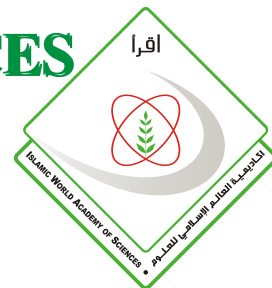


ISLAMIC WORLD ACADEMY OF SCIENCES Newsletter



November-December 2006

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Turkey hosts 15th IAS Conference: *Higher Education Excellence for Development in the Islamic World*



**Turkey's Prime Minister
Recep Tayyip Erdogan**

Under the patronage of Turkey's Prime Minister Mr Recep Tayyip Erdogan, the IAS convened its 15th international science conference in Ankara from 7-10 November 2006. The conference addressed the theme of *"Higher Education Excellence for Development in the Islamic World"*.

Held at Bilkent Hotel in Ankara, the conference was an open scientific activity in which over 150 participants representing over 30 countries participated.

The conference was organised and sponsored by the following organisations:

- Bilkent University, Ankara;
- Islamic Development Bank (IDB), Jeddah, Saudi Arabia;
- OPEC Fund for International Development, Vienna, Austria;
- Islamic Educational, Scientific and Cultural Organisation (ISESCO), Rabat, Morocco;
- International Conference on Higher Education (ICHE), Ankara;
- The Sasakawa Peace Foundation, Tokyo, Japan;
- International Islamic Charitable Organisation, Kuwait;
- Arab Potash Company, Amman, Jordan;
- The World Bank;
- Royal Jordanian Airlines;

- The National Centre for Human Resources, Amman, Jordan; and
- The IAS Secretariat.

The Conference, which coincided with the IAS' 20th Anniversary addressed a number of issues related to higher education in OIC member countries. It sought to engage the widest range of institutions and individuals involved in higher education in the OIC as well as a number of relevant international agencies.

The conference also attempted to link development in the higher education sector to the broader S&T sectors in the various countries.

The conference reviewed a number of modern-day attempts aimed at evaluating the performance of universities. It examined past experiences in this endeavour from a number of countries.

The conference included a number of sessions for papers delivered by IAS Fellows which addressed a wide range of educational and scientific issues.

In addition to an outstanding keynote address by Prof. Richard R. Ernst, Nobel Laureate from Switzerland (and Hon FIAS) entitled *"Goals of Higher Education: Knowledge and Critical Foresight Leading to Societal Responsibility"*; the Coordinator-General of COMSTECH Prof.

Atta-ur-Rahman (FIAS Pakistan) presented a keynote address on the topic of *"Excellence in Higher Education - Some Recent Initiatives in Pakistan"*.

In his keynote address, the founder of the host institution (Bilkent University) Prof. Ihsan Dogramaci presented a concise history of *"Higher Education in Turkey"* in which he outlined some of the factors lying behind the success of Turkey in establishing private non-profit universities, foremost among which is Bilkent University.

A further seven keynote addresses were presented during the conference which addressed such issues as *"What is What in Higher Education in the Arab Region for 2006"* (Prof. Adnan Badran (FIAS Jordan)), and *"Ranking and Evaluation of Universities Worldwide and its Implications for Universities in OIC-Member Countries"* (Dr Hazim Shah (Malaysia)). A number of special presentations, including by Prof Ahmed Abdullah Azad (Bangladesh/Australia) and IAS-DG Moneef Zou'bi, also were given.

At the conclusion of the three days of deliberations which also included site visits, the Conference adopted the IAS 2006 Ankara Declaration on *"Higher Education Excellence for Development in the Islamic World"* (reprinted on pages 2-4 of this newsletter)

2006 ISLAMIC WORLD ACADEMY OF SCIENCES (IAS) ANKARA DECLARATION

on

Higher Education Excellence for Development in the Islamic World

adopted at Ankara, Turkey
Safar 1427 / November 2006



PREAMBLE

1. **WHEREAS** the quest for knowledge is a pillar of the Islamic Faith, and knowledge and its pursuit have today assumed even greater importance in an increasingly knowledge-intensive world;
2. **WHEREAS** there is increased awareness of the critical role higher education plays in socio-economic development, and in building a sustainable future, for which future generations need to be equipped with new skills, knowledge and ideals;
3. **WHEREAS** in OIC countries in particular and developing countries in general, higher education is faced with great challenges related to its financing, staff development, skills-based training, the enhancement and preservation of quality in teaching, research and services, and the relevance of programmes;
4. **WHEREAS** higher education is being confronted by new opportunities relating to technologies that are improving the ways in which knowledge is produced, managed, disseminated, accessed and controlled;
5. **WHEREAS** Vision 1441 declares that OIC-Member countries are committed to become a community that values knowledge and is

competent in utilizing and advancing S&T to enhance the socio-economic well-being of the *Ummah*;

6. **AND WHEREAS** the international science and academic community must lead the way in bridging prevailing civilisational, social, economic, and even political divides between the peoples of the world,

THE PARTICIPANTS IN THE 15TH IAS CONFERENCE HELD AT BILKENT UNIVERSITY IN ANKARA, TURKEY, 07-10 NOVEMBER 2006:

7. **BEING CONCERNED** by the indifference shown by decision-makers in many OIC countries to the pivotal role of quality higher education in realising national aspirations;
8. **NOTING WITH CONCERN** the fact that very few OIC universities are ranked among the world's top 500 universities;
9. **BEING CONCERNED** at the lack of comprehensive, objective methodologies in place to evaluate the performance of universities in OIC countries in terms of quality of education and research output,

AND

10. **APPRECIATING** that in responding to the growing demands of market-

forces of the K-economy, a fresh re-examination is needed of higher education systems in OIC and developing countries in terms of quality and relevance;

11. **SUBSCRIBING** to the notion that quality in higher education is a multi-layered process, which should embrace all its functions and activities including: teaching and academic programmes, research and scholarship, staffing, students, buildings and facilities, equipment, services to the community, and the academic milieu;
12. **SUBSCRIBING** to the notion that internal self-evaluation and external review, openly carried out by autonomous specialists, are vital for enhancing quality. Independent national bodies involving all stakeholders should be established, and comparative standards of quality recognized at the international level should be defined. Due attention should be paid to specific institutional, national and regional contexts;
13. **AGREEING** to the general notion that international higher education surveys such as the Shanghai Jiao Tong University Survey, the Times Higher Education Supplement Survey and other similar studies may not necessarily reflect a true 'assessment' of the university in its

catchment area, although they may be indicative of certain criteria in which universities excel;

14. **EMPHASIZING** that higher education should be characterized by its international dimension: exchange of knowledge, interactive networking, mobility of academics and students, and international research projects, without forfeiting national cultural values and circumstances;
15. **EMPHASIZING** that to attain and sustain national, regional or international quality in higher education, certain components are particularly relevant, notably careful selection of academic staff and their continuous development, in particular through the promotion of apposite programmes including mobility between countries, between higher education institutions, and between higher education institutions and society/industry, as well as student mobility within and between countries. Information and Communication technologies (ICTs) are a main tool in this process owing to their impact on the acquisition of knowledge and know-how. Moreover, the Bologna Process – adopted by many European countries- represents a good model for harmonising quality assurance standards throughout OIC countries and universities in this domain;

ENDORSE THIS DECLARATION AS A PROPOSAL FOR THE ATTAINMENT OF HIGHER EDUCATION EXCELLENCE IN MEMBER COUNTRIES OF THE OIC AND OTHER DEVELOPING COUNTRIES, I.E.:

16. **ASSERT** that the core mission of higher education should be to contribute to the sustainable development and improvement of the wellbeing of societies;
17. **EMPHASIZE** that higher education must endeavour to advance, create and disseminate knowledge through research and to provide, as part of its service to the community, relevant expertise to assist societies in cultural, social and economic development, promoting and developing scientific and technological research as well as research in the social sciences;
18. **ENDORSE** the notion that higher education must help in understanding,

preserving, enhancing and promoting national and global cultures, in a context of pluralism and diversity;

19. **REITERATE** that higher education should aim to cultivate and enhance societal values by training young people to provide critical and detached perspectives to assist the reinforcement of humanistic perspectives;
20. **EMPHASIZE** the key roles played by contemporary basic and applied sciences education for gaining mastery in the transformational technologies of ICT, biotechnology and nanotechnology; as well as environmental and even cultural technologies;
21. **REAFFIRM** commitment to the implementation of specific actions at the national and international levels including, *inter alia*, commitment at the highest level to S&T, sizeable increases in R&D expenditure, and the promotion of the central role of the university as the originator of scientific output. New approaches are necessary to enhance greater linkage between the government, the university and industry;
22. **COMMEND** the success of Turkey in achieving an advanced ranking in terms of the number of scientific and engineering articles published in the world's leading scientific and technical journals, and urge universities and research centres in OIC countries to encourage and assist researchers to increase the quality of their contributions to the world's scientific output;
23. **CALL FOR** the exchange of scientific experiences and of technologies with a view to intensifying cooperation and delivering real benefits among countries, especially involving countries that have developed significant expertise in S&T policy development, S&T infrastructure, biotechnology, information technology, and nanotechnology,

AND

24. **CALL UPON** OIC countries to ensure that that the pursuit of science must not only focus on the attainment of knowledge but also on realising socio-economic goals;
25. **CALL UPON** concerned agencies to implement the necessary practical modalities for the implementation of

the recommendations of this Declaration in close co-ordination with relevant OIC bodies and other agencies, and through:

- (i) Setting up virtual working groups on higher education to develop a methodology for the ranking of OIC universities, to subject to peer-review project proposals submitted for financing, and to co-ordinate fund raising nationally, regionally and internationally to help leading OIC universities improve in world rankings over a specific period of time;
- (ii) Activating virtual working groups on ICT, biotechnology and nanotechnology to be hosted (it is proposed) by Malaysia, Tunisia and Pakistan with a view to implementing relevant OIC recommendations related to the promotion of these transformational technologies;
- (iii) Setting up a study group to prepare a position paper/action plan entitled "Brain-Gain: Concept and Possible Remedies" as a means to understand this phenomenon and help turn the current "Brain-Drain" into a possible "Brain-Gain" for the benefit of OIC countries;
- (iv) Accelerate the provision of quality core ICT infrastructure, increased access and reduced costs, and increase connectivity and physical access to ICT infrastructure, including the development and use of low-cost hardware and software;

AND CALL UPON the leaders and decision-makers of Islamic countries to:

26. **ALLOCATE** more resources to science education with a view to building up a scientific and technological human resource base capable of adapting and developing new technologies;
27. **FACILITATE** opportunities for scientists of the countries of the South to undertake undergraduate, postgraduate and post-doctoral studies in the North and in other parts of the South as a means of building up a critical mass of scientists and technologists in poorer countries;

28. **ESTABLISH** independent national academies of sciences in their countries, or where such entities exist strengthen them, so that they may act as independent advisory bodies to their respective governments, and strengthen academic and scientific links with international science academies and other scientific bodies worldwide;

29. **ENCOURAGE AND SUPPORT** leadership in science at all levels, promote leadership training centres, and nurture future leaders who would contribute to better understanding between the world's countries and civilisations;

AND URGE FURTHER, RELEVANT NATIONAL OIC AGENCIES TO:

30. **PROMOTE** and enhance inborn curiosity and inquisitiveness among the young through developing a "creativity movement" at national levels to create a conducive environment in the home, at school and at university, and to develop OIC-wide creativity programmes;

31. **DEVELOP** financial, business and entrepreneurial skills through education and hands-on experience in school and after-school programmes, and through specialised post-school business skills programmes;

FURTHERMORE, THE PARTICIPANTS IN THE 15TH IAS CONFERENCE:

32. **REAFFIRM** their support to the science community in Iraq and urge the international community to take all possible measures to ensure the safety, security and well-being of Iraqi scientists and academics within Iraq and internationally;

33. **EXTEND THEIR APPRECIATION** to Bilkent University and its Founder Prof. Ihsan Dogramaci (Hon FIAS) for hosting the 15th IAS Science Conference, and to the Islamic Development Bank, COMSTECH, ISESCO, the OPEC Fund for International Development and the Pakistan Academy of Sciences for generously financing this international meeting.

Pakistan's President General Pervez Musharraf Founding Patron IAS Conference Message

This annual scientific conference of the Islamic World Academy of Sciences offers an important opportunity to its Fellows to discuss some of the fundamental issues confronting the

Islamic nations today. Choosing "Higher Education Excellence for Development in the Islamic World" for the fifteenth International Scientific Conference in Ankara is timely and well suited to our current state of affairs.

The lack of high quality education, particularly at the tertiary level, has been a weak area for the Islamic World and one of the key reasons for our deteriorating scientific output. This is apparent from our wildly disproportionate per capita resource distribution for the education sector in the OIC region.

To open the doors of higher education to all students regardless of income, OIC member states must first assign a significant share of their resources to this essential sector of our development. We also need to nurture our economics through emphasis on science and technology and linkages with industry. The OIC members countries must provide strong financial support to such programs and use COMSTECH as platform to address the issues of socio-economic development through transforming to knowledge economies.

The purpose of higher education should be to encourage curiosity, exploration and enhance the quality of life. These are some of the more important qualities that distinguish developed societies from the educationally undernourished and underdeveloped cultures. The task of the Fellows of this august body assembled in Ankara today should be to deliberate and discover ways to formulate a strategy for implementing quality higher education programs relevant to the needs of the citizens of OIC member states. I earnestly hope that the Fifteenth Conference of the Islamic World Academy of Sciences in Ankara will mark the beginning of a new era, reflecting a positive shift in our thinking on higher education.

May Allah give us the courage to cope with these challenges in accordance with the teachings of Islam and bless us with a true and genuine commitment to advance the cause of education, scientific research, technological advancement and prosperity for all.

Jordan's Prince Al-Hassan Ibn Talal Founding Patron IAS Conference Message

The first word of the Holy Qur'an, revealed to the Prophet Muhammad (PBUH), as can be seen on the very logo of the Islamic World Academy of Sciences, is "Iqra!" ("Read!") – a seminal exhortation to learn if ever there was one – and a famous *hadith* instructs his followers to "seek knowledge, even unto China", which was a lot harder in the age of camels than that of transcontinental tourism!

It has long been recognised that education is, without exception, the most important tool for the development of civilization, empowerment and, ultimately, for liberty. It is also the greatest gift that we can bestow upon our younger generations. By educating children at the primary level, we can introduce moral and ethical principles to new minds at the earliest opportunity; and by educating teenagers at the secondary level, we should sustain the acceptance of these ideas throughout the formative years; however, it is only by offering the chance of tertiary education to young adults, that we can train those that will follow us to analyse problems, and to improve methods of governance: in essence, to think for themselves. Education is not only a method for moral and ethical instruction but can be used to nurture every aspect of the younger generation: to support the human being, as a whole, throughout the transition into adulthood.

The second of the UN's eight Millennium Development Goals is to "Achieve Universal Primary Education" (by 2015). But this cannot be the end result. I would also like to see unanimous secondary education, as well as universal opportunities for higher education, by 2050.

Education is not only about imparting knowledge to younger generations, but it carries the utmost responsibility and the greatest opportunity for eliminating prejudice, promoting understanding, and demonstrating a model for cohabitation to be emulated in the future. Irresponsible pedagogy, on the other hand, is an enormous risk that must be avoided at all costs.

The Islamic World is part of a global village that grows smaller and closer every day, and quality higher education must become more-readily obtainable to prevent isolation and estrangement from our ever changing world. Isolation leads to marginalisation, which, in turn, can

have tragic and often disastrous consequences. Abuse of education must be prevented and replaced with open-minded teaching and the tools to accommodate others. After all, it is from the east (الشرق) that the idea of 'illumination' (الإشراق) arose, centuries before the concept of 'enlightenment' was recognised by Europe.

Reconciliation between conflicting ideas such as between traditional values and modernity must be attempted and recognition given to both, although when reconciliation is impossible we must learn to peacefully agree to disagree. Meanwhile, we should re-examine our own, as well as each other's heritage and history to establish universal shared values, because learning about the other can teach us volumes about ourselves.

Such learning by analogy, and by putting ourselves "in the shoes of another", is an invaluable experience. Exchange programmes such as Socrates, Minerva and Erasmus afford students the opportunity to learn about each other from each other. My friend, Ihsan Dogramaci, is a true ally to education, not to mention the valuable contributions made by him and his wife to youth education, and the work of Bilkent University. The nascent Centre of Mediterranean Humanities, in Bilkent, should include a graduate facility to further exchange and enhance mutual education opportunities in the higher education of the region, and beyond.

West Asia/North Africa is the poorest, most dangerous, and most populous region in the world (even more so than China) and it is my wish that Jordan and all other countries in the region might have the opportunity for education at all levels, in even the poorest and least accessible segments. Investment is sorely needed in the educational sector: in research, development, teacher-training and practices and, particularly, focusing upon science and technology. There is great wealth in the region, and great poverty. As the chasm between rich and poor widens, so too does the regional human dignity divide. It is projected that the number of Arab students enrolled in higher education will rise from 3.6 million to 5.6 million in the next decade. A further 250,000 university teachers will be needed, and we must utilise the very best minds that we have to teach future generations. This is an issue that needs to be addressed without delay.

It is manifest that a strategy for education and communication is long overdue in our region, and we would surely benefit from the international input



and experience of other regions. Six OIC countries are currently at the very bottom of the list of 177 countries in the UN's Human Development Index (HDI), with an alarming seventeen Islamic countries in the low HDI category.

Increased South/South cooperation among the Islamic countries, especially in the training of researchers at the post-doctorate level, should be utilised in a creative and innovative manner.

The Islamic World Academy of Sciences provides an umbrella for the scientists of the Islamic countries to meet annually in this conference. Let us prioritise what is desirable, what is needed and what must be immediately dealt with. Many of our commonalities lie

within these priorities and to share ideas and practices among scientists and research & development centres can only be beneficial.

Let us deliver the outcome of our conference to the decision makers. Academia should not exclude itself from society to only talk to each other, but also to "the other", particularly the policy and decision makers in order to introduce change in the Muslim Umma.

Not only is education the best way of working through our regional problems from the grass-roots up, it is also a long-term solution that will secure the future of our region and the future of generations unto whom we will bestow this world, when our time is done.

EDITORIAL LETTER

Citations: What's in a name?

One of the most prominent indicators of a researcher's success, and the success of the university or institution at which they work, is the number and quality of scientific articles published in international scientific journals. Not only is it indicative of the researcher's contribution to his/her field, it is also an important way to obtain funding and to attract bright students to study and work at the same institution.

Many researchers in the Islamic world have already achieved success in this respect and have had a lot of their work appear in such journals. It is however important to remember that most prominent scientific journals are published in Western countries and their audiences are at the current time, primarily Western. Most Islamic names are quite foreign to the Western scientific community, and mistakes in spelling and citing them are very easily and commonly made. It is therefore crucial that researchers from the Islamic world maintain consistency in how they write their names in all publications and in all fora. This will allow reliable retrieval of the researcher's work in searches e.g. on electronic databases, and consistent citing of references, thus enabling the researcher's full contribution to their field to be recognised as it should be.

Moreover, it is a key goal of the IAS scientific community, as expressed in Vision 1441 (see newsletter Vol.18 No.31) and as discussed at the 15th IAS Conference in Ankara, to increase markedly the proportion of the world's scientific output by OIC countries from around 1% at present to 14% of the global total by 1441H (2020AD). Consistency in names will allow better attribution of OIC researchers' work, and thus in a small way assist efforts to achieve this goal.

Alexandra Fowler



Prof. Sajjad Alam
(Bangladesh/ USA)

Prof. Alam was born in 1947 in Dhaka, Bangladesh. He is currently professor of Physics at Albany State University, and director of Albany High Energy Physics Laboratory, New York (USA).

Prof. Alam obtained his PhD in Experimental Particle Physics from Indiana University, Bloomington (USA) in 1975. He was a Teaching Assistant at Indiana University (1971–1974), Senior Assistant at Vanderbilt University, Nashville (1974–1975), Research Associate at Stanford Linear Accelerator Center, California (1975–1979), Senior Associate (1979–1981) and Assistant Professor (1981–1984) at Vanderbilt University, and Professor at Sunya, Albany, New York (1995–present).

From 1979–2001, he was part of the CLEO collaboration at Cornell University in Ithaca, New York. As part of CLEO, he published more than 400 papers in major physics journals. Prof. Alam received the 2000 Abdus Salam Award for Achievement in Science, awarded by the League of America, and in 1993, received the Excellence in Research Award, from University at Albany.

Prof. Alam's primary field of interest is Experimental Particle Physics, or High Energy Physics. The goal of his field of research is to understand the ultimate structure of matter, space, and time. Data analysis in particle physics is very computer intensive and from this point of view, his secondary interest focuses on all aspects of computer science and engineering.

At Albany, he has set up a particle detector tower which uses cosmic rays showering from the sky instead of a particle beam from an accelerator. What is unique about the setup is that it has been instrumented in such a way that it can be accessed from anywhere in the world over the Internet.

Prof. Alam was elected a Fellow of the IAS in 2002.



Prof. Mustafa Doruk
(Turkey)

Prof. Doruk was born in 1932. He was educated in Turkey and West Germany, and received the following degrees: Mechanical Engineering (from the Engineering School in Yildiz, Istanbul (1953), Dip-Ing (Higher Diploma), in Mechanical Engineering, Technische Hochschule Darmstadt, Germany (1956), Dr-Ing (PhD) in Materials Science, Technische Hochschule Darmstadt (1961).

During the period 1963–1970 he was Assistant Professor at the Department of Metallurgical Engineering, Middle East Technical University (METU), then Associate Professor (1970–1976), and full Professor since 1976. He was a United Nations Scholar at the University of California, Los Angeles (1972–1973) and Visiting Professor at Technische Hochschule Darmstadt (1979). He was Chairman of the Department of Metallurgical Engineering at METU (1965–1969), Assistant President and Acting President at METU (1974–1977), and then Dean of Faculty of Engineering at METU (1978–1985). He was Chairman of the Department of Metallurgical and Materials Engineering at METU (1988–1997).

Prof. Doruk has taught undergraduate and graduate students at METU, and offered courses for industrial training in corrosion and chemical cleaning of boilers. He has supervised graduate students on several research topics.

Dr Doruk has more than 60 publications to his credit including two books.

In November 1999 Prof. Doruk was made "Honorary Senator" of the Technische Hochschule Darmstadt (THD) in recognition of his work to establish scientific collaboration between METU (Turkey), and THD.

He is also a Founding Fellow of the IAS, and was for a number of years its Programme Coordinator.



Prof. Mehdi Golshani
(Iran)

Prof. Golshani was born in 1939 in Isfahan (Iran).

He obtained his BSc in Physics from the University of Tehran (Iran) in 1960, and a PhD in Physics from the University of California, Berkeley (USA) in 1969.

His present academic position is Distinguished Professor of Physics, Sharif University of Technology, Tehran.

Prof. Golshani has, over a long career at Sharif University of Technology, held the following positions: Assistant Professor of Physics (1970–1978), Associate Professor of Physics (1978–1985), Professor of Physics (since 1985), Chairman, Department of Physics (1973–1975 and 1987–1989), Academic Vice-Chancellor (1980–87), and Chairman, Department of the Philosophy of Science (since 1995).

He is a Fellow of the Academy of Sciences of Iran (since 1990), Senior Associate, International Center of Theoretical Physics, Trieste, Italy (1990–1995), Member of the Philosophy of Science Association, Michigan (USA), Member of the European Society for the Study of Science and Theology (since 1992), Member of the American Association of Physics Teachers (since 1970), and Member of the Center for Theology and Natural Sciences, Berkeley (USA).

He is the author of seven books, more than 85 articles, editor of one book, and the co-translator of two books.

He has obtained the following Honorary Titles and Awards: Distinguished Professor of Physics at Sharif University of Technology (1992), Winner of the John Templeton Award of Sciences-Religion Course Programme (1995), and Judge of the John Templeton Award for Progress in Religion (the world's largest monetary award) (2000–2002).

Prof. Golshani has been a Fellow of the IAS since 2002.



Prof. Souleymane Niang
(Senegal)

Prof. Niang was born in 1929 in Matam, Senegal. He studied Mathematics in Toulouse (France), where he earned his degrees: BSc (1953), Higher Diploma (1954), Certificate of Mathematics Teaching Capability (1954-1955), and State Doctorate in Mathematical Sciences (1964).

He started his career as Professor at Lycee Fermat, Toulouse (1956-1960) before he was appointed Professor at the Willam Ponty Teacher's School, Dakar (1956), Assistant Professor and Lecturer at the Faculty of Sciences, Dakar University (1960), Senior Lecturer (1964), Professor (1965), and Chair Professor since 1969.

In 1970 he was appointed Director, Research Institute on Mathematics, Physics and Technology Teaching, and was appointed Rector of the University of Dakar in January 1986.

He is the author of a number of books and publications covering teaching materials, science and development issues; research in integral/differential non linear systems, Algebra and differential equations, and has supervised several PhD theses in Analytical Mechanics.

A former president of the Scientific Section of UNESCO National Commission, and of the National Committee of the International Commission for the Teaching of Mathematics in 1970, Prof. Niang is presently a member of professional bodies such as: President of the Mathematics and Physics Section of the Africa and Mauritius Advisory Committee on Higher Education, and Member of the Scientific Council of the Organization of African Unity (OAU).

He has been awarded the following honors: Officer in the National Order of the Lion, Officer in the National Order of Merit, Chevalier - the Senegalese Academic Palms, and Commander - the French Academic Palms.

Islamic World Academy of Sciences (IAS)

The IAS is an independent, non-political, non-government and non-profit making organisation of distinguished scientists and technologists dedicated to the promotion of all aspects of science and technology in the Islamic world.

The establishment of the IAS (then the "Islamic Academy of Sciences") was recommended by the OIC Standing Committee on Scientific and Technological Co-operation (COMSTECH), and approved subsequently at the Fourth Islamic Summit in Casablanca in 1984. The IAS' Founding Conference was held in Jordan in October 1986.

The government of Jordan hosts the IAS at Amman, where the Secretariat started functioning in 1987.

The IAS General Assembly decided to rename the IAS as the "Islamic World Academy of Sciences" in March 2005.

The main objectives of the IAS are:

- *To serve as a consultative organisation for the Ummah and for institutions in the field of science and technology;*
- *To initiate science and technology programmes of benefit to the development of Islamic countries;*
- *To promote research on major problems facing Islamic countries and to identify future technologies of relevance for possible adoption and utilisation; and*
- *To formulate standards of scientific performance and attainment and to award prizes and honours for outstanding scientific achievement to centres of excellence in all science and technology disciplines.*

IAS Newsletter

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The Secretariat welcomes the submission of any articles for publication in the newsletter (publication to be at the Secretariat's discretion).

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**The late Prof. Samaun
Samadikun (FIAS Indonesia)**



It is with a sense of sorrow that the IAS announces the passing away of Prof. Samaun Samadikun, Founding Fellow of the Islamic World Academy of Sciences from Indonesia, and former Chairman of the Indonesian Institute of Sciences (LIPI).

Prof. Samadikun passed away on Wednesday 15 November 2006 in Jakarta. He was 75.

Born on April 15, 1931 in Magetan, Indonesia, Prof. Samadikun graduated from Stanford University with an MSc (1957), and PhD (1971) in Electrical Engineering. He also obtained a Postgraduate Diploma in Nuclear Engineering from Queen Mary College, London University (1960).

He started out as a lecturer at the Electrical Engineering Department, Bandung Institute of Technology Bandung, Indonesia (1957), and became Professor of Electronics in 1974. While at the university, he was appointed Chairman of the Electrical Engineering Department (1964-1967), and the first Director of the Inter-University Center for Microelectronics (1984-1989).

Prof. Samadikun was a Member of Indonesia Engineers Association, the association that awarded him the Adhikara Rekayasa Award in 1984. He was also awarded the National Scientific Citation Medal (1978), and the Mahaputra Utama Medal (1995) by the Government of Indonesia. He was also honored with the 1998 Award of the Association of South Eastern Asian Nations (ASEAN), in recognition of his meritorious service to science and technology.

Prof. Samadikun was a Founding Fellow of the Islamic World Academy of Sciences (1986), and was Founding Fellow of the Indonesian Academy of Sciences.

Prof. Samadikun will be greatly missed by his colleagues and fellow scientists in Indonesia and the Islamic World.

Ina Lillah Wa Ina Ilaihi Raj'oon.

Muslim Scholars
OMAR AL-KHAYYAM
(1044-1123 AD; 465-544H)



Ghaiath al-Din Abul Fateh Omar Ibn Ibrahim al-Khayyam was born at Nishapur, the provincial capital of Khurasan around 1044AD/465H (c. 1038 to 1048). A mathematician, astronomer, philosopher, physician and poet, he is commonly known as Omar Khayyam - Khayyam means the tent-maker in Arabic. Although generally considered as Persian, it has also been suggested that he could have belonged to the Khayyami tribe of Arab origin.

Algebra would seem to rank first among the fields to which he contributed. He made an attempt to classify most algebraic equations, including third degree equations and, in fact, offered solutions for a number of them. This included geometric solutions of cubic equation and partial geometric

solutions of most other equations. His book *Maqalat fi al-Jabr wa al-Muqabila* is a masterpiece on algebra and had great importance in the development of the field. His remarkable classification of equations is based on the complexity of the equations - the higher the degree of an equation, the more terms, or combinations of terms, it will contain. Thus, al-Khayyam recognized 13 different forms of cubic equation. His method of solving equations is largely geometrical and depends upon an ingenious selection of proper conics. He also developed the binomial expansion when the exponent is a positive integer. He was considered to be the first to find the binomial theorem and determine binomial coefficients.

The Saljuq Sultan, Malik-shah Jalal al-Din, called him to the new observatory at Ray around 1074AD/495H and assigned him the task of determining a correct solar calendar. Al-Khayyam introduced a calendar that was remarkably accurate, and was named as *Al-Tarikh-al-Jalali*. It had an error of one day in 3770 years and was thus even superior to the Georgian calendar (error of 1 day in 3330 years).

His contributions to other fields of science include the development of methods for the accurate determination of specific gravity etc. In geometry, he studied the generalities of Euclid and contributed to the theory of parallel lines. In metaphysics, he wrote three books *Risala*, *Dar Wujud* and the recently discovered *Nauruznamah*. He was also a renowned astronomer and physician.

Al-Khayyam wrote a large number of books and monographs in the above areas. Out of these, ten books and thirty monographs have been identified. Of these, four concern mathematics, three physics, three metaphysics, one algebra and one geometry.

Apart from being a scientist, al-Khayyam was also a well-known poet. In this capacity he has become more popularly known in the Western world since 1839, when Edward Fitzgerald published an English translation of his *Rubaiyat* (quatrains)*.

His influence on the development of mathematics in general and analytical geometry, in particular, has been immense. His work remained ahead of others for centuries until the time of Descartes, who applied the same geometrical approach in solving cubics. His fame as a mathematician has been partially eclipsed now by his popularity as a poet.

** Prof. Ali Al-Daffa' (FIAS Saudi Arabia) disputes the fact that Omar al-Khayyam was responsible for the Rubaiyat (quatrains), and quotes Zokofsky who has claimed that at least eighty-two verses of the Rubaiyat were written by other poets.*

(Taken from: "Personalities Noble", National Science Council of Pakistan, ed. Hakim Mohammad Said; 2nd Revised Edition (English and Arabic) publ. Islamic World Academy of Sciences 2000).