

# SPECIAL EDITION

# KHWARIZMI INTERNATIONAL AWARD 30<sup>th</sup> ANNIVERSARY



**Three Decades of**  
Excellence  
Progress  
Dynamism

Ministry of Science, Research and Technology  
Iranian Research Organization for Science and Technology (IROST)

February 2018

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

.....  
In The Name of Allah,  
The Most Beneficent  
The Most Merciful

Ministry of Science, Research and Technology  
Iranian Research Organization for Science and Technology (IROST)

## **SPECIAL EDITION**

# **THIRTIETH ANNIVERSARY KHWARIZMI INTERNATIONAL AWARD (KIA)**

Compiled & Prepared  
By  
**Azar ORANGIAN & Mina BIDAR**

February 2018



**30<sup>th</sup> ANNIVERSARY KHWARIZMI INTERNATIONAL AWARD | SPECIAL EDITION**

- **Publisher:** Iranian Research Organization for Science & Technology (IROST)
- **Editor-in-chief:** Alireza ALLAHYARI
- **Compilation:** Azar ORANGIAN , Mina BIDAR
- **Designer:** Mansour FOROUZESH
- **Circulation:** 2000
- **Date of Publication:** February 2018

- **Address:**  
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# P r e f a c e



**Alireza ALLAHYARI**  
Head of Khwarizmi Awards  
Scientific and Technology Competitions Division

It is hard to believe that 30 years have passed since the establishment of the Khwarizmi International Award. Honoring outstanding contributions to science and technology, one of the main objectives of this award is a priority if our country wishes to reach and build a sustainable development. After the release of the 25<sup>th</sup> Silver Anniversary compilation, we felt the need to publish in English and share with the worldwide scientific community, the result of three decades of Excellence. This comprehensive special edition is a kind of “celebration” as it offers a complete report of the thirty-year performance of the Khwarizmi International Award.

Due to its mission, the KIA maintains a close interaction with researchers and is completely aware of all the ups and downs of a research career. It provides the country with a solid framework to respond to the requests for support and encouragement.

In spring the different calls for participation are sent at national and international level. IROST and the KIA enjoy a very good partnership with national scientific institutions and universities. This interaction is maintained and facilitates the attraction of candidatures. One of the

characteristics of this contest is that nominations and self-nominations are permitted.

KIA receives applications from all over the world. The evaluation process is competently facilitated by the scientific committees’ accuracy and their experts. It is really an intense process, since we want to ensure that all the applications are examined with fairness and equity. It is indeed a great pleasure that IROST is portraying a fresh image of the science and wisdom of the scholars. The KIA is a platform where eminent individuals meet to exchange and share ideas, experience and successes in research.

It is to the President of IROST, the Chairman of the KIA, the Grand Jury, the sponsors, all the scientific community, IROST staff, and particularly the secretariat members, all those persons who extended their help, that I owe my thanks for their unceasing support and their trust.

I wish to extend my special thanks to my colleagues Miss A.Orangian and Mrs. M.Bidar for preparing this especial edition.

I am confident that together we will lead the continuous development of the KIA in meeting the various challenges ahead and providing quality support for the Elite.



# F o r e w o r d



**Farajollah MOHANAZADEH**  
Deputy President of IROST  
Chairman of 30<sup>th</sup> KIA

I feel very privileged and honored to acknowledge the history of the Khwarizmi International Award (KIA).

Khwarizmi International Award is the oldest Iranian scientific contest, founded by the Iranian Research Organization for Science and Technology (IROST), after the establishment of the Islamic Republic of Iran.

Its purpose is to recognize distinguished scientists who have made profound contributions to science and technology and to celebrate the best scientific works in technological advances and inventions that enable a scientific and sustainable national development, based on economic independency.

The competition is open to all national and foreign scientists.

The forethought, perseverance, and dedication of IROST, the chairmen, directors, faculty members, senior-experts, and the secretariat, during these last thirty years, enabled this event to become a scientific and cultural asset for the country.

The 30 years that have elapsed since the first session have presented 967 Laureates.

I am proud and pleased as a chairman and member of IROST to see this great

number of outstanding researchers performing and excelling in their respective areas of interests. We wish to thank them for their contribution to make the KIA a huge success.

This event has constantly received attention from media, and has well-hosted the visits of renowned scientific personalities, domestic and international well-known scientists. Most of the foreign KIA enjoyed the kindness of the Iranian people and were amazed by the technology and scientific level, Iran enjoys.

I would like to extend special thanks to every one of our sponsors and to the scientific community for believing in us and making this award a huge success.

In the end, I would also like to use this opportunity to thank the President of IROST, the scientific committees' members, the Grand Jury, the Secretariat, IROST staff, for the last thirty years for their enormous efforts hard work and for taking this award to new heights and creating a distinct path for the researchers.

# KHWARIZMI INTERNATIONAL AWARD BULLETINS (22<sup>nd</sup>-30<sup>th</sup> SESSIONS)







**ABOUT  
KHWARIZMI  
INTERNATIONAL  
AWARD**

# A b o u t



## About Khwarizmi International Award

### Introduction:

In 1980, the Iranian Research Organization for Science and Technology (IROST) was established with a clear vision to promote science and technology within the country. This leading national research organization, affiliated to the ministry of Science, Research and Technology, is dedicated to research excellence in different fields of science.

In 1987, IROST decided to institute an award, which acknowledges the Iranian outstanding achievements in the field of Science and Technology. IROST proposed the creation of the Khwarizmi Award in memory of Abu Jafar Mohammad Ibn Mousa Khwarizmi, the great Persian Muslim mathematician, astronomer and geographer; he was one of the brightest scientific figures in the world of Islam and Iran(770-840 C.E).

### History:

The first award ceremony was held on the 14<sup>th</sup> of January, 1988. During this first session, 35 national research works in different fields of Science were selected. H.E. the President of the Islamic Republic of that period, Ayatollah Khamenei presented the award in his office. After the first award ceremony, it has been officially decided that the award should be accorded, annually, in February. The award certificate would

be officially signed and presented by H.E. the President of the Islamic Republic of Iran.

At the third session, the fields of medical sciences and basic sciences were added to the engineering and technical fields of participation. During this same session, the World Intellectual Property Organization (WIPO) stepped in and offered its first sponsorship. WIPO presented a gold medal and a certificate to the first Laureate of the innovation category.

Originally, the first Khwarizmi Award contest was held at national level. After the fifth year, the contest opened its door to regional countries. In that year, besides the 19 national Laureates, two prestigious foreign Laureates received the Khwarizmi Award which subsequently produced the foreign section.



The fifth session was also important because of the addition of the field of human sciences. The Khwarizmi Award became a strong incentive of excellence for the Iranian researchers, in many different fields of science.

The sixth session was held with the participation of national and regional research works from 10 countries. The Grand Jury selected 18 outstanding national research works and 3 foreign research works. In 1994, at the seventh session Khwarizmi Award took another significant step with the participation of new countries from Africa and Asia.

For more precision in the evaluation process, research works were classified in new different categories, applied research works and fundamental research works, each category with its own evaluation criteria.



The competition was broadened to attract more fields of research and eight distinct scientific committees were created: Mechanics, Chemical Industry, Electrical Electronics and Computer, Civil Engineering, Agriculture, Basic Sciences, Medical Sciences and Human Sciences.

Apart from that, at the seventh session, the Khwarizmi Award expanded its area of participation and became an international contest, where all the countries from all over the world were invited to participate. The event was renamed as the Khwarizmi International Award (KIA).



From that time, it became evident to the organizers that there was an important need to publish the results of this contest, in a

bulletin. It had been decided that the bulletin would be published at the end of each session, giving the results of this competition and distributed to a broad scientific audience. Each issue introduces the selected research works and presents all the Laureates along with their research works, the Grand Jury and the different scientific committees.

During the next session, the Khwarizmi International Award added other fields of participation such as biotechnology, medical engineering, materials and metallurgy.

In 1996, participation variety in different scientific fields of the Khwarizmi International Award led to the creation of an independent national prize dedicated to research works which deal with medical sciences, the "Razi Medical Sciences Research Festival". From that date forward, only the foreign section of the KIA is accepting applications dealing with medical sciences.



The tenth session was an important milestone in the history of the Khwarizmi International Award as international organizations were invited to support the KIA and today, many of them are doing willingly by allocating special prizes to the KIA laureates. WIPO, APCTT, IFIA, UNESCO, FAO, TWAS, ECI, ECO, UNDP, WAITRO, ... .

The KIA reached a decade of celebrating Excellence, the research works in the fields of engineering, particularly electricity and computer, mechanics, chemical engineering and materials engineering, were of a higher quality and quantity, and most of the KIA Laureates were from these fields.

At the 11<sup>th</sup> session, the Khwarizmi International Award received a great recognition and strong validity among researchers, consequently, the participation rate increased to 60%.

The 11<sup>th</sup> session began with the launch of a new call for participation to Iranian researchers residing abroad. These researchers are the pride of the country as they contribute to the Science and Technology capacity-building of their country and this, in many ways. This vast pool of high skilled scientists entered the competition and most of them were outstanding scientists. In this same session, two Iranian researchers residing abroad received the award.

At the 12<sup>th</sup> session, applicants under 30 years old, students in Master and Ph.D. degrees, young inventors and innovators were invited to present their candidatures for a new award, with specific criteria. A new national award rewarding promising scientists, the Khwarizmi Youth Award (KYA) was created.



Consequently, at the 13<sup>th</sup> KIA session, the KYA was independently launched to honor young scientists and embolden them to keep taking even bigger steps in their research career.



To date 19 sessions of KYA have been successfully held. So far many young Iranian scientists who have made excellent contributions to the advancement of science have been introduced to the scientific community.

The period between the 14<sup>th</sup> to the 21<sup>st</sup> session saw an increase in participation, interaction, amount value of prizes and number of sponsors.

At the 15<sup>th</sup> session, the KIA elaborated the evaluation process. Besides the four research categories: Fundamental Research, Applied Research, Invention and Innovation, the research category classification opened a fifth one, Research and Development.



At the 16<sup>th</sup> session, with the great importance of Arts in the Iranian culture, a new field, Arts, has been added to the field of participation, for the national section.

At the 17<sup>th</sup> session, it was decided that the bulletin would be published in two languages Persian and English. The trophy of the KIA was designed and inaugurated at this same session.

At the 19<sup>th</sup> session, a new scientific committee was added; aerospace the number of scientific committees reached the number of thirteen.

In 2009, a new and independent Award completely dedicated to the human sciences, the Farabi International Award, was created. Therefore from the 22<sup>nd</sup> session, all the applicants with a research work dealing with human sciences were invited to apply for the Farabi International Award.

It is worth noting that the Razi festival, for medical sciences, Khwarizmi Youth Award and Farabi International Award, are three different distinctions derived from the Khwarizmi Award and born during two decades of efforts from the KIA, to recognize and celebrate Excellence in Science.

At the 24<sup>th</sup> session, the electronic space facility encouraged the secretariat to enlarge the list of the scientific committees' members. But the most important target was to add an international perspective to the review process. The KIA invited the prestigious KIA Laureates Circle to participate in the evaluation process and the selection of the recipient of the KIA.

The 25<sup>th</sup> session was special because the KIA celebrated its 25 years of Excellence. For the Silver Anniversary, the KIA released a special issue. In addition to highlighting the KIA's activities through the 25 years, this issue speaks about the philosophy of the KIA, reflects on the changes, innovation, progress and process improvements that KIA

has made over the 25 years.

The 26<sup>th</sup> to the 30<sup>th</sup> sessions were also successfully held with the introduction of top-level domestic and international research works. During these periods, valuable scientists and researchers from abroad came to Iran to attend the award ceremony.

Year by year, the area of participation in the KIA is extending, attracting more scientists from all over the world.

Today, the Khwarizmi International Award is continuing to pursue its successful course with more participation and more international recognition.



## **General information**

### **Purpose:**

- To recognize the efforts made by scientists, researchers, innovators and inventors from all over the world and to appreciate their invaluable achievements and contributions to various fields of science and technology.
  - To promote international scientific cooperation.
  - To Promote Knowledge-Based entrepreneurship culture and research results commercialization.

### **Periodicity:**

The Khwarizmi International Award is annually held.

### **Research Categories and Fields of Participation:**

Five research categories have been determined: Fundamental Research, Applied Research, Research & Development, Invention and Innovation.

The fields of participation include: Aerospace, Agriculture and Natural Resources, Animal Sciences and Veterinary Medicine, Basic Sciences, Biotechnology and Basic Medical Sciences, Medical Sciences, Chemical Technology, Engineering (all fields), Green Technology, Information Technology, Materials, Metallurgy, Mechatronics, Mechanic, Nanotechnology and Industry & Technology Management.



## **Participation Sections:**

- National Section: accepts candidatures from national researchers over twenty five years old.
- Foreign Section: accepts candidatures from all over the world.
- Iranian Residing Abroad Section: accepts candidatures from Iranian researchers residing abroad.
- KIA laureate with outstanding achievements in national production Section: accepts candidatures from KIA or KYA Laureates who have been successful in converting science into national wealth and mass production and developed knowledge-based companies.
- Outstanding Researcher Section: accepts nominations of Iranian outstanding scientists who have made during their lifetime, outstanding contributions, in her/his own field of research, to science and technology.



### **Award details:**

The Khwarizmi International Award shall consist of

- An engraved trophy.
- A certificate, the certificate shall bear the inscription of the awardee' contributions and the signature of H. E. the President of the Islamic Republic of Iran.
  - A certificate signed by the chairman of the KIA
  - A cash prize
  - International Organizations Sponsors Special Prizes



### **Time Line**

Spring: Call for participation  
Autumn: Application submission deadline  
Winter: Awardees announced and honored

### **Award Ceremony**

Applying for the Khwarizmi International Award implies the acceptance and readiness to participate in the award ceremony.

The award ceremony of the Khwarizmi International Award is the most spectacular ceremony in the country and is regarded as the premier event for acknowledging commitment to Science and Technology.

The award ceremony of the Khwarizmi International Award is currently scheduled to take place in Tehran, during February of each year.

The Khwarizmi International Award is usually presented to the KIA Laureates by His Excellency, the President of the Islamic Republic of Iran.

The KIA Award ceremony is also attended by the Ambassadors of the KIA Laureates' country, eminent scientists and scientific personalities, sponsors' representatives, etc.

### **The KIA Exhibition**

Another event which arouses the public's interest is the Khwarizmi International Exhibition.

The KIA Exhibition takes place for the duration of the award ceremony.

It is restricted to the KIA Laureates.

The KIA Exhibition is also in itself, mostly an opportunity to demonstrate the role that Science and Technology can play in the world and Iran's development, motivates the policymakers, who visit the KIA exhibition, to invest in research and to encourage skills and capacity building in Science and Technology.

Traditionally, H.E. the President of the Islamic Republic of Iran inaugurates the KIA Exhibition. After his special tour and the official closure of the award ceremony, all the guests take around the whole exhibition. It is an opportunity for the scientific community to find out more about science and technology and engage with the outstanding recipients of the KIA.

### **Seminars**

It has been a tradition to invite the foreign KIA Laureates to present lectures or seminars, related to their field of research, in scientific institutions.

The main aim of the KIA is to bring together scientists, interested in the same field of research to discuss current issues of Science and Technology, in an academic platform.

# The KIA from a different perspective







**WORDS  
FROM  
LAUREATES**



**Prof. Andres M. Lozano**  
30<sup>th</sup> Session KIA Laureate  
Neurosurgery University of Toronto, Canada  
February, 2017

This is a great honor to receive the KIA Award. I am very grateful to the KIA Committee for this distinct honor. The world needs more Science and Innovation and the KIA award will be an important bridge between scientists in Iran and the world.



**Prof. Christoph Klein**  
29<sup>th</sup> Session KIA Laureate  
Ludwig Maximilians University, Germany  
March, 2016

I would like to express my deep gratitude to be selected for the Khwarizmi International Award, which I would like to dedicate to our children with rare diseases and all physicians and scientists dedicating their talents to develop urgently needed curative therapeutic strategies. Science and Technology can build bridges between people and nations and this promotes humanity all over the world. I sincerely hope that our scientific collaborations continue to grow in the future.



**Prof. Alireza Khadem hosseini**  
29<sup>th</sup> Session KIA Laureate  
Harvard University, USA  
Iranian Researcher Residing Abroad  
March, 2016

It is incredible to see the great potential of scientific progress in Iran. The great culture and legacy of innovation in Iran has led to a great generation of young scientists. I am eager to help them in their path of discovery. Thanks for the recognition that this award provides to scientists. I hope that it aims to inspire them.





**Prof. Claudio Andres Hetz Flores**

28<sup>th</sup> Session KIA Laureate  
University of Chile  
March, 2015

It has been a real honor to receive the KIA Award. In representation of my university and my country, I would want to thank the organization to give the opportunity to show the world the advance we have made in Chili, to contribute to global Science.

This award represents the fact that science does not have frontiers, and can connect people independently of where they live. Basic science is the engine of development and the best way to give wealth to our society.

This award also gave me the chance to visit a beautiful and friendly country, full of intelligent and motivated people. From my perspective, the KIA award is helping Iran to show the world that there is a great science in the country, contributing to motivate scientists all over the world.

I hope this initiative keeps growing and awards great discoveries in all field of science and technology.

Knowledge is the best way to turn the world into a better place.

With Respect and Friendship



**Prof. Laszlo Rosivall**

27<sup>th</sup> Session KIA Laureate  
Semmelweis University, Hungary  
March, 2014

It is nice to recognize that as Ferdowsi had spread the seed of word for 1000 years and these days Iran is spreading the seed of science which has no border and is one of the most important issues pointing into the future development.

I do appreciate this wisdom and task.





**Dr. Ayyappan pillai Ajayaghosh**

26<sup>th</sup> Session KIA Laureate

CSIR-National Institute for Interdisciplinary Science and Technology, India

February, 2013

I feel very proud and honored being one of the KIA Laureate. By receiving this award, I understand that my responsibility to take up more challenging research work is increasing. I am very impressed by the scientific progress Iranian scientists are making. I thank the Iranian Government for its keen interests in supporting science internationally and motivating scientists all over the world. I thank the people of Iran for their excellent hospitality. I wish Iranian people, particularly Iranian scientists, all success in their activities. I particularly wish to thank the IROST and KIA selection committee for choosing me for this prestigious award.



**Prof. Pedro Martinez Gomez**

25<sup>th</sup> session KIA Laureate

Scientific research CSIC, Spain

February, 2012

Thank you very much to the KIA committee for this great honor to me, this KIA Award. This award is a great honor for me and for the Iranian groups of research which collaborate with us from Esfahan, Tabriz, Tehran, Shah rood and Yazd. I hope to continue to be in touch with KIA people, IROST, and the rest of colleagues from Iran.





**Prof. Alexander Maier**  
24<sup>th</sup> session KIA Laureate  
La Trobe University, Melbourne, Australia  
February, 2011

It is an exquisite honor to receive this prestigious award. I am humbled to receive a distinction from a country that has such a long history in making profound contributions in science, technology and arts.  
Thank you for your hospitality and for staging this superb celebration of science



**Prof. Fernand Labrie**  
23<sup>rd</sup> session KIA Laureate  
Laval University, Quebec City, Canada  
February, 2010

It is a great honor to receive the highly prestigious Khwarizmi International Award created in the name of a truly visionary and influential scientist/mathematician. This is an honor that I have the pleasure to share with so many highly respected colleagues from around the world.  
The Iranian Research Organization for Science and Technology (IROST) and its sponsors are to be congratulated for supporting and encouraging top quality science and technology at the international level for the benefit of mankind.  
This was a unique opportunity to see Iran of 2010 after a previous visit 15-20 years ago. I was very impressed by your city and the strong support given to science by your government, I look forward to the opportunity to collaborate with you and your colleagues,





**Prof. Tamio Hayashi**

23<sup>rd</sup> session KIA Laureate  
Department of Chemistry, Kyoto University, Japan  
February, 2010

It is a great honor for me to be selected as a Laureate of the Khwarizmi International Award. I would be very happy to receive it and I am looking forward to participate in the award ceremony in Tehran. I hope we will deepen our friendship between Iran and Japan and we can start some collaboration with Iranian scientists, in our research field, at this opportunity.



**Prof. Li-chyong Chen**

22<sup>nd</sup> session KIA Laureate  
National Taiwan University  
February, 2009

It is a great experience for me to have the opportunity to come to your country. Seeing what really it is, does have a profound effect on me, the hospitality, the love of making friends with outside world, the enthusiasm of building a knowledge-based economy are all important values to share and to help the world to be a better place to live. Thanks to the KIA. It is far more than an award!



**Prof. Jie Meng,**

21<sup>st</sup> Session KIA Laureate  
Peking University Beijing P.R. China  
February, 2008

It is a great pleasure for me to know that I am elected as a Laureate of the 21st Khwarizmi International Award. I'm very grateful to receive the Award. I can't tell you how much I appreciate this great honor. Words can't express how much my appreciation is. I would like to express my gratitude to all of my teachers, collaborators and students over the years. The award will encourage me and my colleagues to continue our research on the understanding the structure of the exotic nuclei and the nucleosynthesis in Universe.





## INTERNATIONAL SPONSORS

# National & International Sponsors

**JOIN THE LIST OF OUR SPONSORS AND PARTICIPATE IN THE RECOGNITION OF THE INTERNATIONAL SCIENTIFIC ELITE!**

Since the 3<sup>rd</sup> session, the KIA has been accepting sponsorship. Sponsors, national and international, are present, offering certificates, medals, trophies, monetary prizes, incentives that are valuable for the recipients.

It is true that by supporting the KIA, sponsors increase their outreach and highlight their names in the region and across the world. Indeed, the call for participation with sponsor's logos is sent in four languages all over the world and the prestigious award ceremony is a well-attended event with large crowds, full of eminent personalities and people interested in research and technology. No need to say that receiving and offering sponsorship is a mutual benefit as it is this precious interaction, which has made KIA, a sought-after event and a recognition by many researchers.

Throughout the years, the number of sponsors has been increasing, which not only reveals the recognition and the success of the KIA, but also the interest of sponsors.

After 30 years, a total number of 94 different national sponsors including organizations, institutions, industry... and international sponsors offered their sponsorship to KIA, 23 of them are well-known foreign institutions.

During the last ten sessions, more than 200 KIA Laureates, from different sections, received special prizes from international sponsors and this according to their criteria.

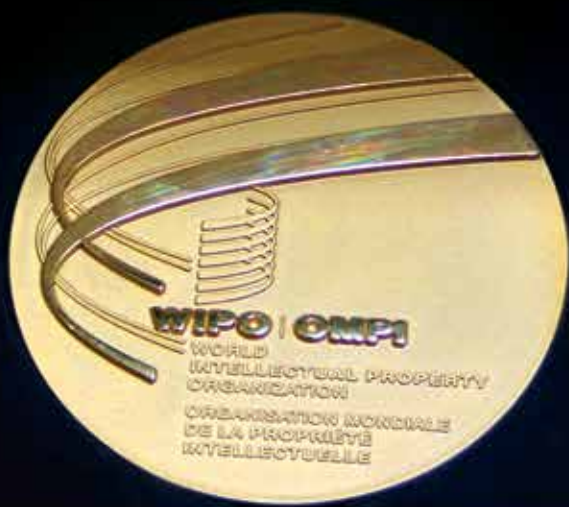
*KIA gratefully acknowledges and thanks every one of its national and international sponsors.*



At each session, KIA has the honor to invite national and international organizations institutions, the industry and the commercial world to partner with the Khwarizmi International Award, by offering their sponsorship.



## Few words from KIA Sponsors



**Imtinan Elahi Qureshi**  
COMSATS Executive Director  
23<sup>rd</sup> KIA, 2010

It is a matter of great honor and pleasure for me to participate in KIA ceremony. COMSATS is proud to be a part of the program which honors scientific achievements and technological innovations. I wish the organizers every success in their future endeavors for a noble cause.



**Cecile Benbachir**  
WIPO Representative  
23<sup>rd</sup> KIA, 2010

I am glad to be the first one to start on writing in the diary of the 23<sup>rd</sup> edition of the Khwarizmi International Award.

This is also the first time that a WIPO representative attends the KIA and that was my honour to hand over 3 medals among which, for the first time in KIA history, a WIPO medal for the best woman inventor. I take this occasion to thank IROST, the organizer of the KIA for the good organization of the event and their kind hospitality.



**Dr. Rohani Hashim**  
WAITRO Secretary-General  
22<sup>nd</sup> Session KIA, 2009

It is a great pleasure and privilege for me to be among great scientists and Khwarizmi awards. WAITRO is proud to present two trophies:

- 1- The best researcher
- 2- The best woman scientist for innovation

Congratulations too, to the organizers for the untiring effort to make this event a success.



# International Sponsors

## Excerpts from their official messages



**Qunli Han**  
Director and Representative,  
UNESCO (UTC)  
21<sup>st</sup> Session of the KIA

...Obtaining an award after the name of a scientist like Khwarizmi, one of the leading Muslim scholars of mathematics, astronomy and geography, is a true honour. Khwarizmi was the founder of several branches of mathematics. In the words of Philip Hitti, the Khwarizmi influenced mathematical thought to a greater extent than any other medieval writer. His work on algebra and his contributions to astronomy and geography were outstanding. Khwarizmi's tremendous academic contribution will be as a permanent example of human excellence. It is rewarding to witness such excellence is being pursued by many researchers today, as shown from the work of the Award winners...



**Prof. Mohamed H.A. Hassan**  
Executive Director of TWAS  
Trieste, Italy  
24<sup>th</sup> Session

... The Khwarizmi International Award represents Iran's growing commitment to science and technology and its determination to acknowledge and reward scientific excellence. Iran has dramatically strengthened its S&T capacity over the past decades. The Khwarizmi International Award is both a reflection of this commitment and a valuable instrument for making additional progress in the future. As part of this effort, TWAS is indeed honored to cosponsor the TWAS/IROST/KIA prizes for young scientists.





**Sunil Narula**  
FAO Representative  
24<sup>th</sup> Session of the KIA

...It is with enormous pleasure and privilege that Food and Agriculture Organization of the United Nations (FAO) has associated it with Khwarizmi International Award since 2009, and its medal and certificate of merit is awarded to the scientist, researcher or practitioner in the field of agriculture, to recognize and encourage the pursuit of excellence in the agriculture related field.



**Dr. Francis Gurry**  
Director General  
WIPO  
25<sup>th</sup> Session of the KIA

...The WIPO Awards recognize the contribution of individual innovators to the development of their national economies and, in turn, to the prosperity of their people. In awarding the WIPO medals at the Khwarizmi International Award, we join the Iranian Ministry of Science and Technology in its efforts to promote the culture of innovation and creativity in the Islamic Republic of Iran, and seek to highlight the role that intellectual property can play in such an environment. I warmly congratulate all the Award winners and commend the organizers of the Khwarizmi International Award for highlighting the importance of innovation to the I. Republic of Iran's economy. I wish you a very successful event.



**Alessandro Amadio**  
UNIDO Representative  
26<sup>th</sup> Session

...Khwarizmi International Award is a remarkable initiative not only to promote and cultivate science but also peaceful relationship among human being and regardless of geographical and cultural borders. On behalf of UNIDO I wish to congratulate all the winners, the Iranian Research Organization for Science and Technology, and the Ministry of Science Research and Technology for their commitment to support science and development.



**Mahmoud Solh**  
Director General ICARDA  
28<sup>th</sup> Session of the KIA

...The Khwarizmi International Award is indeed a genuine recognition of the efforts of researchers, inventor s, and innovators for their outstanding contribution to science and knowledge. To recognize at least a small portion of scientists and researchers efforts, it is emphasized that the noble events, such as KIA, which encourages young scientists, should be supported...

# International Sponsors of KIA

during the last thirty years



Asian and Pacific Center for Transfer of Technology  
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Asian Productivity Organization  
APO



Colombo Plan  
Colombo Plan



Commission on Science & Technology  
for Sustainable Development in the South  
COMSATS



Organization of Islamic Conference  
Standing Committee on Scientific & Technological Cooperation  
COMSTECH



D-8 Organization for Economic Cooperation  
D-8 Organization for Economic Cooperation



ECO Cultural Institute  
ECI

# International Sponsors of KIA

during the last thirty years



Economic Cooperation Organization  
ECO



ELSEVIER  
ELSEVIER



Economic and Social Commission  
for Asia and the Pacific  
ESCAP



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FAO



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ICARDA



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# International Sponsors of KIA

during the last thirty years



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United Nations Development Program  
UNDP



United Nations Educational, Scientific & Cultural Organization  
UNESCO Tehran cluster office  
Iranian National Commission for UNESCO  
UNESCO



United Nations Industrial Development Organization  
UNIDO



World Association of Industrial & Technological Research Organizations  
WAITRO



World Intellectual Property Organization  
WIPO



**STATISTICS  
TABLES & CHARTS**

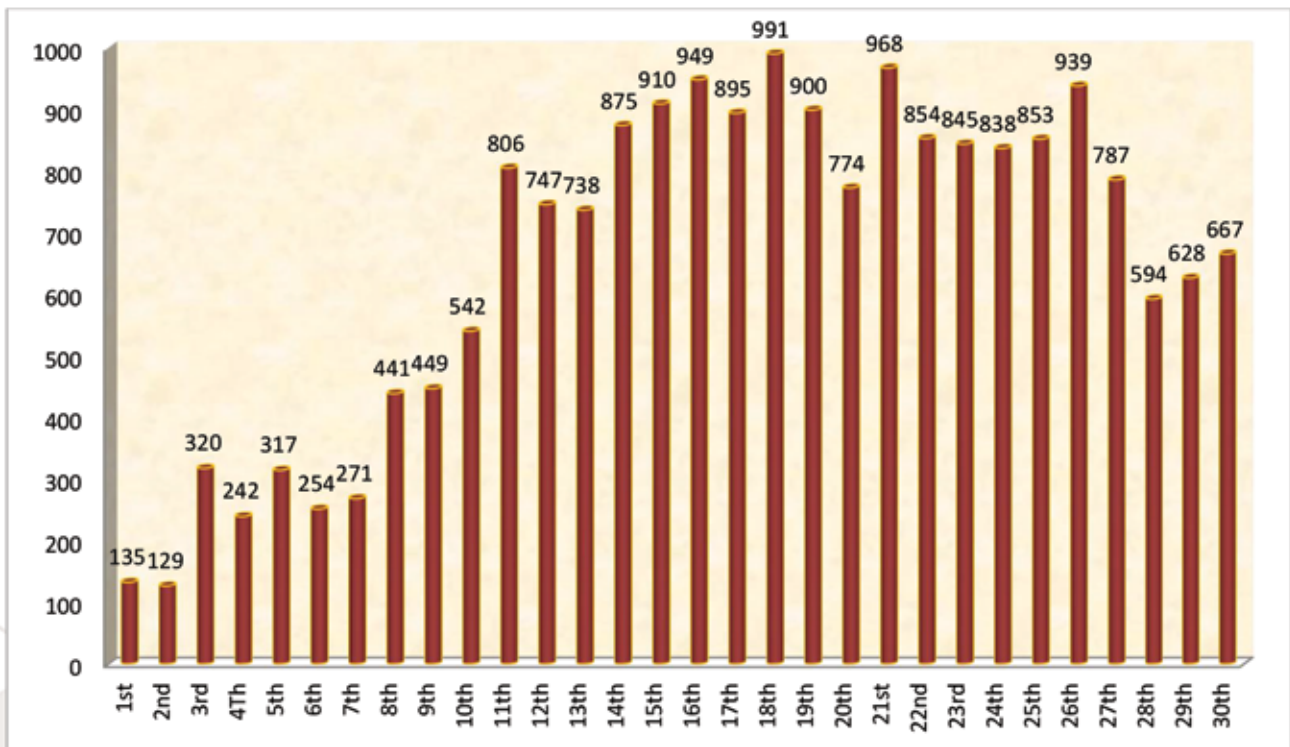
**Table 1: Application entry (1988 – 2017)**

Year	Session	National Section	Foreign Section	Iranian Residing Abroad Section	Total Application Entry
1988	1	135	-	-	135
1989	2	129	-	-	129
1990	3	320	-	-	320
1991	4	242	-	-	242
1992	5	298	19	-	317
1993	6	224	30	-	254
1994	7	222	49	-	271
1995	8	386	55	-	441
1996	9	402	47	-	449
1997	10	440	102	-	542
1998	11	681	111	14	806
1999	12	574	146	27	747
2000	13	422	296	20	738
2001	14	561	298	16	875
2002	15	699	196	15	910
2003	16	734	200	15	949
2004	17	680	200	15	895
2005	18	858	108	25	991
2006	19	742	137	21	900
2007	20	644	107	23	774
2008	21	757	192	19	968
2009	22	696	141	17	854
2010	23	679	144	22	845
2011	24	693	138	7	838
2012	25	736	108	9	853
2013	26	843	80	16	939
2014	27	661	105	21	787
2015	28	351	226	17	594
2016	29	402	212	14	628
2017	30	388	273	6	667
Total		15599	3720	339	19658



Submitting tables and statistics is the best snapshot and one of the best practical ways to analyze data. These visualized data facilitate and provide a basis for good decision-making. In this chapter, different accurate data and statistics have been collected and summarized for each session and each KIA section. This rigorous analysis of trusted statistical data provides the means to measure easily and extract useful information.

Table .1 Shows the total application entry during all sessions, and in different sections. During last 30 years, the Khwarizmi International Award received 19658 applications, of this number, 4059 applications are from the foreign section and Iranian Residing Abroad section. Chart 1, 2 and 3 show the total application entry in each session.



**Chart 1: Number of Registered Applications - 1988-2017 (national & foreign section)**



**Chart 2: Application entry - Iranian residing abroad  
11<sup>th</sup> to 30<sup>th</sup> session**



**Chart 3: Application entry - Foreign section  
5<sup>th</sup> to 30<sup>th</sup> session**

**Table 2: KIA Laureates (1988-2017)**

Year	Session	National Section	Foreign Section	Iranian Residing Abroad	Total Laureates Number
1988	1	35	-	-	35
1989	2	22	-	-	22
1990	3	29	-	-	29
1991	4	26	-	-	26
1992	5	19	2	-	21
1993	6	18	3	-	21
1994	7	20	2	-	22
1995	8	29	8	-	37
1996	9	41	4	-	45
1997	10	40	10	-	50
1998	11	39	6	2	47
1999	12	38	8	2	48
2000	13	33	8	2	43
2001	14	27	10	3	40
2002	15	26	6	1	33
2003	16	17	10	4	31
2004	17	22	9	2	33
2005	18	35	4	1	40
2006	19	23	6	0	29
2007	20	31	7	2	40
2008	21	25	11	0	36
2009	22	25	13	0	38
2010	23	22	4	1	27
2011	24	22	4	0	26
2012	25	22	7	1	30
2013	26	28	7	0	35
2014	27	16	5	3	24
2015	28	10	7	0	17
2016	29	11	9	3	23
2017	30	13	6	0	19
		<b>764</b>	<b>176</b>	<b>27</b>	<b>967</b>

Table 2: displays the number of KIA Laureates in different sessions and in different sections. For the last 30 years, the Khwarizmi International Award has been presented to 967 KIA Laureates. (764 distinguished national researchers, 176 distinguished foreign researchers and 27 distinguished Iranian researchers residing abroad).

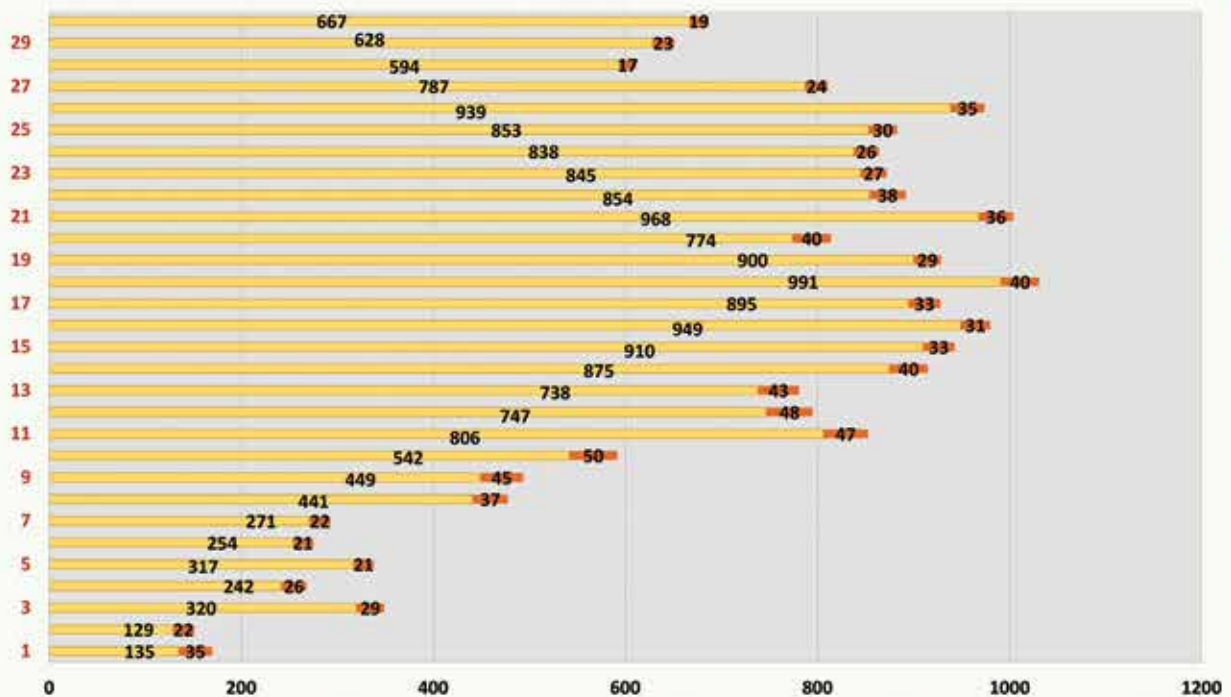


Chart 4: Application entry and number of KIA Laureates for each session (1988-2017)

Chart 4: Compares the number of selected applications and the total number of submitted applications, in each session. This shows that candidates have 5% chance of being selected. This percentage reveals the fact that applications are the subject of a strict selection.

Table 3: Foreign KIA Laureates and their countries (1988-2017)

Country	Foreign section	Iranian Residing Abroad Section	Total
Australia	7	2	9
Bangladesh	4		4
Belarus	1		1
Belgium	2		2
Bosnia & Herzegovina	1		1
Bulgaria	3		3
Canada	7	3	10
Chile	1		1
China	6		6
Denmark	1		1
Egypt	5		5
England	5	2	7
Finland	1		1
France	4	2	6
Georgia	3		3
Germany	7	2	9
Hong Kong	1		1
Hungary	4		4
India	26		26
Italy	5		5
Japan	4		4
Jordan	3		3
Kazakhstan	6		6
Lebanon	2		2
Malaysia	11		11

Country	Foreign section	Iranian Residing Abroad Section	Total
Mexico	1		1
Morocco	1		1
Netherlands	0	1	1
New Zealand	2		2
Norway	1	1	2
Pakistan	19		19
Philippine	2		2
Poland	1		1
Russia	1		1
Saudi Arabia	2		2
Singapore	1		1
South Africa	1		1
South Korea	1		1
Spain	1		1
Sudan	2		2
Sweden	1	1	2
Switzerland	2		2
Taiwan	7	1	8
Thailand	2		2
Tunisia	1		1
Turkey	1		1
USA	4	12	16
Uzbekistan	2		2
<b>Total</b>	<b>176</b>	<b>27</b>	<b>203</b>



**SPECIAL EDITION**  
**KHWARIZMI**  
**INTERNATIONAL AWARD**  
30<sup>th</sup> ANNIVERSARY

  
**30<sup>th</sup>**  
**KHWARIZMI**  
**INTERNATIONAL AWARD**  
Ministry of Science, Research and Technology  
Kansan Research Organization for Science and Technology

**Three Decades of**  
Excellence  
Progress  
Dynamism



## BOARDS

# Scientific & Executive Boards

## The Scientific Board

### **The Chairman**

The deputy-president of IROST acts in the capacity of chairman of the KIA, he/she is appointed by the Minister of Science, Research and Technology.

### **The Grand Jury**

The Grand Jury is the highest scientific decision-making authority. It is chaired by the Chairman of the Khwarizmi International Award. The task of the Grand Jury is to evaluate the scientific and technical value of the recommended applications and finally selects the KIA Laureates.

The Grand Jury for the Khwarizmi International Award consists of eminent scientists appointed by the Ministry of Science, Research and Technology.

During the last thirty years of the Khwarizmi International Award, a total number of 112 eminent professors and researchers from universities and industry have served as members of the Grand Jury.

### **The Scientific Committees**

The heads of the Scientific Committees are officially selected, for each session, by the chairman of the KIA. These committees are composed of highly-authoritative academics, coming from different scientific institutions and representing different disciplines.

The primary responsibility of the head of Scientific Committee is to invite senior experts to examine rigorously the applications submitted to the scientific committee. he / she is expected to ensure strict confidentiality, the application material under examination should not be shared or discussed with anyone outside the review process,, fairness in judgment , supervision of the senior experts examination. During the last thirty years, a total number of 530 senior experts have evaluated applicant's research works.

The application examination may lead to the necessity to organize a field visit or to invite other specialists to assist to the examination.

## The Executive Board

The Chairman, who has overall responsibility, appoints the Executive Chairman who also serves as the head of the KIA and Scientific and Technology Competitions Division.

The Executive Chairman is generally responsible for the execution of the KIA programs.

The Executive Board exercises the powers delegated to it and prepares the agenda of the KIA. It examines programs and budget.

### **The Secretariat**

The Secretariat acts under the authority of the Executive Chairman, it responds fully and effectively to the needs of the KA programs and ensures the coordination between different boards.

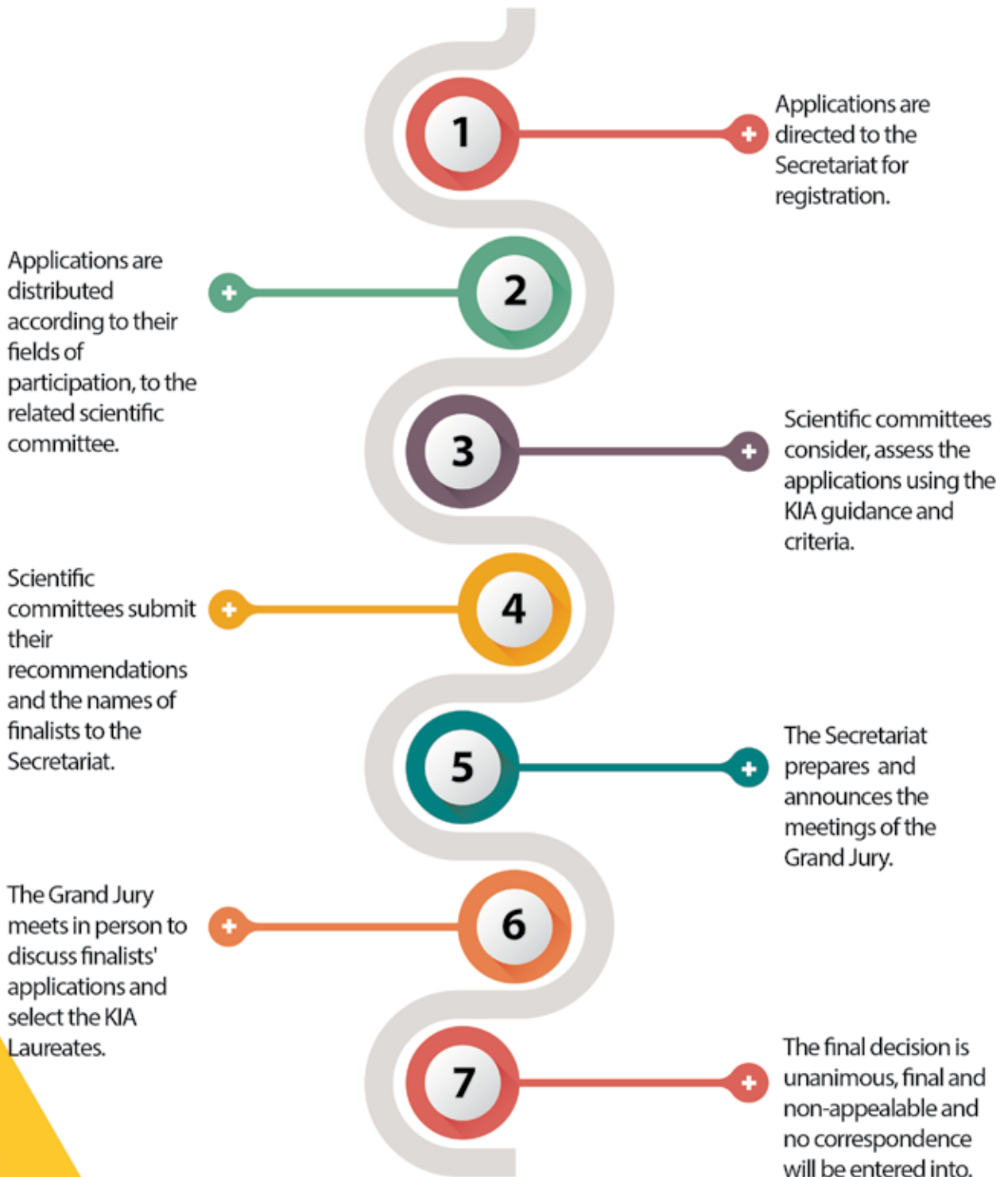
Secretariat's duties include many tasks, among them the application registration, calls for participation, national sponsorship affairs... The Secretariat has also an important role in setting the agenda for the Grand Jury deliberations and the award ceremony organization. The Secretariat provides communication conduit to and from the IROST Scientific Cooperation & International Affairs Section which plays an important role in making the necessary practical arrangements.





# Evaluation Process

All completed candidatures submitted to the KIA go through the following evaluation process:



# Former Presidents of IROST



**Seyed Ahmad Motamedi**  
1988-1989

Session: 1,2  
Frequency: 2



**Mohammad Soleymani**  
1990

Session: 3  
Frequency: 1



**Seyed Ahmad Motamedi**  
1991 - 2001

Session: 4 - 14  
Frequency: 11



**Jafar Mili Monfared**  
2002-2003

Session: 15 - 16  
Frequency: 2



**Ataollah Kouhian**  
2004

Session: 17  
Frequency: 1



**Seyed Hamid Fathi**  
2005 - 2006

Session: 18 - 19  
Frequency: 2



**Gholam Hussein Rahimi Sherbaf**  
2007 - 2009

Session: 20 - 22  
Frequency: 3



**Abbas Taeb**  
2010 - 2011

Session: 23 - 24  
Frequency: 2



**Ahmad Akbari**  
2012 -2015

Session: 25 - 28  
Frequency: 4



**Fathollah Moztarzadeh**  
2016 - present

Session: 29 - 30  
Frequency: 2

# Chairmen of KIA in order of frequency



**M. H. Entezari**  
1995-1996, 2009-2014

Number of session: 8



**H. Salar Amoli**  
2001-2003, 2007-2008

Number of session: 5



**K. Daneshjoo**  
1992 - 1994

Number of session: 3



**S.M.R. Sadri**  
1998-2000

Number of session: 3



**M. j. Ghasemi**  
1988 , 2005-2006

Number of session: 3



**A. Afshar**  
1990-1991

Number of session: 2



**A. Samimi**  
2015-2016

Number of session: 2



**A. Allahyari**  
2004

Number of session: 1



**M. Molanejad**  
1997

Number of session: 1



**H. Mahdian**  
1989

Number of session: 1



**F. Mohanazadeh**  
2017

Number of session: 1

# International Review Panel

At the 16<sup>th</sup> session, new high caliber examiners joined the scientific committees. The KIA extended invitations to distinguished scientists with international stature and experience to participate in the evaluation of the applications received from around the globe, mostly to the KIA Laureates Circle.

They accepted willingly to serve this prestigious award. KIA acknowledges the contribution of these distinguished researchers and appreciates the quality and depth of their evaluation. The KIA is grateful for their time and the energy they devote to this important scientific event.

We hope to see for the next session new appointments in different fields of Science and technology.



**Prof. Hsiang-nan Li**  
Institute of Physics, Academia Sinica  
Taiwan – China  
23<sup>rd</sup> Session- KIA Laureate

It is a great honor that I was elected as a KIA Laureate of the 23<sup>rd</sup> session, and served as an international panel member of the 28<sup>th</sup> session.

The KIA award has encouraged numerous researchers in fundamental and applied sciences to make further contributions.

I appreciate the effort of the involved staff, who continues to strengthen the impact of the KIA award.



**Prof. Habib Ammari**  
Dep. of Mathematics, ETH Zurich  
Tunisia / Switzerland  
28<sup>th</sup> Session- KIA Laureate

As a recipient of the KIA Award, it is always my great pleasure and honor to be a member of the International Review Panel.

# International Review Panel



**Prof. Christoph Klein**  
Ludwig Maximilians University  
Germany  
29<sup>th</sup> Session- KIA Laureate



**Prof. Kazuo Watanabe**  
University of Tsukuba  
Japan  
28<sup>th</sup> Session KIA Laureate

I would like to express my gratitude for being nominated to serve on the International Panel for the 30<sup>th</sup> Khwarizmi International Award!

It is truly an honor for me to be part of this committee and to facilitate the international visibility of the distinguished Khwarizmi Award.

Committed to a high level of Excellency and dedication to medicine and science, I have reviewed a few applications. To the best of my capacities, I have applied stringent criteria form assessments.

Thank you for allowing me to help you in this regard!

It is honorable to assist the laureate candidate selection. I would put my efforts to prioritize the evaluation on the subjects to assist locally and globally on sustainability and peace stability with uniqueness.





**Le 31<sup>ème</sup> Prix International Khwarizmi (KIA)**  
**Appel à Candidature**

**Historique:** Créé à la mémoire de Muhammad Ibn Musa al-Khwarizmi, le mathématicien et astronome iranien et musulman.  
**But:** Récompenser les efforts des chercheurs dont les travaux sont porteurs de progrès très significatifs dans les différents domaines des sciences et de la technologie.  
**Périodicité:** Annuel chaque année.  
**Domaines de Participation:**  
 \* Aéronautique \* Génie Civil \* Sciences des Matériaux & Métallurgie \* Électronique et Informatique  
 \* Mécatronique \* Sciences Fondamentales \* Technologie Verte \* Mécatronique  
 \* Génie de l'Énergie & Management de la Technologie \* Sciences Médicales \* Technologies Chimiques  
 \* Biotechnologie & Sciences Médicales Fondamentales \* Technologie de l'Information \* Nanotechnologie  
 \* Agriculture, Ressources Naturelles, Sciences Animales & Médecine Vétérinaire  
**Catégories:**  
 \* Recherche Appliquée \* Recherche Fondamentale \* Recherche de Développement \* Innovation et Innovation  
**Calendrier:**  
 10 Octobre 2017: Date limite du dépôt des dossiers de candidature  
 Décembre 2017: Annonce aux Lauréats  
 Février 2018: Remise solennelle du Prix

Pour plus de détails et pour plus d'informations, veuillez consulter régulièrement notre site: <http://www.khwarizmi.fr>

**31<sup>st</sup> Khwarizmi International Award (KIA)**  
**Call for Participation**

**History:** Established in memory of Muhammad Ibn Musa al-Khwarizmi, the Iranian Muslim mathematician and astronomer.  
**Purpose:** Dedicated to recognizing outstanding scientific achievements made by Researchers, Inventors and Innovators from all over the world.  
**Fields of Participation:**  
 \* Aerospace \* Civil Engineering \* Materials & Metallurgy \* Electrical & Computer  
 \* Mechatronics \* Basic Sciences \* Green Technology \* Mechatronics \* Mechanical Technology  
 \* Industry & Technology Management \* Information Sciences \* Medical Technology \* Chemical Technology  
 \* Biotechnology & Basic Medical Sciences \* Information Technology \* Nanotechnology  
 \* Agriculture, Natural Resources, Animal Sciences & Veterinary Medicine  
**Research Works Categories:**  
 \* Applied Research \* Fundamental Research \* Research & Development \* Innovation & Innovation  
**Timeline Key Dates:**  
 10<sup>th</sup> October, 2017: Deadline for submission  
 December, 2017: Announcement to the KIA Laureates  
 February, 2018: Award ceremony

To apply and check the key dates please visit our website: <http://www.khwarizmi.fr>



**Contactez nous:**

Ministry Research Organization for Science & Technology (IROST)  
 Khwarizmi International Award (KIA) – Secretariat  
 House Kad 10, Haghshad Road, Alborzabad District, Alborzgov. Highway  
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 Website: [www.khwarizmi.fr](http://www.khwarizmi.fr) Tel: (+9821) 56 27 63 21 / 56 27 63 22  
 E-mail: [khwarizmi@irost.ir](mailto:khwarizmi@irost.ir) website: [www.khwarizmi.fr](http://www.khwarizmi.fr)



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**31. Khwarizmi Internationale Preisverleihung (KIA)**  
**Aufruf zur Teilnahme**

**Wortung:** Ebenfalls zum Andenken an Muhammad Ibn Musa al-Khwarizmi, der islamisch-muslimische Mathematiker und Astronom.  
**Zeitraum:** Jährlich.  
**Zielsetzung:** Gewährt der Anerkennung überlegender wissenschaftlicher Eigenschaften der Forscher, Erfinder und Innovatoren aus der ganzen Welt.  
**Bereiche der Märfenung:**  
 \* Luft- und Raumfahrt \* Biologiewissenschaften \* Materialien und Metallurgie \* Mechanik  
 \* Energie Technologie \* Medizintechnologie \* Grundlagenwissenschaften \* Mechatronik  
 \* Elektro- und Computertechnik \* Information Technologie \* Chemische Technologie \* Nanotechnologie  
 \* Biotechnologie und Medizinische Grundlagenforschung \* Industrie und Technologie Management  
 \* Landwirtschaft, Natürliche Ressourcen, Nutztierwissenschaften und Veterinärmedizin  
**Forschungsbereiche Kategorien:**  
 \* Angewandte Forschung \* Grundlagenforschung \* Forschung und Entwicklung \* Erfindung und Innovation  
**Wichtige Termine:**  
 10. Oktober 2017: Einreichungsfrist  
 Dezember 2017: Ankündigung an die KIA Preisträger  
 Februar 2018: Preisverleihungszeremonie

Bitte besuchen sie unsere Website regelmäßig: <http://www.khwarizmi.de>



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**El 31º Premio Internacional Khwarizmi (KIA)**  
**Llamamiento a Candidaturas**

**Historia:** Se estableció este Premio para honrar la memoria de Muhammad Ibn Musa al-Khwarizmi, matemático y astrónomo musulmán iraní.  
**Objetivo:** Se concede a científicos cuyos descubrimientos o investigación representen una contribución relevante para las Ciencias.  
**Periodicidad:** Anualmente.  
**Campos de Investigación:**  
 \* Aeroespacial \* Ingeniería Civil \* Electricidad e Informática \* Industria, Gestión de la Tecnología  
 \* Mecánica \* Ciencias Básicas \* Tecnología Verde \* Mecatrónica  
 \* Ciencias Médicas \* Tecnologías Químicas \* Tecnologías de Información \* Nanotecnología  
 \* Biotecnología y Ciencias Médicas Básicas \* Ciencia de los Materiales, Metalurgia y Energías Renovables  
 \* Agricultura, Recursos Naturales, Ciencias Animales y Medicina Veterinaria  
**Categorías:**  
 \* Investigación Aplicada \* Investigación Fundamental \* Investigaciones para el Desarrollo \* Innovación e Innovación  
**Algunos Fechas:**  
 10 de Octubre de 2017: Cierre del llamamiento a candidaturas  
 Diciembre de 2017: Anuncio a los KIA Laureados  
 Febrero de 2018: Entrega de premios

Para solicitar y más información, visite por favor, con regularidad, nuestro sitio: <http://www.khwarizmi.es>



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**APPENDIX**

# About IROST



## Iranian Research Organization for Science and Technology (IROST)

### Introduction

Iranian Research Organization for Science and Technology (IROST) was founded in 1980. IROST as one of the leading Iranian organizations for science and technology (S&T) mainly aims to devote itself to achieving independence in scientific and technological pursuit of the country by supporting and exploiting the potential offered by the Iranian inventors, innovators, researchers and industrialists and to respond to the increasing demands for S&T development programs. This organization provides valuable services in fulfilling the country's scientific, technical and engineering requirements through supporting applied and developmental research as well as developing new technologies by exploiting qualified experts and modern equipment and facilities.

In the years since the IROST's inception, distinguished academics from among the country's academic community took over the presidency of IROST.





## Missions and Objectives

IROST's major objectives are to:

- Provide support for the development of high priority technologies at national level, and offer consultations for evaluation, commercialization and marketing of these technologies.
- Provide the grounds for effective utilization of research results by leading research to production.
- Evaluate patent applications, scientifically and professionally, and issue approval certificates for the grant of patents in the country.
- Hold Research-Oriented Ph.D. (Doctoral) Programs, and organize short-term educational workshops and courses.
- Execute major projects with the aim of technology development at national level.
- Organize and co-ordinate Intellectual Property (IP) protection efforts in the country.
- Manage the National Scientific Data Center

### **IROST departments:**

- 1- Department of Agriculture
- 2- Department of Biotechnology
- 3- Department of Mechanical Engineering
- 4- Department of Electrical Engineering and Information Technology
- 5- Department of Advanced Materials and Renewable Energy
- 6- Department of Chemical Technology
- 7- Research Institute for New Technology Development Studies (RINTDS)





# Khwarizmi Youth Award (KYA)

The Khwarizmi Youth Award (KYA) is annually awarded to young scientists, students or specialists from universities and industry (up to 35-year-old) for their research contribution. In another section, the KYA also encourages pupils from high schools to undertake research works in all fields of science.

From the 3<sup>rd</sup> session to the 12<sup>th</sup> session of the KIA, the enthusiastic welcome and the high rate of participation from young researchers led to the creation of the Khwarizmi Youth Award (KYA). Criteria were defined, scientific committees composed and an appropriate national policy was determined to channel the efforts and the applications.

For the KIA, the Khwarizmi Youth Award was a new experience and a new born. In 1999, the Iranian Research Organization for Science and Technology (IROST) established a separate secretariat and appointed a chairman for the Khwarizmi Youth Award. By doing this, IROST was pursuing its own mission, stimulating creativity among young scientists and young specialists, working in industry. With the creation of the KYA, educative institutions were encouraged to promote research inside their own educative programs.





The KYA became a goal for many young scientists who spend hours of hard efforts on research programs. The KYA took responsibility and implemented a large policy to organize the vast entry and the appropriate evaluation of the applications. Applications sent by high schools were and are forwarded to special scientific committees.

Each year, every university, research institution, industry and school displays on its boards the call for participation and no academic year passes, without the introduction of young researchers to the KYA competition. Young students do amazing things to show their passion for Science.

From 1999 to 2017, nineteen sessions have been held so far. A huge amount of 14996 applications have been submitted by young researchers and 322763 by students from high schools. All these applications entered the competition and followed a meticulous evaluation process.



- In all these nineteen sessions, 418 research works were selected from young researchers under the age of 35 years old and 684 from students from high schools.
- More specifically, 1102 research works were carried out by 1612 finalists; 464 men and 92 women for the young scientists section, and by 716 boys and 340 girls for the high school students section.
- Since the 16<sup>th</sup> session (2015), the international organization (The World Academy of Sciences) TWAS has presented willingly its support (cash award) to 6 KYA Laureates.

# Who is Khwarizmi?



## **Muhammad ibn Musa al-Khwarizmi**

Muhammad ibn Musa Khwarizmi was a Persian Muslim mathematician, astronomer, astrologer and geographer. He was born in Persia of that time and died around 850. Historians have different interpretations on his life and the origin of his name Khwarizmi.

Khwarizmi was scholar in House of Wisdom in Baghdad, where he translated Greek scientific manuscripts. He also studied and wrote many books and treatises. His "Algebra" was the first book on the systematic solution of linear and quadratic equations. Consequently, Khwarizmi is to be considered to be the father of algebra. His contributions not only made a great impact on mathematics, but on language as well. The word algebra is derived from al-jabr, one of the two operations used to solve quadratic equations, as described in his book. The words algorism and algorithm stem from algoritmi, the Latinization of his name.

## **Contributions**

His major contributions to mathematics, astronomy, astrology, geography and cartography provided foundations for later and even more widespread innovation in algebra, trigonometry, and his other areas of interest. His systematic and logical approach to solving linear and quadratic equations gave shape to the discipline of algebra, a word that is derived from the name of his book on the subject. « The Compendious Book on Calculation by Completion and Balancing». The book was first translated into Latin, in 1145, it introduced the term "algebra to European languages.

His book on the Calculation with Hindu Numerals was principally responsible for the diffusion of the Indian system of numeration in the Middle-East and then Europe. This book was also translated into Latin in the twelfth century, as Algoritmi denumero Indorum. From the name of the author, rendered in Latin as algoritmi, originated the term algorithm.

Khwarizmi systematized and corrected Ptolemy's data in geography as regards to Africa and the Middle East. Another major book was his *Kitab surat al-ard* «The Image of the Earth»; translated as *Geography*). He also assisted in the construction of a world map for the caliph al-Ma'mun and participated in a project to determine the circumference of the Earth, supervising the work of 70 geographers to create the map of the then «known world». When his work was copied and transferred to Europe through Latin translations, it had a profound impact on the advancement of basic mathematics in Europe. He also wrote on mechanical devices like the astrolabe and sundial.

### **Algebra**

*Kitab al-mukhtar fi hisab al-jabr wa-l-muqabala* “The Compendious Book on Calculation by Completion and Balancing” is a mathematical book written approximately 830 CE.

### **Arithmetic**

Khwarizmi's second major work was on the subject of arithmetic, which survived in a Latin translation but was lost in the original Arabic version.

### **Geography**

Khwarizmi's third major work is his *Kitab surat al-Ard* «Book on the appearance of the Earth». It is a revised and completed version of Ptolemy's *Geography*, consisting of a list of 2402 coordinates of cities and other geographical features following a general introduction.

### **Astronomy**

Khwarizmi's *Zij al-sindhind* (astronomical tables) is a work consisting of approximately 37 chapters on calendrical and astronomical calculations and 116 tables with calendrical, astronomical and astrological data, as well as a tables of sine values. This is one of many Arabic zijes based on the Indian astronomical methods known as the *sindhind*.

### **Jewish calendar**

Khwarizmi wrote several other works including a treatise on the Hebrew calendar.

It describes the -19 year intercalation cycle, the rules for determining on what day of the week the first day of the month Tishri shall fall; calculates the interval between the Jewish era (creation of Adam) and the Seleucid era; and gives rules for determining the mean longitude of the sun and the moon using the Jewish calendar.

Similar material is found in the works of Biruni and Maimonides.







**KIA  
LAUREATES**

# KIA Laureates | Iranian researchers residing abroad section (1998-2017)

Year	Session	Name	Research Title	Country of Residence	
	1998	11 <sup>th</sup>	Prof. Reza Ghohestani	Identification and characterization of antigens involved in autoimmune bullous dermatoses	France
	1998	11 <sup>th</sup>	Prof. Farrokh Nadim	Evaluation of clay shear strength under earthquake loading	Norway
	1999	12 <sup>th</sup>	Prof. Junes Ipaktchi Prof. Mohammad Reza Saidi	Three component amino alkylation of aldehydes by functionalized organozinc compounds promoted by lithium perchlorate (Licloo4)	Germany
	1999	12 <sup>th</sup>	Prof. Abdollah Bashir Hashemi	Cubanes : From explosives to pharmaceuticals	USA
	2000	13 <sup>th</sup>	Prof. Mahnaz Badamchian	melanoma tumor cell Inhibition of proliferation by MB-35 a novel thymic peptide	USA
	2000	13 <sup>th</sup>	Prof. Mohammad Ali Nabi Rahni	Biosensors and nano-engineering : development and applications for clinical, environmental, industrial & chemical warfare monitoring	USA
	2001	14 <sup>th</sup>	Prof. Mohammad Ghanbari	Video Networking	England
	2001	14 <sup>th</sup>	Prof. Mohammad Raof	Static, dynamic, hysteretic and fatigue characteristics of helical steel cables	England
	2001	14 <sup>th</sup>	Prof. Bijan Safaie	Immunology and cancer	USA
	2002	15 <sup>th</sup>	Prof. Gholam Ali Mansoori	Development of molecular based statistical mechanical theories and models...	USA

# KIA Laureates | Iranian researchers residing abroad section (1998-2017)

	Year	Session	Name	Research Title	Country of Residence
	2002	16 <sup>th</sup>	Prof. Mohammad Sahimi	Synthesis, preparation and characterization of nano porous membranes and molecular modeling of transport and separation of fluid mixtures therein	USA
	2002	16 <sup>th</sup>	Prof. Ramin Sheikhattar	molecular Elucidation of mechanism of cancer	USA
	2003	16 <sup>th</sup>	Prof. Khosro Adeli	lipid disorders in Mechanisms of insulin resistance	Canada
	2003	16 <sup>th</sup>	Prof. Mostafa Ronaghi	Pyrosequencing; a tool for sequence-based DNA analysis	USA
	2004	17 <sup>th</sup>	Prof. Gholam Hossein Hakimelahi	Pro – Dual – Drug strategy in combating cancer	Taiwan
	2004	17 <sup>th</sup>	Prof. Firouz Darroudi	Contribution from molecular and cytogenetic approaches in epidemiology to cancer risk assessment and prevention	Netherlands
	2005	18 <sup>th</sup>	Prof. Hamid Habibi	Recombinant carp growth hormone and development of a food supplement for improving growth rate in cultured fish	Canada
	2007	20 <sup>th</sup>	Prof. Bahram Mobashr	Discovery of a population of extremely massive and evolved galaxies close to the beginning to the universe	USA
	2007	20 <sup>th</sup>	Prof. Akram Taji	Plant tissue culture and in vitro plant breeding	Australia
	2010	23 <sup>rd</sup>	Prof. Tofigh Mussivand	Cardiovascular Heart failure treatment Medical devices	Canada

# KIA Laureates | Iranian researchers residing abroad section (1998-2017)

Year	Session	Name	Research Title	Country of Residence	
	2012	25 <sup>th</sup>	Prof. Mohammad Reza Mozafari	Manufacture are mesonanocarrier systems using Mozafari method	Australia
	2014	27 <sup>th</sup>	Prof. Majid Samii	Prominent role in taking "global knowledge border on neurosurgery " forward and continuing in improving the quality of neurosurgery in Iran	Germany
	2014	27 <sup>th</sup>	Prof. Seiamak Bahram	Novel histocompatibility genes in man (from discovery to clinical application)	France
	2014	27 <sup>th</sup>	Prof. Nader Bagherzadeh	Design and analysis of high performance and low power computer architecture based on the nation of Network-on-Chip (NOC)	USA
	2015	29 <sup>th</sup>	Prof. Alireza Khademhosseini	Nano and micro fabricated hydrogels for regenerative engineering	USA
	2015	29 <sup>th</sup>	Prof. Mohammad Taherzadeh	Resource Recovery: conversion of agricultural wastes and residuals to biofuels and biomaterials	Sweden
	2015	29 <sup>th</sup>	Prof. Behrokh Khoshnevis	Robotic construction on earth and beyond	USA





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**30<sup>th</sup> ANNIVERSARY**

# KIA Laureates | Foreign Section (1992-2017)

Year	Session	Name	Research Title	Country	
	1992	5 <sup>th</sup>	Prof. S. Zafar Husain Zaidi	Chemistry (field)	Pakistan
	1992	5 <sup>th</sup>	Dr. Qaiser Mushtaq	Mathematic (field)	Pakistan
	1993	6 <sup>th</sup>	Prof. Atta-ur-Rahman	Organic Chemistry (field)	Pakistan
	1993	6 <sup>th</sup>	Dr. Hameed Ahmed Khan	Physics (field)	Pakistan
	1993	6 <sup>th</sup>	Dr. Amir Hossain Khan	Chemistry (field)	Bangladesh
	1994	7 <sup>th</sup>	Dr. Mohammad Salimullah	Stimulated brillouin and raman scattering modulational instabilities, harmonic generations, etc.....	Bangladesh
	1994	7 <sup>th</sup>	Prof. Mohammad Anwar Waqar	Molecular and cell biology : eukaryotic DNA replication and cancer , control of replication processes and protein chemistry	Pakistan
	1995	8 <sup>th</sup>	Dr. Edil Erogzhaevich Ergozhin	Soluble polyelectrolytes based on copolymers of styrene with benzonitrile	Kazakhstan
	1995	8 <sup>th</sup>	Dr. Asghar Qadir	Space Time Symmetries	Pakistan
	1995	8 <sup>th</sup>	Dr. Noor Mohammad Butt	1-Compilation of Debye-Waller factors of cubic alloys and non-cubic materials 2- Correlation of micro to macro properties of cubic materials	Pakistan

# KIA Laureates | Foreign Section (1992-2017)

	Year	Session	Name	Research Title	Country
	1995	8 <sup>th</sup>	Dr. Khushnood Ahmed Siddiqui	Utilization of atomic energy, new genetics and biotechnology for solving the major problems of food and agriculture	Pakistan
	1995	8 <sup>th</sup>	Dr. Nurunnahar Rahman	Identification of carcinogens present in environment and food	Bangladesh
	1995	8 <sup>th</sup>	Dr. sarvar Mukadirovich Kadirov	Wear and Tear characteristic properties and methods of diesel engine parts reliability increase	Uzbekistan
	1995	8 <sup>th</sup>	Dr. Ang Hooi Hoon	Characterization of local plasmodium falciparum isolates by cloning and susceptibility studies against antimalarial drugs	Malaysia
	1995	8 <sup>th</sup>	Dr. Ma-Concepcion Claudio Lizada	Postharvest technologies for Carabao mango	Philippine
	1996	9 <sup>th</sup>	Prof. Belen Morallo-Rejesus	Field release and establishment of larval parasitoids for management of diamondback moth of courtiers in the Philippines	Philippine
	1996	9 <sup>th</sup>	Dr. Mohd Omar AB Kadir	Timing belt cover for automotive from poly propylene / rice husk	Malaysia
	1996	9 <sup>th</sup>	Prof. Prem Kumar Uppal	Control of equine influenza epidemic in India	India
	1996	9 <sup>th</sup>	Dr. M. Shamsuddin	Thermodynamic and electron transport properties of semiconducting chalcogenides	India
	1997	10 <sup>th</sup>	Prof. Erkrang Wang	Some new aspect of the basic research on electro analytical chemistry	China

# KIA Laureates | Foreign Section (1992-2017)

Year	Session	Name	Research Title	Country	
	1997	10 <sup>th</sup>	Prof. Esen Abikenovich Bekturov	Solution properties, structure and complex formation of water soluble and water swelling polymers	Kazakhstan
	1997	10 <sup>th</sup>	Dr. Iqbal Hussain Qureshi	Nuclear analytical techniques development and application in Pakistan	Pakistan
	1997	10 <sup>th</sup>	Dr. Ghulam Murtaza	Electron thermal transport in steep gradients	Pakistan
	1997	10 <sup>th</sup>	Prof. Kanti Bhushan Datta	Mathematical Control Theory	India
	1997	10 <sup>th</sup>	Dr. Sheikh Riazuddin	Transgenic Plant Technology	Pakistan
	1997	10 <sup>th</sup>	Prof. Dorairajan Balasubramanian	Molecular basis of Cataract	India
	1997	10 <sup>th</sup>	Dr. Chittoor Mohammed Habibullah	Hepatocyte transplantation for the treatment of fulminant hepatic failure	India
	1997	10 <sup>th</sup>	Dr. MD. Rafiqul Islam	Oral Rehydration Therapy	Bangladesh
	1997	10 <sup>th</sup>	Mohammad Shukri	Flood Monitoring kit	Malaysia
	1998	11 <sup>th</sup>	Dr. Viqar Uddin Ahmad	Phytochemical investigation on the endemic plants of Pakistan	Pakistan



# KIA Laureates | Foreign Section (1992-2017)

	Year	Session	Name	Research Title	Country
	1998	11 <sup>th</sup>	Dr. Rezvan Nayef Alsayed Ahmad	Islam Sciences	Lebanon
	1998	11 <sup>th</sup>	Dr. P. Ramasamy	Crystal Growth	India
	1998	11 <sup>th</sup>	Dr. Harsh K. Gupta	Investigation of artificial water reservoir induced earthquakes	India
	1998	11 <sup>th</sup>	Dr. Kaida Bin Khalid	Microwave dielectric properties of hevea rubber latex	Malaysia
	1998	11 <sup>th</sup>	Dr. Mohammad Belhag	Non-linear oscillation in mechanical systems	Morocco
	1999	12 <sup>th</sup>	Dr. Hassan Hanafi	Islam and philosophy	Egypt
	1999	12 <sup>th</sup>	Dr. Khaled Ghanem	Microbial modification of poultry manure into protein enriched and uric acid free feed stuff	Egypt
	1999	12 <sup>th</sup>	Dr. Govind Swarup	Giant Metrewave Radio Telescope (GMTR)	India
	1999	12 <sup>th</sup>	Dr. Hvedri Inassaridze	Non abelian homological algebra and its applications	Georgia
	1999	12 <sup>th</sup>	Dr. Nazarbai Bliev	Generalized Analytic Functions (GAF) in fractional spaces	Kazakhstan

# KIA Laureates | Foreign Section (1992-2017)

	Year	Session	Name	Research Title	Country
	1999	12 <sup>th</sup>	Dr. Alexander A. Zhensykbaev	Optimal Recovery of Operators	Kazakhstan
	1999	12 <sup>th</sup>	Dr. Vazha Okujava	Mechanisms of Cortical Inhibition	Georgia
	1999	12 <sup>th</sup>	Dr. Anis Rahman	Reducing environmental impacts of agriculture	New Zealand
	2000	13 <sup>th</sup>	Dr. Riazuddin	Some topics involving an interplay of weak, electromagnetic and strong interactions	Pakistan
	2000	13 <sup>th</sup>	Dr. Gyorgy Csaba	Phylogeny & Ontogeny of hormone receptors : study of hormone imprinting	Hungary
	2000	13 <sup>th</sup>	Dr. Iliya I. Blekhan	The discovery, the investigation, the practical use of the phenomenon of self-synchronization of rotating bodies	Russia
	2000	13 <sup>th</sup>	Dr. Rajpal Singh Sirohi	Speckle metrology development of instrumentation using speckle phenomenon	India
	2000	13 <sup>th</sup>	Dr. Hanafi Bin Ismail	A new & novel multifunctional rubber additive based on palm oil fatty acid	Malaysia
	2000	13 <sup>th</sup>	Dr. Margrethe Serek	Environmental safety methods for extending post-harvest life of Ornametals	Denmark
	2000	13 <sup>th</sup>	Dr. Noraieni Haji Mokhtar	Sine-Slab system for erosion control	Malaysia

# KIA Laureates | Foreign Section (1992-2017)

	Year	Session	Name	Research Title	Country
	2000	13 <sup>th</sup>	Dr. Farouk El-Sabban	Effect of high temperature and nutritional factors on thrombosis in brain micro vessels	Egypt
	2001	14 <sup>th</sup>	Dr. Ali A. Al-Daffa	History of Science in Islam	Saudi Arabia
	2001	14 <sup>th</sup>	Dr. Muhammad Suhail Zubairy	Quantum optics and laser physics	Pakistan
	2001	14 <sup>th</sup>	Dr. Sankar Pal	Pattern recognition and image processing in soft computing	India
	2001	14 <sup>th</sup>	Dr. Sornchai Loareesuwan	Chemo Therapy of Malaria	Thailand
	2001	14 <sup>th</sup>	Dr. Bina Siddiqui	Studies on the chemical constituents of Azadirachta indica and development of botanical pesticides	Pakistan
	2001	14 <sup>th</sup>	Dr. John J. Jonas	Thermo mechanical processing of steels	Canada
	2001	14 <sup>th</sup>	Dr. Bulat Mukashev	Ion-radiation induced modification of silicon and development of new technology for its production	Kazakhstan
	2001	14 <sup>th</sup>	Dr. Nodar Tsintsadze	Relativistically intense laser – matter interaction	Georgia
	2001	14 <sup>th</sup>	Dr. Farid Badria	Hepatoprotective agent from natural products	Egypt

# KIA Laureates | Foreign Section (1992-2017)

	Year	Session	Name	Research Title	Country
	2001	14 <sup>th</sup>	Dr. Gopakumar Kumara Panicker	Production of chitin and chitosan from prawn shell waste	India
	2002	15 <sup>th</sup>	Dr. Jerzy Roman Woyke	Contribution to science and practice of apiculture	Poland
	2002	15 <sup>th</sup>	Dr. Thanu Padmanabhan	Investigations in different areas of cosmology and gravitation	India
	2002	15 <sup>th</sup>	Dr. Anil K. Bhowmick	Band formation behavior of rubber & rubber blends during milling	India
	2002	15 <sup>th</sup>	Dr. Rahmah Noordin	A novel recombinant antigen-based rapid dipstick test for the specific and sensitive detection of Brugia Malayi Infection	Malaysia
	2002	15 <sup>th</sup>	Dr. Tushar Kanti Datta	Reliability analysis and control of structures of dynamic loading	India
	2002	15 <sup>th</sup>	Dr. Badreldin Ali	Gentamicin nephrotoxicity in rats & its modulation by other drugs and studies on the pharmacology and toxicity of the traditional medicinal plant Rhazya Stricta	Sudan
	2003	16 <sup>th</sup>	Dr. Nassir-El Din- Assad	Research on Islamic culture and civilization	Jordan
	2003	16 <sup>th</sup>	Prof. Shaojun Dong	Improvement on electrochemical methods	China
	2003	16 <sup>th</sup>	Dr. Michael Kew	Aetiology, pathogenesis and prevention of hepatocellular carcinoma in black Africans	South Africa

# KIA Laureates | Foreign Section (1992-2017)

	Year	Session	Name	Research Title	Country
	2003	16 <sup>th</sup>	Dr. Denys wheatley	Citrulline deficient metabolism of tumors	England
	2003	16 <sup>th</sup>	Dr. Ajoy Ghatak	Recent advances in fibers optics and electronics	India
	2003	16 <sup>th</sup>	Dr. Fayyaz Ud Din	Structure of proton	Pakistan
	2003	16 <sup>th</sup>	Dr. Ivan Ivanov	Expression of human and other eukaryotic genes in heterologous hosts	Bulgaria
	2003	16 <sup>th</sup>	Dr. Barry James Donovan	A comprehensive survey on pollination	New Zealand
	2003	16 <sup>th</sup>	Dr. Jiradej Manosroi	Development of tPA (Lekeplase), a blood clot lysis drug in bacterial system by genetic engineering	Thailand
	2003	16 <sup>th</sup>	Dr. Asim Ali Abdel-Rahman	Cotton integrated pest management in Sudan	Sudan
	2004	17 <sup>th</sup>	Prof. Noboru Fujihara	Most advanced techniques for reproductive biology to the conservation and restoration of endangered wild animals	Japan
	2004	17 <sup>th</sup>	Dr. Sanjaya Rajaram	Wheat breeding, for Iran	India
	2004	17 <sup>th</sup>	Prof. Roumen Tsanev	Structure and function of chromatin in Eukaryotes	Bulgaria

# KIA Laureates | Foreign Section (1992-2017)

Year	Session	Name	Research Title	Country	
	2004	17 <sup>th</sup>	Prof. Alexander Ramm	One – dimensional inverse scattering and spectral problem	USA
	2004	17 <sup>th</sup>	Prof. Narinder Mehra	Transplant immunology and immunogenetics	India
	2004	17 <sup>th</sup>	Dr. Shi-Yao Zhu	The cancellation of spontaneous emission via quantum interference	China
	2004	17 <sup>th</sup>	Dr. Gurdev Khush	Rice improvement program	India
	2004	17 <sup>th</sup>	Dr. Tasawar Hayat	Peristalsis of non – Newtonian fluids	Pakistan
	2004	17 <sup>th</sup>	Prof. Yaakob Bin Che Man	Development of rapid instrumental methods for fats and oils analysis (palm oil products)	Malaysia
	2005	18 <sup>th</sup>	Dr. Md. Azizur Rahman	1-Interior permanent magnet motors 2-Power transformer protection 3-Bearingless electric motor drives	Canada
	2005	18 <sup>th</sup>	Dr. Levon M. Khachigian	Innovative Gene – Specific "molecular scissors" targeting key genes as potential novel therapeutics in vascular disease	Australia
	2005	18 <sup>th</sup>	Dr. Luigi Lugiato	Quantum Imaging	Italy
	2005	18 <sup>th</sup>	Dr. John Speakman	The causes and consequences of variation in energy metabolism	England

# KIA Laureates | Foreign Section (1992-2017)

	Year	Session	Name	Research Title	Country
	2006	19 <sup>th</sup>	Prof. Muhammad Iqbal Choudhary	Discovery of potential drug candidates for the treatment of alzheimer's disease and related dementias	Pakistan
	2006	19 <sup>th</sup>	Prof. Moncef Zouali	Innovative studies of A B-Lymphocytes: insights into understanding autoimmunity and discovery of a subversion strategy used by infectious agents	France
	2006	19 <sup>th</sup>	Prof. Muhammad Abuelma'atti	Powerful technique for modeling the nonlinearities encountered in analogue electronic circuits and systems	Saudi Arabia
	2006	19 <sup>th</sup>	Prof. Christofer Leygraf	Scientific and engineering advancements in atmospheric corrosion	Sweden
	2006	19 <sup>th</sup>	Prof. Murray Moo-Young	Bioreactor design in biotechnology applications engineering principles and process innovations	Canada
	2006	19 <sup>th</sup>	Prof. Richard N. Frye	Iranian Culture	USA
	2007	20 <sup>th</sup>	Prof. Digby Macdonald	Development of point defect model for prediction of localized corrosion	USA
	2007	20 <sup>th</sup>	Dr. Muharem Avdispahic	Explicit formulas in number theory	Bosnia
	2007	20 <sup>th</sup>	Prof. Dimitar Klissurski	Scientific bases of synthesis of highly efficient catalysts	Bulgaria
	2007	20 <sup>th</sup>	Dr. Varagur Ganesan Malathi	Characterization, diagnosis comparative and functional genomics of whitefly transmitted geminiviruses infecting grain legumes, cotton and tomato	India

# KIA Laureates | Foreign Section (1992-2017)

Year	Session	Name	Research Title	Country	
	2007	20 <sup>th</sup>	Dr. Raj Pal Singh	Degradation and stabilization of polymers	India
	2007	20 <sup>th</sup>	Dr. Huiming Cheng	The synthesis structure and properties of single walled and double walled carbon nanotubes	China
	2007	20 <sup>th</sup>	Prof. Abdul Latif Ahmad	Sustainable development of palm oil industries via a novel membrane based treatment system	Malaysia
	2008	21 <sup>st</sup>	Dr. Brian William Coad	Freshwater Fishes of Iran	Canada
	2008	21 <sup>st</sup>	Prof. Willy jean Malaisse	Lipotoxic aspects of pancreatic islet cell biochemical, biophysical and functional alterations in rats depleted in long-chain polyunsaturated W3 fatty acids an animal model of the metabolic syndrome	Belgium
	2008	21 <sup>st</sup>	Prof. Hubert Vaudry	Characterization on novel biologically active peptides: the unique contribution of amphibians to the discovery of mammalian neuropeptides	France
	2008	21 <sup>st</sup>	Prof. Su-Moon Park	Development of Fourier transform electrochemical impedance spectroscopy (FT-EIS) and a new model foe electrochemistry based on FT-EIS measurements	South Korea
	2008	21 <sup>st</sup>	Prof. Jie Meng	Relativistic description for ground-state properties of exotic nuclei	China
	2008	21 <sup>st</sup>	Prof. Chung-Chih Wu	Investigations on advanced OLED device technologies	China-Taipei
	2008	21 <sup>st</sup>	Prof. Hassan Y. Aboul-Enein	The impact of chirality on drug analysis	Egypt



# KIA Laureates | Foreign Section (1992-2017)

Year	Session	Name	Research Title	Country	
	2008	21 <sup>st</sup>	Prof. Pier Mannucci Mannuccio	Inhibitor development in previously untreated patients (Pups) or minimally blood component-treated patients (MBCTPS) when exposed to Von Willebrand factor containing factor VIII concentrates and to recombinant factor VIII concentrates	Italy
	2008	21 <sup>st</sup>	Prof. Thomas F. Luscher	Cardiology ( Atherosclerosis and Myocardial Infarction )	Switzerland
	2008	21 <sup>st</sup>	Dr. Vinu Ajayan	Nano porous carbons and nitrides	India
	2008	21 <sup>st</sup>	Prof. Chintamani Nagesa Ramachand Rao	Some important aspects of the chemistry of nano materials	India
	2009	22 <sup>nd</sup>	Prof. Seik Weng Ng	Structural study of organometallic compounds by crystallography	Malaysia
	2009	22 <sup>nd</sup>	Prof. Padma Kant Shukla	Plasma physics and nonlinear sciences	Germany
	2009	22 <sup>nd</sup>	Prof. Jhillu Singh Yadav	Synthesis of complex natural products of biological relevance	India
	2009	22 <sup>nd</sup>	Prof. Ferenc Fulop	Chemistry of cyclic Beta-Amino acids	Hungary
	2009	22 <sup>nd</sup>	Prof. Li-Chyong Chen	Functionalizing carbon nanotubes, grapheme, semiconductor nanowires and related nanostructures for next generation energy, optoelectronic and sensing applications	Taiwan
	2009	22 <sup>nd</sup>	Prof. Brett Neilan	The molecular genetics of cyanobacteria toxins optoelectronic and sensing applications	Australia

# KIA Laureates | Foreign Section (1992-2017)

	Year	Session	Name	Research Title	Country
	2009	22 <sup>nd</sup>	Prof. Su-May Yu	Rice functional genomics for exploring genes and mechanisms that control growth and yield of cereal crops	Taiwan
	2009	22 <sup>nd</sup>	Prof. Tejraj Aminabhavi	New insights into polymers in drug delivery, membrane science, molecular transport and modeling	India
	2009	22 <sup>nd</sup>	Prof. Erik de Clercq	Discovery of antiviral drugs	Belgium
	2009	22 <sup>nd</sup>	Prof. Jaakko Tuomilehto	Epidemiology, etiology, and prevention of diabetes, cardiovascular disease and dementia	Finland
	2009	22 <sup>nd</sup>	Prof. Didier Raoult	Clinical microbiogenomics of emerging pathogens	France
	2009	22 <sup>nd</sup>	Prof. Per Brandtzaeg	Basic studies of mucosal immunity to promote the fields of vaccinology and immunotherapy in human medicine	Norway
	2009	22 <sup>nd</sup>	Prof. Gyula Telegdy	Role of neuropeptides in the central nervous systems	Hungary
	2010	23 <sup>rd</sup>	Prof. Fernand Labrie	Medical castration with GnRh agonists in prostate cancer – it has become standard therapy worldwide, replacing surgery and high doses of estrogens.	Canada
	2010	23 <sup>rd</sup>	Prof. Tamio Hayashi	Design of chiral transition metal catalysts and development of new catalytic asymmetric reactions	Japan
	2010	23 <sup>rd</sup>	Prof. Shun – Jen Cheng	Representation theory of Lie super algebras and super duality	China Taipei

# KIA Laureates | Foreign Section (1992-2017)

	Year	Session	Name	Research Title	Country
	2010	23 <sup>rd</sup>	Prof. Hsiang Nan Li	Perturbative QCD approach to B meson decays	China Taipei
	2011	24 <sup>th</sup>	Prof. Guido Ferlazzo	Human dendritic cells activate resting Natural Killer (NK) and are recognized via the Nkp30 receptor by activated NK cells	Italy
	2011	24 <sup>th</sup>	Prof. Ronald Frahm	New methods in high precision and time resolved X-Ray absorption spectroscopy using synchrotron	Germany
	2011	24 <sup>th</sup>	Prof. Rashid Ganeev	New approaches in creation of ultra-short sources of laser radiation	Uzbekistan
	2011	24 <sup>th</sup>	Prof. Alexander Maier	Molecular mechanism of malaria pathogenesis	Australia
	2012	25 <sup>th</sup>	Prof. Mustafa Naziroglu	Role of oxidative stress and antioxidants on Ca <sup>2+</sup> signaling and molecular pathways through TRPM2 cation in dorsal root ganglion cells	Turkey
	2012	25 <sup>th</sup>	Prof. Askar Jumadildayev	Generalized commutator cohomologies and identities	Kazakhstan
	2012	25 <sup>th</sup>	Dr. Sun Chang Qing	Original contributions to the coordination bond-band theory	Singapore
	2012	25 <sup>th</sup>	Prof. Raj Senani	Synthesis and design of analog filters, oscillators and simulated impedances using modern electronic circuit building blocks	India
	2012	25 <sup>th</sup>	Prof. Moh'd Ahmad Al-Nimr	A reverse osmosis desalination unit	Jordan

# KIA Laureates | Foreign Section (1992-2017)

	Year	Session	Name	Research Title	Country
	2012	25 <sup>th</sup>	Prof. Ali Chamkha	Thermo - Solutal convection in a porous medium -filled enclosure under various thermal and concentration boundary conditions	Lebanon
	2012	25 <sup>th</sup>	Prof. Perdo Martínez Gómez	Use of biotechnology for preserving rare fruit germplasm from developing countries	Spain
	2013	26 <sup>th</sup>	Prof. Kurt Mehlhorn	Algorithm Engineering	Germany
	2013	26 <sup>th</sup>	Prof. Muhammad Ashraf	Plant stress physiology and molecular biology	Pakistan
	2013	26 <sup>th</sup>	Dr. Rebecca Asquith	Enhancement of the human immune response	Australia
	2013	26 <sup>th</sup>	Dr. Ayyappan pillai Ajayaghosh	Fluorescent supramolecular architectures for sensing and imaging	India
	2013	26 <sup>th</sup>	Dr. Yacheslav Ulyanovich Buko	Basic approach for pharmacological correction of liver pathology and associated extra hepatic disease	Belarus
	2013	26 <sup>th</sup>	Prof. Yousef S.H. Najjar	Novel gas turbine cogeneration system in power and industry	Jordan
	2013	26 <sup>th</sup>	Prof. Mohd Sapuan Salit	Preparation and characterization of Kenaf reinforced thermoplastic composites	Malaysia
	2014	27 <sup>th</sup>	Prof. Richard Guy Compton	Nanoelectrochemistry "Calibration-free pH sensing"	England

# KIA Laureates | Foreign Section (1992-2017)

Year	Session	Name	Research Title	Country	
	2014	27 <sup>th</sup>	Prof. Ben Zhong Tang	Aggregation- induced emission	China
	2014	27 <sup>th</sup>	Prof. Erich Kleinpeter	Antiaromaticity proved by the anisotropic effect in <sup>1</sup> H NMR spectra	Germany
	2014	27 <sup>th</sup>	Prof. David Edwards	Characterizing crop genomes	Australia
	2014	27 <sup>th</sup>	Prof. Laszlo Rosivall	New and unique mechanism of GFR regulation	Hungary
	2015	28 <sup>th</sup>	Prof. Fu-Tong Liu	Galectins in health and disease	Taiwan
	2015	28 <sup>th</sup>	Prof. Claudio Andrés Hets Flores	Development of therapeutic strategies to treat neurodegenerative diseases	Chile
	2015	28 <sup>th</sup>	Prof. Andreas Manz	"Lab on Chip" technology for use in analytical chemistry and applied biosciences	Switzerland
	2015	28 <sup>th</sup>	Prof. Habib Ammari	Mathematics for Imaging	Tunisia
	2015	28 <sup>th</sup>	Prof. Kazuo Watanabe	Plant genetic resources and biotechnology application to sustainable development	Japan
	2015	28 <sup>th</sup>	Prof. Federico Rosei	Multiferroic materials for solar energy harvesting	Italy

# KIA Laureates | Foreign Section (1992-2017)

Year	Session	Name	Research Title	Country	
	2015	28 <sup>th</sup>	Prof. Michael Johannes Schütze	Material and coatings based solutions for protection against high temperature corrosion in advanced technologies	Germany
	2016	29 <sup>th</sup>	Prof. Guochen zhao	Precambrian geology and supercontinent	Hong Kong
	2016	29 <sup>th</sup>	Prof. Hiroyuki Ohshima	Theory of interfacial electric phenomena of soft particles	Japan
	2016	29 <sup>th</sup>	Prof. Paul Weiss	The ultimate limits of miniaturization	USA
	2016	29 <sup>th</sup>	Prof. Bernhard Breit	Exploration of catalysts and catalytic reactions for organic synthesis	Germany
	2016	29 <sup>th</sup>	Prof. Yi-Fang Tsay	Nitrate transport and signaling	Taiwan
	2016	29 <sup>th</sup>	Prof. Alan F. Cowman	Pathogenesis of malaria	Australia
	2016	29 <sup>th</sup>	Prof. Christoph Klein	From therapeutic orphans to pioneers of personalized medicine - international alliance for children with rare diseases of the immune system	Germany
	2016	29 <sup>th</sup>	Prof. Jorge Ancheyta	Upgrading of heavy petroleum	Mexico
	2016	29 <sup>th</sup>	Prof. Suresh kumar Bhargava	Development of smart materials and technology for sensing mercury from industrial effluents	Australia

# KIA Laureates | Foreign Section (1992-2017)

Year	Session	Name	Research Title	Country	
	2017	30 <sup>th</sup>	Prof. Guido Kroemer	Cell death in pathophysiology: inexorable, avoidable and desirable	Spain
	2017	30 <sup>th</sup>	Prof. Andres M. Lozano	Brain stimulation for neurological conditions	Canada
	2017	30 <sup>th</sup>	Prof. Andrea C. Ferrari	Raman spectroscopy as a versatile tool for studying the properties of graphene	Italy / UK
	2017	30 <sup>th</sup>	Prof. Cecilia Lindgren	Dissection of the molecular pathogenesis of obesity and fat distribution	Sweden
	2017	30 <sup>th</sup>	Prof. Abdelhamid Sayari	Hybrid material for CO2 capture: design, performance and stability	Tunisia/Canada
	2017	30 <sup>th</sup>	Prof. Yaroslav D. Sergeyev	Lipschitz global optimization and infinity computing	Russia/Italy







## 30<sup>th</sup> ANNIVERSARY **KHWARIZMI** INTERNATIONAL AWARD

In 1980, the Iranian Research Organization for Science and Technology (IROST) was established with a clear vision to promote science and technology, within the country. This leading national research organization, affiliated to the ministry of Science, Research and Technology is dedicated to research excellence in different fields of science.

In 1987, IROST decided to institute an award, which acknowledges the Iranian outstanding achievements in the field of Science and Technology. IROST proposed the creation of the Khwarizmi Award in memory of Abu Jafar Mohammad Ibn Mousa Khwarizmi, the great Persian Muslim mathematician, astronomer and geographer; he was one of the brightest scientific figures in the world of Islam and Iran.(770-840 C.E).

The first award ceremony was held on the 14<sup>th</sup> of January, 1988. During this first session, 35 national research works in different fields of Science were selected. H.E. the President of the Islamic Republic of that period, Ayatollah Khamenei presented the award in his office.

### 30<sup>th</sup> ANNIVERSARY KHWARIZMI INTERNATIONAL AWARD | SPECIAL EDITION

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