy needs. In this regard, more than ever before, knowledge of mechanics is needed in harvesting and saving energy, including exploitation and efficient use of conventional resources, development of technologies for clean energy (e.g. biomass) , harnessing natural power for electricity (e.g. wind energy and hydraulic power), etc.

There is clear need for mechanics in relation to energy to ensure that the best information is available to policy-makers and engineers. The mechanical problems that need to be coped with range from storage and leakage of nuclear waste, design of blades and solid-fluid interactions of windmills, reduction of drag of aircraft to enhance propulsive efficiency, to improvement of combustion processes, and efficient exploitation and use of coal, oil, etc.

1.2.4 Education, scientific and technological capacity building

Capacity building in science encompasses the efforts that are required to establish and maintain a critical mass of qualified scientists with the supporting infrastructure, including facilities and working conditions, that enable them to conduct research, education, training and advisory work (Strategic Plan 2006-2011, ICSU).

Science and engineering education is a critical aspect of capacity building. However, there is great disparity of educational levels in the Asia and Pacific region. The problem is more challenging to developing countries, where, possibly, limited financial resources and an absence of universal education systems amplify the problems. It is necessary to facilitate capacity building in the context of some international program which meets this regional need.

As mechanics plays a central role in engineering, education and capacity building, the encouragement of the study of mechanics and related engineering disciplines helps to lift the quality and ability of researchers and engineers in the region. This will in turn enormously optimize and enhance the manufacturing processes and the quality of products so as to benefit the global society.

1.2.5 Exploration of new horizons

The interchange between different disciplines and countries facilitates to identify those areas where early international planning and coordination are necessary. For many emerging areas, such as nanosciences/nanotechnology, high-performance computation, and advanced experimental techniques, international collaboration occurs almost spontaneously. There is a need to build a platform for such kinds of activities:

- To identify emerging international research priorities that fall within the disciplines related to mechanics and are of importance to science and society, such as complex system science, stochastic processes in nature and society, molecular biosciences, and nanosciences and nanotechnology, etc.;
- To develop mechanisms to ensure that these can be addressed in a timely manner by scientists in related countries;
- To explore the development of a series of international conferences on key areas of interest to scientists and society of the region.

2. Principal Objectives

The principal aims of the proposed International Center for Theoretical and Applied Mechanics in Beijing are to promote the development and application of mechanics in Asia and the Pacific region. They include improving the academic capability to conduct cutting-edge researches, advancing the ability to apply mechanics to solving problems of concern to society, promoting engagements with policy-makers and government, and creating a platform for academic exchange and communication.

OBJECTIVES

- To advance all branches of theoretical and applied mechanics and related sciences, including analytical, computational and experimental investigations.
- To organize various international activities such as conferences, symposia, workshops and summer schools for subjects falling within the field of theoretical and applied mechanics and interdisciplinary branches that meet the needs of the countries in Asia and the Pacific, and in turn further the participation and contribution of the region to the global mechanics community.
- To promote mutual beneficial interaction with industry so as to make the advances in mechanics and related fields available to engineers and entrepreneurs, and to bring the needs of industry to researchers.
- To provide scientific and technical advances to policy-makers by advisory reports identifying the most significant issues in economic and social development of Asia and the Pacific and suggestions to initiate or support scientific plans.
- To enhance capacity building and education of mechanics in the countries of the region. The Center will aim to improve mechanics education in the countries by encouraging the study of science and engineering, and by training young scientists.
- To facilitate collaboration and communication in mechanics research within the region and with other researchers and organizations world-wide by exchange programs, bi- and multilateral workshops, and mutual visits.

The Center will be a non-governmental scientific organization, and will be affiliated to IUTAM¹ in close collaboration with ICSU Regional Office for Asia and the Pacific. Thus,

¹ Subject to the approval of the General Assembly of IUTAM

the missions of the Center will be closely related to those of ICSU, namely, to *identify and address major issues of importance to science and society*, to *facilitate interaction amongst scientists across all disciplines and from all countries*, to *promote the participation of all scientists in the international scientific endeavor, regardless of race, citizenship, language, political stance or gender*, and to *provide independent, authoritative advice to stimulate constructive dialogue between the scientific community and governments, civil society, and the private sector*. In particular, the Center will aim at:

2.1 To promote the advancement of mechanics

Mechanics is a basic scientific discipline concerned with force, motion and macroscopic, mesoscopic/microscopic mechanical properties of substances (solids, liquids, gases, plasmas, etc.). Classical branches of mechanics are solid mechanics, fluid mechanics and dynamics and control. They primarily deal with the deformation and failure of solids; the flow of fluids and the transport of momentum, energy and mass; and motion and evolution of discrete systems. In addition, today's mechanics also includes a number of interdisciplinary branches such as physical mechanics, biomechanics, environmental mechanics and geomechanics, etc. Still more new and interdisciplinary/multidisciplinary branches will keep emerging. Multidisciplinary mechanics is an area full of exciting opportunities and engineering applications. Because of the complexity of the problems involved, numerous analytical, numerical and experimental techniques have been developed. The outcome of these researches has been successfully applied to many important practical problems in engineering as well as mathematics and the natural sciences. With the development of society, more attention is being paid to mechanics related to natural and geological calamities, such as earthquakes, landslides, debris flows, tsunamis, and floods, etc. Studies of responses of materials and structures across multi-scales have been essential to the understanding, design, manufacture and prediction of behavior of various structures in areas ranging from aerospace engineering to nanotechnology. Biomechanics and biomedical engineering are directly related to human health and treatment of diseases.

In view of the wide scope and multidisciplinary nature of mechanics, there is an evident need to create a platform to enable all countries in the region to access the state-of-the-art advances in all disciplines of mechanics and to exchange and share knowledge and experiences. All countries will benefit irrespective of size and stage of development. Advances in mechanics in this region will in turn encourage the participation and contribution of these countries to the global mechanics community. The Center aims at assisting and coordinating applications for international conferences and plans to organize symposia and summer schools in line with the aims of IUTAM and

ICSU. The Center will also invite and host international scientists in theoretical and applied mechanics for short visits and lectures in the Asian-Pacific region.

2.2 To interact with society and policy-makers

Nowadays the knowledge of science and technology is playing a more influential role at the societal and governmental level. Scientific evidences now become an essential basis for policy making by governments and other organizations. The Center aims to assist the scientific community of mechanics in Asia and the Pacific, in implementing new scientific initiatives and engaging with policy-makers and other sectors of society. Under the support of IUTAM and in close collaboration with the ICSU Regional Office, the Center will invite scientists on a global scale to identify and discuss issues related to mechanics that are of common interest to the regional and international society and to produce advisory reports to the governments, scientific institutions and funding agencies. For example, environment, sustainable development and human health are such issues that are of common interest globe-wide. The Center will also promote mutual beneficial interaction with industry so as to make the advances in mechanics and related fields available to engineers and entrepreneurs, and to bring the needs of industry to researchers;

Hazard prediction and prevention is an area that modern mechanics can make great contributions. Information on mechanical evolution of materials can be extracted from many natural hazards as topics of mechanics research. The Center will invite international experts and researchers to seminars, provide the analysis of regional and global environment, natural hazards and promote the sharing of knowledge on hazard prevention. This can be of great importance to the economic and social development of the countries in the region. Thus, one of the goals of the Center is to work toward a more coordinated and inclusive approach to research on the environment such that the necessary high-quality scientific evidence is made available to policy-makers, and to develop new international programs in key areas.

2.3 To improve education of mechanics

The Center will make efforts to promote the educational level in mechanics in the region. Science education is a critical aspect of capacity building. It is a challenging issue for all countries, particularly for the developing countries, where limited financial resources and inadequate universal education may amplify the problem. The Center plans to play a very active role in organizing educational activities. These activities may range from workshops for teachers in various disciplines of mechanics, competitions among students, publishing of textbooks and exchange of students, etc.

2.4 To create a platform of academic communication and exchange

One of the most significant changes that have taken place in science over the past decade has been increased emphasis on interdisciplinary tendency. It is at the borders between disciplines that many of the most exciting scientific advances are taking place. At the same time, the major challenges that society is facing, from global warming and sustainable development to emerging pandemic diseases, can only be fully addressed by a combined approach and knowledge from different scientific disciplines. The Center will emphasize that interdisciplinary approaches are needed in developing and implementing its overall strategy and that effective mechanisms are in place to facilitate cross-fertilization of ideas from different scientific disciplines. The academic communication and exchange will encompass both activities to enhance international cooperation and activities to enhance interdisciplinary cooperation.

The Center will also create a platform to promote scientific cooperation among scientists in Asian and the Pacific institutions and support the training courses on the frontiers of theoretical and applied mechanics. It will promote the exchange of scientific information and the exchange of scientists within the region and across the globe.

Part II : Summary of Major Activities, 2007-2010

ACTIVITIES

- **Actions in relation to ICSU plan.** In terms of the ICSU Strategic Plan 2006-2011, the Center will work closely with the ICSU Regional Office in Kuala Lumpur to develop initiatives in areas identified in the ICSU strategic plans.
- **Programs specifically designed for the Center, initiated or approved by IUTAM.**
- **Conferences and seminars that are held ad hoc to deal with emerging issues of common interest to countries in the region and need international cooperation.** As the case may be, consensus reached at these meetings may be presented as advisory report to concerned governmental and funding organizations. Workshops for advances in mechanics research and education will also be organized.
- **Exchanges and short academic visits of researchers within the region**
- **Support to young researchers and students to participate in the activities organized by the Center.**
- **Publication of newsletters, textbooks, and lecture notes, and construction and maintenance of a website for the Center.**

The above activities are to be held in countries associated with the Center in the region. The host institutions are expected to provide personnel, facility, and financial supports.

After the meeting on the BICTAM on August 17, 2007, the Center was formally founded, located in the Institute of Mechanics, Chinese Academy of Sciences, Beijing. Major developments since the meeting are summarized as follows:

ESTABLISHMENT OF ORGANIZATIONS

Date	Activity	Actions
17 Aug. 2007	<p>Meeting on BICTAM, Beijing</p> <ul style="list-style-type: none"> ● 15 delegates from 9 countries/regions attended. ● Report on Mechanics in Australia, India, Israel, Korea, Japan, Singapore and China. ● Discussion and elaboration of the Center's proposal and statutes. 	<p>The Center was formally founded.</p> <ul style="list-style-type: none"> ● STATUTES (As revised August 18, 2007) ● A Proposal for Establishment of Beijing International Center for Theoretical and Applied Mechanics (As revised August 18, 2007)
Oct. 2007	<p>Eight leading universities in China accepted the invitation to be the Center's co-sponsors.</p>	<p>Local Organizing Committee (LOC) was set up, which consist of representatives from the co-sponsors with Prof. Jiachun Li, President of CSTAM as its Chairman.</p>



Fig. 1 Group picture at the meeting on BICTAM in Beijing, 2007

Date	Activity	Actions
Apr. 2008	Three additional scientists (Members of IUTAM GA) have joined the International Advisory Panel (IAP) of the Center as members.	Nine out of the eleven adhering organizations of IUTAM in the Asia and the Pacific region have representatives on the IAP of BICTAM.

- Prof. Graham Weir, New Zealand
- Prof. Weichung Wang, Taiwan, China
- Prof. Tongxi Yu, Hong Kong, China



Fig. 2 Acceptance letter from Prof. Graham Weir in Apr. 2008

Aug. 2008	Informal evening party for the members of BICTAM IAP in Adelaide during the 22nd ICTAM.	Reviewed and discussed the Center's activities. Progress report: <ul style="list-style-type: none"> ● Activities and Programs of the Center ● Financial support from different sources in China
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Aug. 2009	IUTAM Bureau 2009 Meeting, Beijing.	The Center should prepare for the application in the future.
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- Affairs on BICTAM to be recognized as IUTAM's affiliated organization was discussed in IUTAM Bureau Meeting.

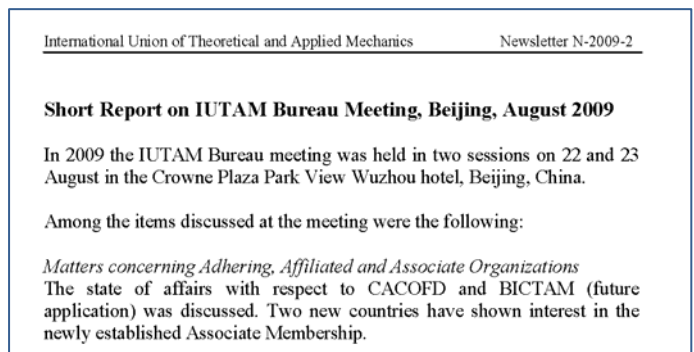


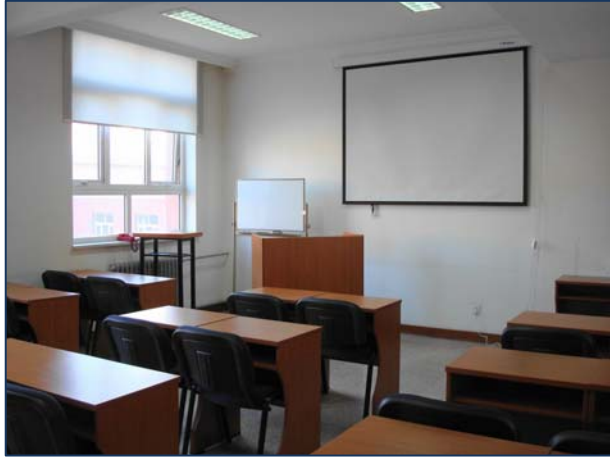


Fig. 3 Report on IUTAM Bureau Meeting (IUTAM's Newsletter)

ESTABLISHMENT OF INFRASTRUCTURE

Date	Activity	Actions
Dec. 2007	<p>The Center's Secretariat had been established, which located in the Institute of Mechanics, CAS. The facilities include:</p> <ul style="list-style-type: none"> ● Six offices for visiting scientists ● A classroom holding 22 persons ● A meeting room seating 40 persons ● An administrative office ● All offices with personal computers, telephones, and access to the internet 	<p>Under the sponsorship of the Institute of Mechanics, CAS, the infrastructure of the Center was established.</p>
		
		<p>Fig. 4 Offices of the Center's Secretariat</p>
		
	<p>Fig. 5 Facilities in the Center's administrative office</p>	<p>Fig. 6 Classroom for lectures and short courses</p>
Feb. 2008	<p>A website of the Center has been set up: http://www/bictam.org.cn.</p>	<ul style="list-style-type: none"> ● Introduction for the Center and its Statutes ● To issue News, programs of the Center's activities

Date	Activity	Actions
Jan. 2008	Progress report to the IAP members.	Brief Report of BICTAM: <ul style="list-style-type: none"> ● LOC was set up. ● Tentative plan for the kick-off activities of the Center ● Sponsorship ● Website
Jun. 2008	The programs of BICTAM for 2008-2010 had been announced on the Center's website. <ul style="list-style-type: none"> ● Priority to students recommended by the IAP members ● Students supported is 40 for 2008 	Programs of BICTAM for 2008-2010: <ul style="list-style-type: none"> ● 2 symposia and 2 summer courses in 2008 ● 2 symposia in 2009 ● 1 workshop in 2010
Jun. 2009	Send Newsletter (N-2009-1) to IAP members: <ul style="list-style-type: none"> ● Report on the BICTAM in 2008 and the plan for the symposia in 2009. ● 2 symposia concerning about multi-phase flows and computational mechanics in the autumn of 2009. ● Vacancies for speakers and students from member countries of BICTAM. 	Newsletter of the Center, June 2009: <ul style="list-style-type: none"> ● Report on the BICTAM in 2008 ● BICTAM Symposia in 2009




Fig. 7 BICTAM Newsletter N-2009-1, June 2009

Date	Activity	Actions
Dec. 2009	<p data-bbox="456 275 844 344">Send greeting message to IAP members:</p> <ul data-bbox="456 386 844 583" style="list-style-type: none"> <li data-bbox="456 386 844 455">● Two featured symposia in the autumn of 2009 <li data-bbox="456 468 844 583">● Application for IUTAM Affiliated Organization Status 	<p data-bbox="889 275 1356 344">New Year's greetings from BICTAM, 2009</p> 

Fig. 8 Letter with Greeting Card to IAP members, Dec. 2009

ACADEMIC ACTIVITIES

Date	Activity	Actions
Dec. 2007 - Present	<p data-bbox="402 1486 917 1598">More than 20 scientists and senior students invited as visiting guests of the Center:</p> <ul data-bbox="402 1640 917 1755" style="list-style-type: none"> <li data-bbox="402 1640 917 1755">● Mainly from USA, UK, Germany, Australia, France, India and Taiwan, China. 	<p data-bbox="946 1486 1372 1514">Visiting Guests at the Center.</p> <ul data-bbox="946 1556 1372 1755" style="list-style-type: none"> <li data-bbox="946 1556 1372 1591">● Lectures and short courses <li data-bbox="946 1604 1372 1673">● Mutual cooperation with some labs of the Imech, CAS <li data-bbox="946 1686 1372 1755">● Visiting days last from two weeks to one year.

Date	Activity	Topics
Jul. 8-17, 2008	<p>Lecturer: Prof. PD Dr. Jörg Weißmüller (Karlsruhe Institute of Technology, Germany)</p> <p>Place: Peking University, Beijing, China</p> <p>Attendees: 30 Post-graduate students</p>	<p>Summer School on Surfaces and Interfaces in Solid Matters</p> <ul style="list-style-type: none"> ● Atomic-scale geometry ● Structure-energy relations ● Thermodynamics ● Electronic structure etc.
		
<p>Fig. 9 Summer School, Peking University, 2008</p>		
Aug. 6-22, 2008	<p>Place: Xiangtan University, Hunan, China</p> <p>Attendees: More than 100 graduate students</p>	<p>Summer School on Multi-field Coupling Theory and Smart Materials</p> <ul style="list-style-type: none"> ● Multi-scale Mechanics ● Ferroelectric/Ferromagnetic Materials and Multi-field Coupling Theory ● Mechanics of Special Materials and Structures etc.
Oct. 7-9, 2008	<p>Place: Beijing Institute of University, Beijing, China</p> <p>Attendees: 71 delegates from China, Germany, France, Czech and UK</p>	<p>Symposium on Computational Mechanics of Materials</p> <ul style="list-style-type: none"> ● Nano, micro and micromechanical modeling ● Nonlocal damage modeling ● Damage and fracture etc.

Date	Activity	Topics
Oct. 16-17, 2008	Lecturer: Prof. Michael A. Lieberman (University of California-Berkeley, USA) Place: Office of the Center, Beijing, China Attendees: 30 graduate students	Mini-Course on the Principles of Plasma Discharges <ul style="list-style-type: none"> ● Summary of Plasma Fundamentals ● Summary of Discharge Fundamentals ● Analysis of Discharge Equilibrium ● Inductive RF Discharges



Fig. 10 Mini-course, Imech, CAS, 2008

Dec. 1-3, 2008	Place: The Shanghai Jiaotong University, Shanghai, China Attendees: 35 delegates from China, Vietnam, Singapore, Malaysia, Philippine and other countries and areas	Workshop on the South China Sea Tsunami <ul style="list-style-type: none"> ● Potential seismic risk under the sea of the Manila Trench ● Mechanism of the tsunami disaster ● The key technology of the development of an early warning system etc.
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Date	Activity	Topics
Dec. 9-12, 2008	<p>Place: Sanya, Hainan, China</p> <p>Attendees: 50 delegates from China, USA, UK, Germany, Japan, Australia, Singapore, Indian and Hongkong, China.</p>	<p>Symposium on Mechanics and Biomimetics of Biomaterials & Animal Locomotion</p> <ul style="list-style-type: none"> ● Structures and properties of natural biomaterials ● Multiscale modeling of natural biomaterials ● Biomimetic design and fabrications of novel materials ● Biomechanics of animal flying and swimming ● Biomechanics of animal terrestrial locomotion ● Biomimetics of micro-sized air vehicles
		
<p>Fig. 11 Symposium, Sanya, 2008</p>		
Jun. 30, 2009	<p>Lecturer: Professor Parviz Moin (Stanford University, USA)</p> <p>Place: Office of the Center, Beijing, China</p> <p>Attendees: 160 delegates</p>	<p>Lecture on Wall Turbulence</p>
		
<p>Fig. 12 Lecture, Imech, CAS, 2009</p>		
Sep. 21-25, 2009	<p>Place: Peking University, Beijing, China</p> <p>Attendees: 150 delegates</p>	<p>Symposium on Turbulence</p>

Date	Activity	Topics
Aug. 16-20, 2009	Place: Peking University, Beijing, China Attendees: 120 delegates from various institutes with different backgrounds such as biology, chemistry, physics and mechanics	Summer School on Mechanics in Microfluidics
Oct. 12-16, 2009	Place: Hohai University, China Attendees: 55 delegates from USA, France, Japan, Spain, Argentina, Singapore and China.	Symposium on Meshfree/Meshless, Particle and Generalized/Extended Finite Element Methods
		
<p style="text-align: center;">Fig. 13 Symposium, Hohai University, 2009</p>		
Oct. 16-19, 2009	Place: Lanzhou University, China Attendees: 20 delegates from USA, Korea, Japan, India and China.	Symposium on Multi Flow in Atmospheric Boundary Layer: Wind Erosion, Dust Storms
		
<p style="text-align: center;">Fig. 14 Symposium, Lanzhou, 2009</p>		

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