



HRH PRINCE EL HASSAN BIN TALAL INAUGURATES NEW TXPES BEAMLINE AT SESAME



HRH Prince El Hassan Bin Talal attended the inauguration of the new Turkish soft X-ray PhotoElectron Spectroscopy (TXPES) beamline at Synchrotron-light for Experimental Science and Applications in the Middle East (SESAME) in Balqa's Allan area in Jordan. Representatives from countries across the Middle East, Europe and Asia attended.

The TXPES beamline represents a strategic addition to the SESAME centre, where this advanced technology is used worldwide in research ranging from new materials and solar cells to semiconductors, surface reactions and nanomaterials, making TXPES a “cutting-edge” platform that benefits a wide scientific community across the region.

Prince Hassan highlighted the crucial role of joint scientific institutions in fostering regional cooperation, enhancing human security, and supporting sustainable development, while drawing attention to the challenges facing the Middle East.

The prince stressed that science and scientific diplomacy offer the most effective means to overcome crises, build trust, and promote stability. “Science offers a path to a future where technology is safely managed and innovation benefits human dignity,” he said.

SESAME centre is the first third-generation synchrotron light source in the Middle East and North Africa. Since its inauguration in 2017, the centre has stood as the region's first hub of scientific excellence, offering a cutting-edge research environment that brings together scientists from across the Middle East and works to curb the migration of skilled professionals.

Each year, SESAME welcomes hundreds of researchers and students from across the region, offering them the opportunity to carry out pioneering research in fields ranging from medicine and biology to

physics, environmental science, archaeology, and other advanced disciplines.

Prince Hassan drew attention to the conclusions of a joint workshop held in Amman in April by the Jordan Atomic Energy Commission and the Nuclear Threat Initiative (NTI). He added that NTI underlined the value of incorporating nuclear security within a comprehensive humanitarian framework addressing the interconnections of water, energy, food and the environment, known as the WEF Nexus, to support regional security and build more resilient communities.

The prince underlined that collaborative scientific work, such as the SESAME model, serves as an effective means to ease regional tensions and foster mutual trust among the peoples and countries of the Middle East. The Prince toured the centre's facilities, observing latest scientific technologies and innovations, emphasising Jordan's key role as a regional centre for science, technology, and capacity-building. He said: “This meeting marks the beginning of a new journey. From Amman, we can embark on a new model of scientific cooperation that serves peace and development in our region and beyond”.

Source: The Jordan Times.

BRIDGING THE GAP BETWEEN ACADEMIA AND INDUSTRY IN THE DIGITAL AGE

PRINCE HASSAN MEETS WITH ACADEMICS, INDUSTRIALISTS IN IRBID



HRH Prince El Hassan, president of the Higher Council for Science and Technology (HCST), and Founding Patron of the Islamic World Academy of Sciences (IAS), visited Al Hassan Industrial Estate and Yarmouk University in Irbid, Jordan.

During the visit, the prince met with a number of industrial and academic leaders, emphasising the importance of boosting integration among education, scientific research, and industry to support sustainable national development.



At Al Hassan Industrial Estate, Prince El Hassan was briefed on recent developments and key achievements in the fields of industry, investment, and employment. In an open dialogue with experts from the industrial, trade, and investment sectors, as well as academics and business leaders, the prince highlighted the need to link industrial companies with vocational training institutions and universities to develop technical skills and enhance workforce efficiency in the service of the national economy.

He underscored the significance of creating job opportunities and promoting economic empowerment to boost productivity and keep pace with global transformations towards digital systems.

The prince also called for enhancing the competitiveness of Al Hassan Industrial Estate as a hub for quality industrial investment and production in northern Jordan.

Prince El Hassan stressed the need to continue bridging the gap between academia and industry to enhance the national innovation ecosystem and align educational outputs with labour market needs.

During his visit to Yarmouk University, accompanied by HRH Princess Sumaya, Prince El Hassan met with presidents of Jordanian universities in a meeting dedicated to discussing two main topics: the importance of linking scientific research with the industrial sector and preparations for the upcoming “Youth and Renaissance” conference scheduled for April.

Source:

<https://jordantimes.com/news/local/prince-hassan-meets-with-academics-industrialists-in-irbid>

PRINCE EL HASSAN CALLS FOR EVIDENCE-DRIVEN PLANNING IN TALKS WITH UN OFFICIALS



HRH Prince El Hassan Bin Talal met with heads and representatives of UN agencies operating in the Kingdom, including the UN Resident Coordinator, for discussions that focused on development cooperation and regional challenges.

The meeting brought together senior officials from FAO, ILO, IOM, OCHA, UNDP, UN Security Management, UNESCO, UNFPA, UN-Habitat, UNHCR, UNICEF, UNIDO, UNODC, UNOPS, UNRWA, WFP, WHO and UN Women. HRH Princess Sumaya Bint El Hassan, President, Royal Scientific Society, also took part in the discussions. Prince El Hassan underscored the importance of strengthening the long-standing partnership between Jordan and the UN system, calling for coordinated, forward-looking development approaches that address the social, economic and humanitarian challenges facing Jordan and the region. UN agency representatives briefed the Prince on their ongoing programmes in Jordan and reviewed progress toward achieving the Sustainable Development Goals (SDGs), highlighting both achievements and areas requiring further effort.

Prince El Hassan stressed that human dignity must remain the guiding principle of all development and humanitarian work, noting that tackling issues of fragility, sustainable development and stability demands integrated and comprehensive strategies. He also highlighted the need for knowledge-based dialogue and evidence-driven planning, emphasising that enhanced cooperation between national institutions, civil society and UN agencies is essential to strengthening resilience and supporting sustainable development pathways.

The meeting also highlighted the importance of continued consultation and cooperation in support of national priorities and in further strengthening the enduring partnership between Jordan and the UN system.

Source: <https://jordantimes.com/news/local/prince-el-hassan-calls-for-evidence-driven-planning-in-talks-with-un-officials>

INTEGRATING LAND, IDENTITY AND MIGRATION AND ACCEPTING DIFFERENCES FOR DEVELOPING SUSTAINABLE PEACE AND WELLBEING PRINCE EL HASSAN MEETS WITH PARLIAMENTARIANS, MEMBERS OF THE INTERPARLIAMENTARY ASSEMBLY ON ORTHODOXY



HRH Prince El Hassan, chairperson of the Board of Trustees of the Royal Institute for Inter-Faith Studies, met with a high-level delegation of parliamentarians and members of the Interparliamentary Assembly on Orthodoxy (IAO).

In his opening address, Prince El Hassan welcomed the participating delegations and parliamentarians from 13 countries, stressing the significance of convening such a meeting amid the current circumstances in the Arab Mashreq.

“The evolving geopolitical landscape requires revisiting the concepts of identity, borders and shared cultures, in a way that reinforces societal resilience and bolsters communities’ capacity to address current and future challenges,” the prince said. He also said that Eastern Christianity is an integral component of the region’s heritage, adding that the future of the Mashreq is shaped by three key pillars, land, identities and migration, warning that the persistence of injustice and the absence of fairness create fertile ground for extremism.

The Prince also stressed that peace-building starts with acknowledging others and respecting differences, noting that inclusive, knowledge-based dialogue is essential to safeguarding the region’s social fabric. He highlighted that protecting human dignity is the true foundation of stability, and that dialogue among all segments of society is a necessity dictated by the current era and the imperatives of human security.

The delegates expressed their appreciation for Jordan’s role, under the leadership of His Majesty King Abdullah II in promoting mutual understanding among religions and peoples.

Source: <https://jordantimes.com/news/local/prince-hassan-meets-with-parliamentarians-members-of-interparliamentary-assembly-on-orthodoxy>

FOSTERING STUDENT ENGAGEMENT IN HIGHER EDUCATION IN THE DIGITAL AGE

*Adnan Badran FLAS, FAAS
President, Islamic World Academy of Sciences
and President, Arab Academy of Sciences*



We are passing through a critical period in the history of the Islamic world where our countries are at a crossroad; where to go and what to do for our future generations. It is a complicated game where the future is foggy and the roadmap is not clear. This is why we have to think of what we shall do to ensure a safe and stable future for our countries and, indeed, for building peace and self-reliance for the whole region.

I think the solution for clearing the uncertainty lies in science and how we use science in fostering student engagement in the digital age and fostering scientific research delivery for empowering our men and women in our countries in the digital age, to deal with quantum computing, nanotechnology and AI.

There is no other alternative except to undertake science particularly frontier science, for innovation and building creativity and entrepreneurship to apply science for the delivery of solutions to our problems and the challenges we may face.

R&D acceleration is essential for incubation and startups to open new venues in advancing science towards new industries,

particularly in Nanoscience, IT and AI Nexus to coordinate it with the other nexus of Water-Energy-Food Security and Ecosphere and meeting the challenges of climate change in our Arab semi-arid region.

Therefore, empowering men and women with quality and inquiry-based learning for building the analytical mind in the digital age is no longer an alternative, but the choice of engagement to uphold and maintain.

Student engagement is universally recognized as the single most determinant of critical academic success for the quality of education. Digital platforms, are created therefore with unprecedented technological acceleration, and a shift of the learner expectations have demanded a radical and urgent evaluation of traditional engagement models that lead to the development of an **Integrated Digital Engagement Model (IDEM)**, a robust theoretical framework synthesized from the theory of **Community of Inquiry (CoI)**, which could be achieved from a dynamic systemic multidimensional process emerging from the synergy of interaction between three essential organizational dimensions: firstly, the **Learner**, secondly, the **Pedagogy Design**, and thirdly, **Institutional Technology**.

We have to dissect the cognitive, emotional and behavioral dimensions of engagement, and to address the critical challenges of **digital divide**, transactional distance, cognitive overload, and assessment integrity.

Institutional governance and pedagogy practice and integration of **active learning** and **instructor presence** and data-driven **personalization**, and **digital well-being**

policies are non-negotiable; they are the core elements required to successfully transform digital learning from passive into an interactive, human-centered, and deeply motivating intellectual endeavor.

Therefore, I urge you, Fellows of the Academy, to be at the edge of science, to raise the standards of living of men and women and future generations of our region.

We are moving into a competitive industrial world, and we have to match it with our indigenous strength in science and technology, particularly in the making of the nexus between nanotechnology, quantum computing and AI. We should continue our basic scientific research to provide the delivery of science for application and innovation.

We have to foster student engagement and apply the theme of inquiry-based education for raising the analytical mind to a new orbit of Science, Technology and Innovation (STI).

We have to devote our time in the laboratory and the field for R&D to invent new industries and to provide solutions for managing our human resources and natural resources, realizing their potential for the advancement of our economy and social systems. There is no doubt that we are living in a world to be a producing nation for knowledge and skills and to be competent with other advanced nations.

Again, science is the solution.



NEW IAS FELLOWS 2025

The General Assembly of the Islamic World Academy of Sciences (IAS), at its latest meeting, ratified the results of the 2025 IAS Fellowship Elections, which revealed that nine candidates were awarded the IAS Fellowship.

The elected Fellows are:

1. Prof. Jafri Malin **Abdullah** (Malaysia)
2. Prof. Mushtaq **Ahmad** (Pakistan)
3. Prof. Ahmad Zaharin **Aris** (Malaysia)
4. Prof. Yarub Al-**Douri** (Iraq)
5. Prof. Tengku Aizan **Hamid** (Malaysia)
6. Prof. Sardar **Khan** (Pakistan)
7. Prof. Md. Shuza **Uddin** (Bangladesh)
8. Prof. Koichi **Unami** (Japan)
9. Prof. Mohammad **Wasay** (Pakistan)



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Koichi
Unami
(Japan)



Mohammad
Wasay
(Pakistan)

KHATIJAH YUSOFF FIAS

*Adnan Badran FIAS, FAAS
President, Islamic World Academy of Sciences
and President, Arab Academy of Sciences*



Professor Datin Paduka Dr. Khatijah Mohamad Yusoff is a highly respected Malaysian virologist, molecular biologist, and academic leader whose career spans more than four decades of contributions to scientific research, higher education, and national science policy. She is internationally recognized for her pioneering work in molecular virology, particularly on the Newcastle Disease Virus (NDV), and for her leadership in advancing biotechnology and biomedical sciences in Malaysia and the wider developing world.

Prof. Yusoff received her early education in Malaysia before pursuing higher studies in Australia. She obtained a Bachelor of Science with First Class Honours in Microbiology and later earned a Doctor of Philosophy (PhD) in Microbiology from La Trobe University, Australia. Her doctoral research marked the beginning of her long-standing focus on viral molecular biology and virus–host interactions, areas that would later define her scientific legacy.

Upon returning to Malaysia, Prof. Yusoff joined Universiti Putra Malaysia (UPM), where she played a central role in building and strengthening the university’s research capacity in virology, biotechnology, and biomolecular sciences. Over the years, she progressed through the academic ranks to become a Professor of

Virology, earning recognition as one of Malaysia’s leading scientists. She has supervised numerous postgraduate students at the master’s and doctoral levels, many of whom now occupy key positions in academia, research institutions, and industry.

Her scientific research has focused primarily on the molecular characterization, replication mechanisms, and pathogenicity of Newcastle Disease Virus, a virus of major economic importance to the poultry industry worldwide. Prof. Yusoff was among the earliest researchers to successfully sequence and analyze key NDV genes, including the large polymerase (L) gene, significantly advancing global understanding of paramyxovirus biology. In later years, her work expanded into the use of NDV as a viral vector, exploring its potential applications in oncolytic virotherapy, vaccine development, and therapeutic gene delivery.

Beyond her research achievements, Prof. Yusoff has held several senior academic and administrative leadership roles. At Universiti Putra Malaysia, she served as Dean of the Faculty of Biotechnology and Biomolecular Sciences and later as Deputy Vice-Chancellor (Academic and International Affairs). In these capacities, she was instrumental in shaping academic policy, promoting international collaborations, and strengthening research excellence and global engagement.

Her expertise has also been sought at the national policy level. Prof. Yusoff served as Deputy Secretary-General (Science) at the Ministry of Science, Technology and Innovation (MOSTI), where she contributed to national strategies on science, technology, innovation, and research governance. Her work in this role bridged the gap between scientific research and public policy, emphasizing ethical research practices, capacity building, and sustainable scientific development.

Prof. Yusoff's contributions have been widely recognized through numerous prestigious awards and honors. Among the most notable are the UNESCO Carlos J. Finlay Prize for Microbiology, awarded in recognition of outstanding contributions to microbiological research benefiting developing countries, and the Merdeka Award, one of Malaysia's highest national honors for excellence in science and innovation. She has also received multiple national research awards and lifetime achievement recognitions.

Internationally, Prof. Yusoff is an active member of the global scientific community. She is a Fellow of the Academy of Sciences Malaysia and has served in leadership roles within prominent international organizations, including as Vice-President of The World Academy of Sciences (TWAS) for East and Southeast Asia and Vice-

President of the Islamic World Academy of Sciences (IAS). She has also contributed to advisory and governing bodies such as the International Centre for Genetic Engineering and Biotechnology (ICGEB) and committees on research integrity and ethics.

Throughout her career, Prof. Datin Paduka Dr. Khatijah Mohamad Yusoff has demonstrated an enduring commitment to scientific excellence, mentorship, ethical research, and the advancement of science for societal benefit. Her work continues to influence virology research, science education, and policy development at both national and international levels, firmly establishing her as one of Malaysia's most accomplished and respected scientists.



WHEAT BREAD FORTIFICATION BY LEBANESE SUMAC AND CACTUS SEEDS: NUTRITIONAL, ANTIOXIDANT, AND SENSORY PROPERTIES*

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4 Research Platform for Environmental Science, Doctoral School of Science and Technology, Lebanese University, Beirut.

5 Biotechnology Department, College of Science, Baghdad University.

6 Laboratory of Agro-Industrial Chemistry, University of Toulouse, French National Institute for Agricultural Research, National Polytechnic Institute of Toulouse; Department of Biological Engineering, Paul Sabatier University Institute of Technology, Auch.

Published: 19 November 2025

Citation:

Baki ZA, Abourida SH, BadranA, et al. **Wheat bread fortification by Lebanese sumac and cactus seeds: nutritional, antioxidant, and sensory properties.** *Ital J Food Saf* doi:10.4081/ijfs.2025.12817

Abstract

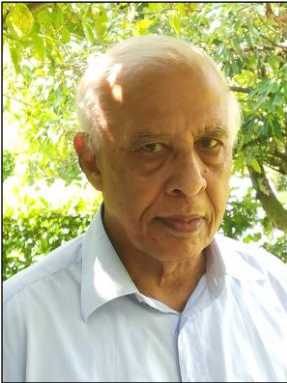
Bread is an indispensable staple food and a great source of complex carbohydrates, making it a potential product for fortification. The purpose of this study was to investigate the sensory, antioxidant, and nutritional properties of bread fortified with sumac (*Rhus coriaria*) and cactus (*Opuntia ficus-indica* L.) seed powder. Different levels (4, 6, and 8% w/w flour replacement) of the powdered seeds were used. Fortified bread samples were compared to control (unfortified) bread and evaluated for their moisture, nutritional composition (protein, fat, fiber, ash, carbohydrates, and energy value), sensory preference, total phenolic content (TPC), and antioxidant activity (2,2-diphenyl-1-picrylhydrazyl assay). The antioxidant capacity and TPC were significantly higher ($p < 0.05$) for sumac- and cactus-fortified bread samples compared to the control. Nutritionally, fortification significantly increased fiber and fat content while decreasing carbohydrate content and energy value ($p < 0.05$); protein content remained relatively stable. Sensory evaluation showed a preference for sumac-fortified bread, particularly at lower concentrations. Moisture content was significantly lower in fortified samples. This study demonstrates that fortification, particularly with 8% sumac, yielded favorable results concerning antioxidant activity, phenolic content, and sensory preference, alongside notable changes in nutritional composition.



* Full article: <https://www.pagepressjournals.org/ijfs/article/view/12817/13545>

PHENOMENA OF EL NIÑO AND LA NIÑA

Mohammed Asghar FLAS*



Abstract:

The occurrence and dynamics of the natural phenomena of El Niño and La Niña in the Tropical Pacific Ocean, are determined by the strength and weakness of trade winds.

1. Introduction

During normal conditions in the Pacific Ocean, Fig. 1, trade winds blow West along the equator taking warm water from South America towards Asia, where rainfall and flooding increases in the countries concerned. To replace that warm water cold water arises from the depths – a process called upwelling; El Niño and La Niña are two opposing climate patterns that break these normal conditions. These phenomena are called El Niño -Southern Oscillation (ENSO) cycle.



Figure 1. Oceanic Eastern Tropical Pacific, where El Niño originates, (1).

2. El Niño

During the El Niño, trade winds weaken, and warm water is pushed back East towards the West coast of the Americas. These warm waters cause the Pacific Jet stream to move South of its usual position. Due to this shift, areas in the Northern USA and Canada are dryer and warmer than usual, but in the USA Gulf Coast and Southeast, these periods are wetter than usual and have increased flooding. As the warm water passage is blocked on the way to Asia, the rainfall decreases in the countries concerned and they suffer from a dry period.

El Niño also has a strong effect on the marine life off the Pacific coast. During normal conditions, upwelling brings water from the depths to the surface. This water is cold and nutrient rich. However, during El Niño, the upwelling weakens or stops altogether. Without the nutrients from the deep, there are fewer phytoplankton off the coast. This affects the population of fish that eat phytoplankton and, in turn, affects everything that eats fish. The warmer waters can also bring tropical species like yellowtail and albacore tuna into areas that are normally too cold, (2).

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3. La Niña

La Niña has the opposite effect of El Niño. During the El Niño events, trade winds are even stronger than usual pushing more warm water towards Asia. Off the West coast of the Americas, upwelling increases, bringing cold nutrient-rich water to the surface. These cold waters in the Pacific push the Jet stream Northward. This tends to lead to drought in the Southern USA and heavy rains and flooding in the Pacific Northwest and Canada. During the La

Niña period, winter temperatures are warmer than normal in the South and cooler than normal in the North. La Niña can also lead to a more severe hurricane season.

During La Niña, waters off the Pacific coast are colder and contain more nutrients than usual. This environment supports more marine life and attracts more cold-water species like squid and salmon to places like the Californian coast, (2).

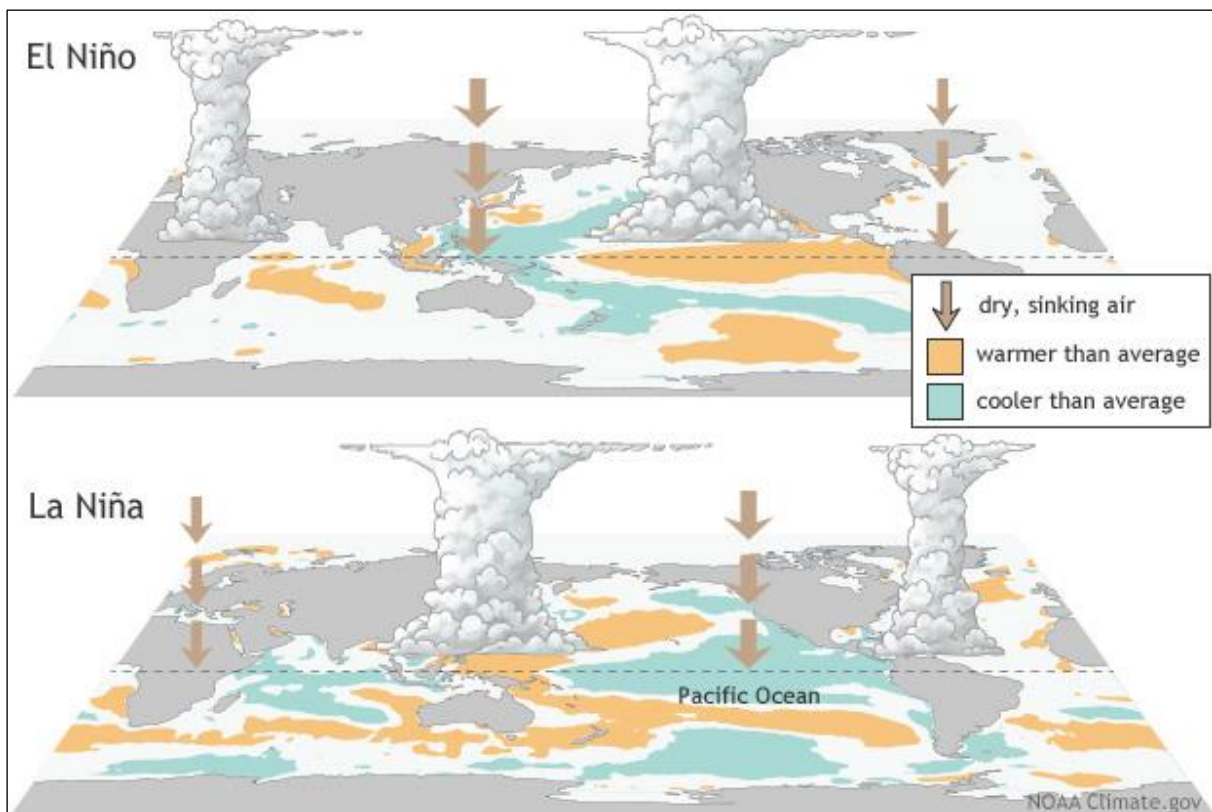


Figure 2. Presents the respective images of El Niño and La Niña, particularly, in the Pacific Ocean region, which is warmer than average for El Niño and cooler than average for La Niña, (1).

These El Niño and La Niña occur every two to seven years, on average, but they do not occur on a regular basis, and typically last nine to twelve months.

4. Conclusions

El Niño and La Niña are warm and cold phases of natural climate patterns across the Tropical Pacific.

References

1. Courtesy Google.
2. "What are El Niño and La Niña?" Courtesy Google.

**PROF. M. IQBAL CHOUDHARY FIAS
RECEIVES THE GLOBAL AMBASSADOR
AWARD 2025¹**



The Coordinator General of OIC-COMSTech, Professor Dr. Muhammad Iqbal Choudhary, a distinguished scientist whose work has shaped modern research and collaboration across the Muslim world, was honored with the acclaimed Global Ambassador Award.

As the Coordinator General of OIC-COMSTech, he leads scientific cooperation among OIC member states, and is Vice President for Central and South Asia at The World Academy of Sciences, in addition to being a Distinguished National Professor of Bioorganic and Natural Product Chemistry in Pakistan.

In the awards ceremony organized by the Diplomatic Insight Group (DIG) in Islamabad. For more than three decades, Prof. Choudhary has led groundbreaking research in natural product chemistry and evidence-based traditional medicine, including the discovery of anti-epileptic and antileishmanial compounds now progressing through clinical trials.

His work on overcoming antibiotic resistance remains a major contribution to global health. At the International Center for Chemical and Biological Sciences (ICCBS), he has built one of the strongest scientific centers in the developing world, training hundreds of young scientists, especially women, from Asia and Africa.

With over **1,500 publications**, **94 patents**, **94 books** and **40 chapters in books**, published by major U.S. and European presses, and **110 Ph.D.**

graduates (Citations **49,725**, h-index **89**, i10-index **1051**), his impact is widely recognized, earning prestigious honors such as the Mustafa (pbuh) Prize, the Chinese Government International Friendship Award, the Sheikh Zayed Award, and Pakistan's Sitara-e-Imtiaz, Tamgha-i-Imtiaz, and Hilal-e-Imtiaz.

**PROF. M. IQBAL CHOUDHARY FIAS
AWARDED THE PRESTIGIOUS SHAHEED
HAKIM MOHAMMED SAID AWARD 2025
IN SCIENCE AND EDUCATION²**



H.E. Prof. M. Iqbal Choudhary, Coordinator-General OIC-COMSTech, has been awarded the prestigious Shaheed Hakim Mohammed Said Award 2025 in science and education for his exceptional contributions in these fields.

The award was presented to him by Governor Punjab, H.E. Sardar Saleem Haider Khan, in a prestigious ceremony held at the Governor's House in Lahore, where Chairperson of Hamdard Pakistan, Mrs. Sadia Rashid, was also present during the ceremony.

Prof. Choudhary is internationally recognised as one of the leading scientists in natural product chemistry, medicinal plant research, and traditional medicine innovation. His decades-long scientific leadership, prolific research output, and global collaborations have significantly advanced the fields of Traditional Complementary Medicine across the OIC region and beyond. This honour adds to his long list of global distinctions and reaffirms his legacy as a champion of integrating traditional healing with modern scientific discovery.

¹ Source: <https://thediplomaticinsight.com/cg-oic-comstech-receives-global-amb-award/>

² Source: <https://www.peakpoint.pk/en/2025/12/07/iqbal-choudhary-wins-shaheed-hakim-award-2025/>

VISITORS OF THE ISLAMIC WORLD ACADEMY OF SCIENCES (IAS)

Several guests were received at the Academy's Headquarters by Prof. Adnan Badran, President of the IAS, where they discussed issues pertinent to the Academy and potential collaboration.



Left to right: Dr. **Rida Shibli Khawaldeh**, President, Jordan Society for Scientific Research; Entrepreneurship and Innovation, Dr. **Mashhour Rifai**, Secretary General, Higher Council for Science and Technology (HCST), Dr. **Adnan Badran**, President, IAS, and Dr. **Anis Al-Mansour**, member of the Higher Education Council.



A delegation from the University of Petra (UOP) headed by Dr. Rami Abdel Rahim, President, UOP.

**LETTER FROM PROF. OMAR FASSI-FEHRI,
THE PERMANENT SECRETARY OF HASSAN II ACADEMY
OF SCIENCE AND TECHNOLOGY**

KINGDOM OF MOROCCO



HASSAN II ACADEMY OF SCIENCE AND TECHNOLOGY

THE PERMANENT SECRETARY

Rabat, 05th December 2025

1254/

Professor Adnan BADRAN
President of the Islamic World Academy
of Science

Dear President,

I wish to extend my sincere appreciation for the transmission of the IAS 2025 Declaration, together with the Conference Report and the List of Participants relating to the 26th IAS Conference on "Artificial Intelligence and Nanotechnology Nexus." These documents provide valuable insight into the outcomes of the conference and will be of great interest to our academy.

The themes addressed at the conference resonate strongly with our own research priorities for a sustainable and inclusive economic development and scientific progress.

Please accept our warmest regards and best wishes for the continued success of your Academy in promoting science, technology, and innovation for sustainable development.

Yours sincerely,

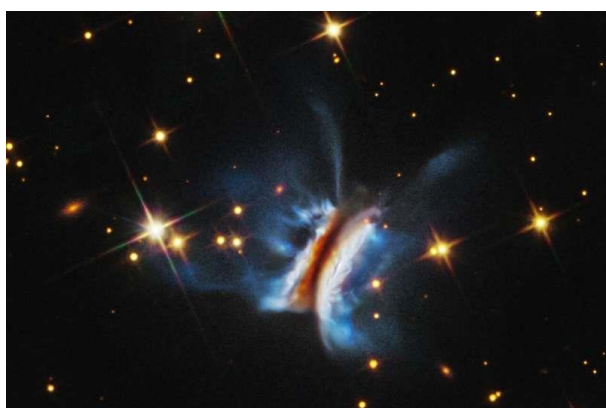


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PICKS OF THE CHIEF EDITOR

THE CHAOTIC 'DRACULA'S CHIVITO': HUBBLE REVEALS LARGEST BIRTHPLACE OF PLANETS EVER OBSERVED*

Astronomers using NASA's Hubble Space Telescope have imaged the largest protoplanetary disk ever observed circling a young star. For the first time in visible light, Hubble has revealed the disk is unexpectedly chaotic and turbulent, with wisps of material stretching much farther above and below the disk than astronomers have seen in any similar system. Strangely, more extended filaments are only visible on one side of the disk.



The findings, which were published in *The Astrophysical Journal*, mark a new milestone for Hubble and shed light on how planets may form in extreme environments, as NASA's missions lead humanity's exploration of the universe and our place in it.

Located roughly 1,000 light-years from Earth, IRAS 23077+6707, nicknamed "Dracula's Chivito," spans nearly 400 billion miles, 40 times the diameter of our solar system to the outer edge of the Kuiper Belt of cometary bodies.

The disk obscures the young star within it, which scientists believe may be either a hot, massive star, or a pair of stars. And the enormous disk is not only the largest known planet-forming disk; it's also shaping up to be one of the most unusual.

"The level of detail we're seeing is rare in protoplanetary disk imaging, and these new Hubble images show that planet nurseries can be much more active and chaotic than we expected,"

said lead author Kristina Monsch of the Center for Astrophysics, Harvard & Smithsonian (CfA). "We're seeing this disk nearly edge-on and its wispy upper layers and asymmetric features are especially striking. Both Hubble and NASA's James Webb Space Telescope have glimpsed similar structures in other disks, but IRAS 23077+6707 provides us with an exceptional perspective, allowing us to trace its substructures in visible light at an unprecedented level of detail. This makes the system a unique, new laboratory for studying planet formation and the environments where it happens."

The nickname "Dracula's Chivito" playfully reflects the heritage of its researchers, one from Transylvania and another from Uruguay, where the national dish is a sandwich called a chivito. The edge-on disk resembles a hamburger, with a dark central lane flanked by glowing top and bottom layers of dust and gas.

Puzzling asymmetry

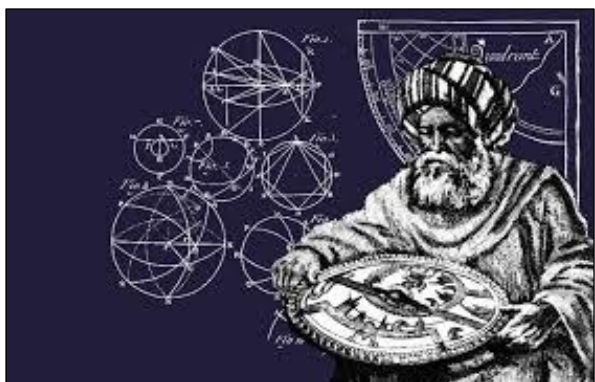
The impressive height of these features wasn't the only thing that captured the attention of scientists. The new images revealed that vertically imposing filament-like features appear on just one side of the disk, while the other side appears to have a sharp edge and no visible filaments.

This peculiar, lopsided structure suggests that dynamic processes, like the recent infall of dust and gas, or interactions with its surroundings, are shaping the disk.

All planetary systems form from disks of gas and dust encircling young stars. Over time, the gas accretes onto the star, and planets emerge from the remaining material. IRAS 23077+6707 may represent a scaled-up version of our early solar system, with a disk mass estimated at 10 to 30 times that of Jupiter, ample material for forming multiple gas giants. This, plus the new findings, makes it an exceptional case for studying the birth of planetary systems.

* Source: <https://phys.org/news/2025-12-chaotic-dracula-chivito-hubble-reveals.html>

ABU ABDULLAH AL-BATTANI* (858-929 AD)



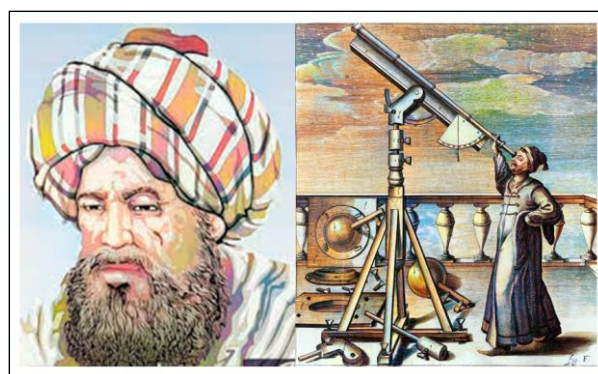
Abu Abdullah Muhammad Ibn Jabir Ibn Sinan al-Battani al-Harrani was born around 858 AD in Harran, and according to one account, in Battan, a State of Harran. Battani was first educated by his father Jabir Ibn Sinn al-Battani, who was also a well-known scientist. He then moved to Raqqa, situated on the bank of the Euphrates, where he received advanced education and later flourished as a scholar. At the beginning of the ninth century, he migrated to Samarra, where he worked till the end of his life in 929 AD. He was of Sabian origin,, but was himself a Muslim.

Battani was a famous astronomer, mathematician and astrologer. He has been held as one of the greatest astronomers of Islam. He is responsible for a number of important discoveries in astronomy, which was the result of a long career of 42 years of research beginning at Raqqa when he was young. His well-known discovery is the remarkably accurate determination of the solar year as being 365 days, 5 hours, 46 minutes and 24 seconds, which is very close to the latest estimates. He found that the longitude of the sun's apogee had increased by $16^{\circ}, 47'$ since Ptolemy. This implied the important discovery of the motion of the solar apsides and of a slow variation in the equation of time. He did *not* believe in the trepidation of the equinoxes, although Copernicus held it.

At-Battani determined with remarkable accuracy the obliquity of the ecliptic, the length of the seasons and the true and mean orbit of the sun.

He proved, in sharp contrast to Ptolemy, the variation of the apparent angular diameter of the sun and the possibility of annular eclipses. He rectified several orbits of the moon and the planets and propounded a new and very ingenious theory to determine the conditions of visibility of the new moon. His excellent observations of lunar and solar eclipses were used by Dunthorne in 1749 to determine the secular acceleration of motion of the moon. He also provided very neat solutions by means of orthographic projection for some problems of spherical trigonometry.

In mathematics, he was the first to replace the use of Greek chords by *sines*, with a clear understanding of their superiority. He also developed the concept of cotangent and furnished their table in degrees.



He wrote a number of books on astronomy and trigonometry. His most famous book was his astronomical treatise with tables, which was translated into Latin in the twelfth century and flourished as *De scientia stellerum - De numeris stellerum et motibus*. An old translation of this is available at the Vatican. His *Zij* was, in fact, more accurate than all others written by that time.

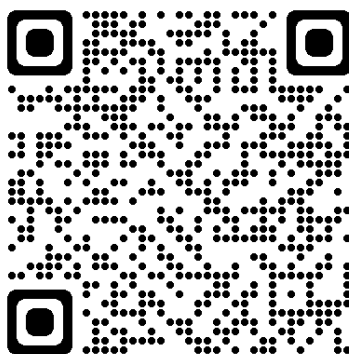
His treatise on astronomy was extremely influential in Europe until the Renaissance, with translations available in several languages. His original discoveries both in astronomy and in trigonometry were of great consequence in the development of these sciences.

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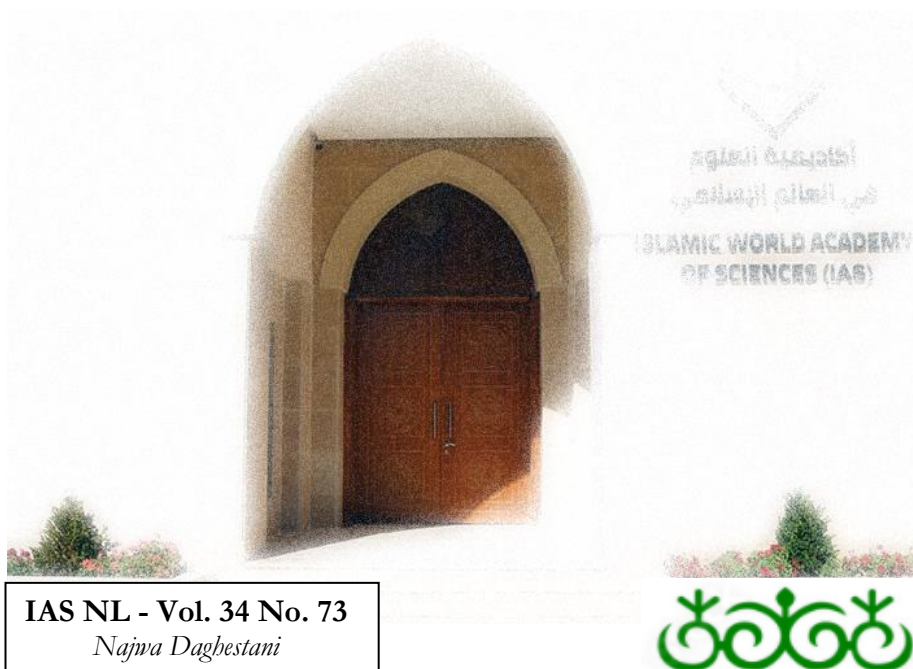
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