

56[™]IChO International Chemistry Olympiad Saudi Arabia 2024

21 to 30 July, 2024 Bonds

For Hosting the 56th Edition of the International Chemistry Olympiad

2024



Since its establishment in 1968, the International Chemistry Olympiad (IChO) has been distinguished by its focus on a critical field that has substantially contributed to humanity, particularly in the industrial and petrochemicalsectors, where Saudi Arabiais a globalleader.

Hosting the 56th edition of the International Chemistry Olympiad marked a significantmilestone, confirming the Kingdom's dedication to welcoming global events and advancing its role in various scientific fields. Held in Riyadh, this famous event drew participants from across the globe.

Mr. Yousef Al-Benayan The Minister of Education

The Olympiad stands out as a platform for all participants (students, mentors, and nations) to exchange scientific expertise and promote international relations that strengthen collaboration and future partnerships within knowledge-based societies.

During its 56th edition, the Olympiad offered participants the opportunity to witness the Kingdom's comprehensive transformation across scientific, economic, and cultural domains, a transformation driven by the visionary leadership of the Custodian of the Two Holy Mosques King Salman bin Abdulaziz Al Saud, and His Royal

Highness Prince Mohammed bin Salman bin Abdulaziz Al Saud.

This event emphasized the Kingdom's ongoing efforts to set its position as a global scientific hub, leveraging resources to encourage a competitive Saudi generation capable of contributing to Saudi Vision 2030.



Inspired by the words of His Royal Highness Prince Mohammed bin Salman bin Abdulaziz Al Saud, "We will gather creative and talented minds from all over the world to create something different," the strategy of the King Abdulaziz and His Companions Foundation for Giftedness and Creativity (Mawhiba) emphasizes the importance of strengthening its international presence and encourage

collaboration with leading global institutions. This is achieved through the identification, support, and empowerment of talented and creative individuals, aiming to position Saudi Arabia as a global hub for promoting young talent in priority developmental fields that will have a profound impact on humanity's future. The strategic partnership between Mawhiba and the Ministry of Education has proven to be of deep impact, leading to the achievement of over 701 medals and certificates of recognition in the most known international Olympiads. These Olympiads had various fields, including mathematics, physics, chemistry, biology, informatics, science, astronomy, space,

Dr. Amal Al-Hazzaa Previous Secretary-General of Mawhiba.

nuclear sciences, and artificial intelligence. Through this partnership, Mawhiba has refined exceptional expertise in preparing scientific teams to represent Saudi Arabia in over 25 international and regional competitions.

Mawhiba has also prioritized expanding its global participation by hosting big international events. One of the most notable was the Kingdom's hosting of the International Chemistry Olympiad 2024, held at King Saud University.

This event showcased Saudi Arabia's thorough approach to identifying and caring for gifted and creative individuals, both locally and internationally. It also highlighted the significance of such large-scale competitions for students, educators, and professionals in the field of chemistry within the Kingdom. The event brought together leading talents and experts in chemistry from 89 countries, emphasizing Saudi Arabia's sci-

entific leadership in chemical research and industries. It eased the exchange of expertise with specialists from universities and national research centers, enabling all participants to build connections with future scientists and experts in the field. Moreover, this event provided an opportunity to showcase our rich cultural heritage, deeply rooted in a series of human civilizations.

To maximize the benefits of hosting the International Chemistry Olympiad and in continuation of Mawhiba's mission to empower the talented to become future leaders across diverse fields, 135 members of Mawhiba's alumni participated in organizing this global event. This participation provided them with valuable opportunities to interact with talented peers from around the world and gain practical experience in managing large-scale international scientific events.



King Saud University is honored to host the International Chemistry Olympiad, reflecting its important role in supporting scientific research and outstanding researchers across various scientific fields. The university's capabilities and academic fame have also established its esteemed position in the fields of scientific research locally, regionally, and globally. This reputation is shown by the number of research papers published annually in the Science Network across diverse fields, the recruitment of exceptional research talent, and its research partnerships with international universities and research centers, which drive scientific progress and advanced technologies.

Hosting this Olympiad on the university's campus presents a valuable opportunity to exchange educational and scientific expertise among participating

Prof. Dr. Abdullah bin Salman Al-Salman The President of King Saud University

countries and promote connections among their students. Through this event, the university aim's to attract exceptional students and smooth the way for their enrollment by showcasing its facilities, research laboratories, and centers of research excellence and demonstrating its advanced research power.

Participation in the International Chemistry Olympiad focuses on boosting Saudi Arabia's states in international competitions, promoting confidence in the nation's ability to compete globally in sciences, particularly chemistry, and raising public awareness of chemistry's crucial role. Furthermore, it seeks to encourage scientific competitiveness within the educational community and contribute to building a creative generation capable of dealing with a scientific language. King Saud University's participation in hosting the event is designed to create an appropriate environment for participants throughout the Olympiad, easing communication and the exchange of expertise among them.

Finally, on this occasion, the university and its staff extend their deepest gratitude to the Custodian of the Two Holy Mosques and His Royal Highness the Crown Prince, for their unwavering support of the university and its scientific aspiration. They also express heartfelt thanks to all participants in the Olympiad, wishing them great success and continued excellence.



At SABIC, we believe our responsibility extends beyond producing a wide range of petrochemicals for the Kingdom and the world. It includes contributing to sustainable and thorough economic development for individuals and communities, particularly in our areas of expertise. This is driven by our firm ambition to make positive changes in people's lives.

Our efforts at SABIC are not limited to building the capabilities of our employees but extend to the community. We are committed to strengthening and establishing effective education for youth in science, technology, and innovation. Our operating model relies on partnerships with non-profit associations, non-governmental organizations, schools, communities and other relevant parties; to encourage meaningful collaboration that benefits everyone.Over the

Eng. Abdulrahman bin Saleh Al-Faqih SABIC CEO

years, we have successfully implemented diverse initiatives to support students passionate about chemistry, innovation, and other scientific fields. By leveraging our extensive resources, we help find the potential of young talent, supporting their journey toward excellence in international forums and highlighting their competitive edge in science and innovation. Saudi Arabia's hosting of the International Chemistry Olympiad in July 2024 is an amazing achievement of the outstanding successes achieved by the Saudi Science and Engineering Team at the ISEF International Fair.

Through our partnership in this global Olympiad, we aim to reinforce the Kingdom's position and leadership in chemical research and industries, guided by the wise and inspiring vision of the Custodian of the Two Holy Mosques, King Salman bin Abdulaziz Al Saud, and His Royal Highness Crown Prince Mohammed bin Salman bin Abdulaziz Al Saud.

At SABIC, we remain committed to highlighting the crucial role of chemistry and its close connection to research, innovation, and human development. We aim to inspire younger generations early in their lives, promoting growth, leadership, and the creation of a brighter future for our nation.

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Awards and Medals
Over 1.5 Million Views
Words Celebrating Efforts and Aspiring for a Bright Future
Well-Deserved Awards for Bright Minds
Challenges and Solutions
Success Partners
Ministry of Education
King Saud University
SABIC Exclusive Sponsor
Media Coverage
Becoming a Global Inspiration
Professional Platforms for Event Coverage
Simplifying Media Permits
An International Event Accessible to All
Comprehensive Media Resources
Direct Communication for Accuracy and Credibility
Main Media Coverage Goals
Media Resonance and Global Horizons
Impactful campaigns and active engagement
Media Center

Conclusion



IChO Glossary

The following terms were used throughout this document.

The Jury	The committee composed of the heads of participating teams and votes on all decisions related to the competition, including choosing questions for the exams and selecting students for awards.
Olympiad President	The person responsible for overseeing the competition and its organizational aspects, ensuring that all procedures and logistics were followed.
International Steering Committee	The highest entity responsible for making decisions within the Olympiad organization. It consists of project leaders from various countries and meets at least once monthly in preparation for the event.
Scientific Committee	The committee prepares and reviews the scientific content related to the IChO, ensuring that the scientific challenges and materials align with international standards.
Organizing Committee	The committee is responsible for preparing and managing all organizational aspects of IChO.
Head Mentor	The Head Mentor represents each team and is responsible for submitting and receiving all related documents. The Head Mentor also signs all necessary forms on behalf of their country and has the right to vote on behalf of their country.
Delegation	Each national delegation consists of at most four students selected on a national level, plus up to two mentors, two observers, and any number of guests.
Student	The IChO competitors were secondary school students or recent graduates who have not started university education.
Mentor	Specialists in chemistry, such as chemistry teachers, may serve as mentors, with up to two accompanying individuals, one designated as the head mentor.
Observer	Delegations may include up to two observers alongside the mentors. Observers could attend all Jury meetings, assist with translation, and contribute to the correction process.
Remote observers	These persons remotely assist mentors and observers who participate in the IChO on-site.
Guest	Delegations may bring guests who do not represent them officially or participate in Jury meetings or official tasks but may join event and excursion programs for mentors and observers.
Observer delegation	These were representatives of countries not yet participating in the IChO. They attended to observe and as a condition of participating with students, as stated in IChO regulations.

Main Committees

Supervisory Committee



Committee Tasks

The Supervisory Committee was set up in the first project phase to supervise the organizing and scientific committees and enable the successful implementation of IChO 2024 in organizational, financial, and scientific terms.

Committee Members



Dr. Amal Al-Hazzaa Chairwoman of the Supervisory Committee, previous Secretary-General of Mawhiba.



Dr. Khalid Al-Sharif Vice Chairman of the Supervisory Committee, Acting Secretary-General of Mawhiba.



Princess Noura bint Khaled Committee member, Director of the Education and Development Programs Partnerships Department at the Ministry of Tourism



Princess Noura bint Abdul Mohsen

Committee member, Director of Protocol and International Relations at the Diriyah Gate Development Authority



Dr.Yousef Alhomoud Committee member, Director General of Student Affairs, Ministry of Education



Dr. Ali Aldalbahi

Committee member, Dean of Student Affairs at KSU- Vice chairman of the Board of Directors Of the Saudi Chemical Society



Dr. Zaid Al-othman Committee member, Dean of the Faculty of Science at KSU – chairman of the Board of Directors Of the Saudi Chemical Society



Dr. Wajeeh Moughrabiah Committee member, Director of the Local Workforce Solutions Department in the Local Content & Business Development Unit (Sabic)



Prof. Abdullah Mohammad AlMayouf

Chairman of the Scientific Committee, Vice Dean of Graduate Studies for Academic Affairs at KSU



Mr.Badr Almajrathi Chairman of the Organizing Committee, Manager of Competitions Department in Mawhiba

International Steering Committee

Committee Tasks

The International Steering Committee plays an important role in overseeing the long-term organization of the International Chemistry Olympiad. The Committee consists of members elected by the International Jury, as well as former and future organizers of the Olympiad.

Committee Members

Elected:

JL Kiappes, UK-USA (2023) chairman Carlos Castro-Acuna, Mexico (2021) Clement Guibert, France (2022) Ben Pilgrim, UK (2021, 2023) Yunus Emre Türkmen, Türkiye (2022) I-Jy Chang, Taiwan (2023)

Ex Officio:

Petra Ménová, Czech Republic, past chairman Patrik Willi, Switzerland (2023) Badr Al-Majrathi, Saudi Arabia (2024) Abdallah El Marhoune, UAE (2025) Turaboy Shermatov, Uzbekistan (2026)



Organizing Committee

Committee Tasks

The committee's role centers on overseeing all organizational aspects and unifying the efforts of the organizing teams to meet all hosting requirements and ensure the success of the event.

Committee Members

Badr AlMajrathi: Chairman of the Organizing Committee **Ali AlGhobary:** Member and Chair of the Events and Public Relations Team

Nawaf Al-Dajani: Member and Chair of the Government Affairs Team

Musa bin Qahal: Member and Chair of the Security and Safety Team

Sondos Al-Wahaib: Member and Chair of the Partner Relations Team

Majed Al-Kinani: Member and Chair of the Media Team Thiban Al-Anazi: Member and Chair of the Technology and Technical Support Team Yasser Al-Ghaihab: Member and Chair of the Purchases Team

Najla Al-Ajaji: Member and Chair of the Registration and Reception Team

Adel Al-Ghadeer:Member and Chair of theAccommodationandTransportationTeamTwerekShehata:Member andChairof theVolunteeringTeam

 Talal Al-Rashidi: Member and Chair of the Exams

 Preparation and Supporting Team

Felwah AL-Salem: Secretary of the Committee

Scientific Committee

Committee Tasks

The Scientific Committee plays a crucial role in the Olympiad, being responsible for drafting preparatory questions for both theoretical and practical exams. Additionally, it reviews all scientific content to ensure compliance with the established international standards.

Committee Members Core Committee and exam authors

Prof. Abdullah Mohammad AlMayouf:
Chairman of Scientific Committee, Vice
Dean of Graduate Studies for Academic
Affairs at KSU
Prof. Gábor Magyarfalvi: Vice chairman of
the Scientific Committee
Prof. Kuo Wei Huang: Member
Prof. Petra Menova: Member
Prof. Gabor Lente: Member

Mr. Abdullah Jassem Abdulghani: Member Mr. Nasser Abdullah AlObaid: Member, representing Mawhiba Alumni Prof. Abdullah Ali Al-Qahtani: Member Prof. Hamad Zaid Alkhathlan: Member Mr. Andrei Shved: Member Dr. Essam Hussan Abu Jameah: Member Dr. Dayana Gulevich: Member Mr.Salman Abdullah Alsharif: Member Mr.Mohammad Abdullah Almagweshi: Member Dr. Ahmad Abdulkarim Alsaleh: Member Dr. Krisztina Racz: Member Mr. Peter Zagyi: Member

Committee members

Mr. Bader Almulhim (Mawhiba Alumni) Mr. Ali Al Haddad (Mawhiba Alumni) Mrs. Sara Al abandi (Mawhiba Alumni) Mrs. Leena Alshammasi (Mawhiba Alumni) Mr. Mohammad Alhudaithi (Mawhiba Alumni) Mr. Osama Alali (Mawhiba Alumni) Mrs. Dana Alaithan (Mawhiba Alumni) Mrs. Ra'ad Saleh Algahtany (Mawhiba Alumni) Mrs. Ra'af Saleh Algahtany (Mawhiba Alumni) Mr.Twereg Hobrom (Mawhiba Alumni) Dr. Zainab Ahmed Al-Saihati Dr. Dmytro Kandaskalov Mr. Amer Alabd Dr. Peter Bolgar Dr. Kata Nora Enyedi Mr. Oliver Evans Mr. István Dávid Ficsór

Mr. Ádám Kapdos Mr. György Kóczán Prof. Katalin Ősz Mr. Benedek Sajósi Dr. Zsuzsanna Sánta Mr. Daniil Soloviev Dr. Ákos Szabó Dr. Zsófia Szalay Mr. Attila Villányi

About IChO

An annual global competition dedicated to the brightest high school chemistry students, the competition spotlights participation from countries worldwide. Each country is represented by a team of four students who compete in detailed exams designed to test their advanced chemistry knowledge and skills.

The competition consists of two main exams:

Practical Exam: Conducted in fully equipped laboratories and lasting five hours.

Theoretical Exam: This exam also lasts five hours and is usually held on a separate day following the practical exam.

The Olympiad was first launched in 1968 in Prague, then part of Czechoslovakia. Since its establishment, the event has been held annually over a span of ten days, hosted by a different country each year.



Candidature Story

The idea of hosting the International Chemistry Olympiad arose during its 49th edition in 2017. In the same year, Mawhiba met with the International Steering Committee of the Olympiad to better understand the hosting requirements and to support Mawhiba's ambition to host this important event. After understanding the initial approval from the Minister of Education, Mawhiba embarked on a rapid journey to discuss the details of the competition during the 50th edition in cooperation with the International Steering Committee. After thoroughly understanding the event's needs, Mawhiba selected a respected university known for its excellence in chemistry as a partner for the event. Therefore, King Saud University was chosen, and they enthusiastically agreed to host the Olympiad on campus.

In partnership with the Ministry of Education, Mawhiba sought approval to host the event and submitted an official request to the Royal Court. This request was then referred to the Experts Committee of the Council of Ministers for careful review, which resulted in a positive recommendation from the Council of Political and Security Affairs to host the International Chemistry Olympiad. Accordingly, the Royal Court approved the hosting of the 2024 International Chemistry Olympiad, according to Royal Order No. 37698 dated 06/17/1443 AH. Following this royal approval, Mawhiba sought the support of SABIC, a world leader in chemistry, as the event's official sponsor.

With this full support, Mawhiba presented its bid to host the 2024 International Chemistry Olympiad in front of the international jury at the Olympiad held in France in 2019. Fortunately, Saudi Arabia won the bid to host the event in 2024, becoming the first Arab country to host the International Science Olympiad.

Steps Leading to Saudi Arabia's Hosting of the International Chemistry Olympiad 2024

Meeting with the International Steering Committee of the International Chemistry Olympiad.
Securing initial approval from the Minister of Education.
Obtaining royal approval for hosting the event.
Discussing competition details with the International Steering Committee.
Submitting an exceptional bid file for hosting, presented to the International Judging Committee.
Securing the win, marking the first International Science Olympiad hosted by Saudi Arabia.



Saudi Arabia Where Chemistry Meets Culture



Saudi Hosting of IChO

Saudi Arabia hosted 333 students from around the globe, united by their creativity and excellence in the field of chemistry. The event took place in the heart of Rivadh, which welcomed the 56th International Chemistry Olympiad 2024 from July 21 to July 30. The Olympiad was organized collaboratively by the Ministry of Education, the King Abdulaziz and His Companions Foundation for Giftedness and Creativity (Mawhiba),



and King Saud University, with exclusive sponsorship by SABIC.

Participants experienced an amazing journey that combined academic excellence with an introduction to the richness of Saudi culture. They competed for top rankings in one of the world's most highly regarded chemistry challenges.

Great Collaboration for a Successful Hosting



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The 56th Olympiad celebrated an amazing partnership between the Ministry of Education, King Abdulaziz, and His Companions Foundation for Giftedness and Creativity (Mawhiba) and King Saud University. However, before starting the preparations for hosting this event, Mawhiba was required to submit the following documents to the IChO:

Hosting requirements

• Approval from the hosting university.

• Approval from the Ministry of Education with a note that the host university must be specified before the submission.

- Support from universities with their approval to participate in the competition by sharing distinguished chemistry experts and specialists.
- Support from the Saudi Chemical Society, including nominations from the association's members who see fit for such a role.



The Goals Behind Hosting IChO

Promoting the importance of annual chemistry competitions within the Kingdom.

establish diverse partnerships.

Highlighting the Kingdom's leadership in chemical research and industries.

of Saudi Arabia.

Strengthening collaboration between university academics, national research centers, and international experts.

research, innovation, and human development.

The Expected Impact of the 56th IChO

Easing knowledge exchange with global talents and Empowering international connections with future chemists and specialists from around the globe. **Increasing** awareness among Saudi students about the International Chemistry Olympiad and highlighting Showcasing the cultural diversity and historical depth STEM (Science, Technology, Engineering, and Mathematics) disciplines.

> **Promoting** Saudi culture and showcase the Kingdom's rich heritage and civilization.

Affirming the critical role of chemistry in driving Emphasizing the role of chemistry in advancing research, innovation, and human progress.



Opening Ceremony

The opening ceremony of the International Chemistry Olympiad 2024 proceeded under the sponsorship of His Excellency the Minister of Education, Mr. Yousef Al-Benyan. The event was attended by Dr. Amal Al-Hazzaa, former Secretary-General of Mawhiba, and Mr. Marhaf Al-Madani, Assistant Minister of Education for Development and Transformation, representing the Minister of Education, alongside Dr. Abdullah Al-Salman, President of King Saud University, and several key education leaders and officials.

The ceremony attracted noteworthy attendance, with over 1,300 specialists and enthusiasts in science and chemistry present. Additionally, it garnered more than 492,000 views on Platform X, reflecting the considerable interest and growing enthusiasm for the scientific field. This event served as an outstanding platform for improving ideas and encouraging innovation in the world of chemistry.

A unique organizational team was dedicated to the event, implementing a detailed seating plan that arranged students alphabetically by country. A map displaying the seating layout was provided to ensure smooth organization and seamless delegation management. This professional approach enhanced the ceremony's overall experience and left a positive impression on all attendees.



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Keynote Speeches at the Ceremony

"Today, through this great event, we all aim to strengthen bonds and relationships between nations. I would like to thank you for the warm hospitality and excellent organization. Since our arrival, we have been embraced with heartfelt sincerity, which is no surprise. Finally, you should take pride in this profound understanding of the science of chemistry."



"Hosting the International Chemistry Olympiad in Riyadh symbolizes the Kingdom's commitment to advancing scientific knowledge, its dedication to supporting talented youth, and fostering international cooperation in alignment with the objectives of Saudi Vision 2023."



The 56th IChO Identity

Verbal Identity

The event's slogan, "Build the Bonds," served as the basis of Mawhiba's journey toward hosting and organizing the Olympiad. It focused on strengthening the connections between nations and people through chemistry. The slogan also reflects the fundamental principles of chemistry itself: communication, innovation, and unity.

Visual Identity

The 56th International Chemistry Olympiad's visual identity goes beyond being a simple logo; it expresses the advancement of knowledge, the support of international relations, and Saudi Arabia's role in shaping the future of global chemistry.





The logo consists of three key elements

Covalent Molecules

The characterization of covalent molecular structures emphasizes that innovation comes from collaboration, much like the bonds formed in chemistry.

Interconnected Shapes

The repetitive figure of chemical structures symbolizes the concept of close connections and teamwork within the community to make innovative solutions.

Saudi Map

The logo integrates the map of Saudi Arabia, reflecting the nation's identity, rich heritage, and cultural depth, while showcasing its hosting and participation in the Olympiad.

IChO Delegations



Switzerland

Syria

Taiikistan

Thailand

Türkiye

Turkmenistar

United Arab

United Kingdom

Ukraine

Emirates

Participating Teams

(Individual 1)

(Individual 2)

Saudi Arabia

Serbia

Singapore

Slovakia

Slovenia

South

Africa

Spain

Sri Lanka

Argenting Ireland Armenia Italy Australia Japan Austria Kazakhstan Kuwait Azerbaijan Kyrgyzstan Bangladesh Belgium Latvia Brazil Liechtenstein Lithuania Bulgaria Canada Luxembourg China Malaysia Chinese Taipei Mexico Costa Rica Moldova Croatia Mongolia Cuba Montenegro Cyprus Nepal Czech Republic Netherlands Denmark New Zealand Ecuador Nigeria El Salvador North Macedonia Estonia Norway Finland Oman France Pakistan Georgia Paraguay Germany Peru Greece Philippines Poland Hungary Iceland Portugal India Qatar Indonesia Republic of Korea Iran Romania



America

Uzbekistan

Venezuelo

Vietnam

Observer Countries

Ghana Jordan Morocco Iraq



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Executive Summary of the the 56th International Chemistry Olympiad

- 333 competitors from 85 countries worldwide
 4 observer countries participating for the first time
 260 mentors, observers, and visitors
- 12 cultural and touristic events
- **135 student** organizers and volunteers from the Mawhiba Alumni.
- 42 members of the Scientific Committee
- Exams translated into 50 languages
- **\$6,553,463 USD** invested to host the largest global chemistry competition
- **58 organizers** dedicated to support participants from their arrival in the Kingdom until their departure.



Awards and Medals for Teams from 89 Countries

A total of **232** awards were distributed among the participants, categorized as follows:

10.8% of participants received 36 gold medals.

20.1% won 67 silver medals.

29.7% earned 99 bronze medals.

30 students were honored with certificates of appreciation for their achievements.



The Journey of Creative Minds at the 2024 International Chemistry Olympiad



Day		Activities		Activities	
1		Arrival and Registration	dents	Arrival and Registration	
2		 Opening Ceremony Lunch at King Saud University Visit to the Laboratories Preparation and Orientation for Students to Discuss Practical Exam Questions Return to Accommodation at Marriott Hotel Meeting with Participants to Discuss Key Topics of the Practical Exam 		 Opening Ceremony arriving at King Saud University hotel. Lunch at King Saud University Visit to Al Masmak Palace. 	
3	entors e	Translation of Practical ExamsVisit to Riyadh Boulevard City		 Attending SABIC event at King Saud University Visit to Diriyah. 	
4	We	Me	 Organizing a Visit to the National Museum Preparation for Discussion of Theoretical Questions Discussion Meeting on the Theoretical Exam 	Stu	Visit to eSports World CupPractical Exams
5		Translation of Theoretical ExamTour of Al-Bujairi in Diriyah		 Tour of The Royal Institute of Traditional Arts 	

The International Chemistry Olympiad (IChO)

Day		Activities		Activities
6		Reunion CeremonyVisit to Riyadh ParkMeeting with Students	Students	Theoretical ExamReunion Ceremony
7		Exam Marking		Visit to Souk Al-Zal
8	ors	Judging Process		 Visit to King Abdulaziz Arabian Horse Center Visit to SABIC's Plastics Applications Development Center (SPADC)
9	Ment	Closing CeremonyFarewell Dinner		 Visit to the National Museum Arranging a visit to Makkah for Muslim participants. Closing Ceremony Farewell Dinner
10		• Departure		• Departure

The International Chemistry Olympiad (IChO)





Overview of Organizing The Largest International Competition in The Field of Chemistry in Saudi Arabia

Invitations & Registration

As the IChO date was set, the 2024 International Chemistry Olympiad (IChO) invitations and registration process involved several key stages according to IChO regulations. The delegation registration was open on Tuesday, 30 January 2024, for countries to submit the number of students. mentors, and observers. The registration process was closed on Wednesday, 1 May 2024. Following this, countries must submit the names of their delegates by the deadline of Sunday, 16 June 2024. Lastly, the submission of flight information was open on Sunday, 16 June 2024, and must be completed by Monday, 1 July 2024.

Countries not automatically invited to the IChO were required to apply to the International Steering Committee by the end of November preceding the Olympiad. Mawhiba invited all countries to the Olympiad based on the recommendation of the International Steering Committee, and according to the Ministry of Foreign Affairs and IChO regulations.

Dedicated System For Information Collection

Mawhiba hasset up a dedicated system for delegations toprovide the following documents and information:

- Passport Information and photocopy.
- Clear Personal photos
- The media appearance consent form
- Consent and confirmation of contact details
- Personal information form including clothes size, health conditions, any specific needs they might have.

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Arriving To Saudi Arabia

On July 20, the delegations arrived at King Khalid International Airport with thorough organization that eased even the entry procedures. Organizers guided the delegations to their accommodations: Riyadh Marriott Hotel for mentors, and King Saud University Residence for students. All transportation services were provided according to an official schedule meeting the needs of participants, and ensuring their smooth movement between activities.



Challenges:

- Themanagementoftransportation, accommodation, and activities for students, mentors, and organizing committees at various locations.
- Coordinating various logistical requirements with multiple parties.
- Some participating countries do not have a Saudi consulate, which has caused delays in issuing visas for delegations.

Solutions:

- The Organizing Committee has established a team dedicated to managing logistics.
- Creating a digital platform to ease tracking schedules and register logistical information for all participants.
- The Saudi Ministry of Foreign Affairs has communicated with all participating countries to facilitate the procedures for obtaining visit visas, which is a positive step to support those interested in participating in scientific competitions.



Unlimited Support Through 11 Teams.



Empowered Organizational Efforts







As part of an overall organizational plan, the organizing committee has distributed its members across 11 teams, each assigned specific responsibilities. This approach aims to coordinate the efforts of its members from the Ministry of Education, Mawhiba, and King Saud University, ensuring alignment with all hosting requirements and addressing the needs of all participating parties. This creates an effective engaging environment.

Registration and Reception Team

- Welcoming participants at the airport with hospitality that reflects the culture and warmth of the Saudi people.
- Supervising the registration process, ensuring all essential information is accurately collected and updated.

• Processing fees and ensuring all participants receive the necessary information.

Public Relations Team

- Overseeing the execution of the opening and closing ceremonies, managing hospitality, seating arrangements, and media production operations.
- Ensuring all participants, guests, and VIPs enjoy a seamless and memorable experience during and after the event.
- Promoting the competition through various media platforms.
- Preparing and distributing a detailed guide for participants, including necessary contact information, a full schedule of activities, meal timings, exam arrangements, sightseeing details, and dress code requirements.

Government Affairs Team

- Simplifying and coordinating all required governmental procedures to ensure the smooth execution of the Olympiad.
- Arranging visa issuance processes for delegations.
- Coordinating with security, paramedics, and emergency response teams.
- Providing necessary support for medical and security emergencies.
- Ensuring comprehensive governmental support and coordination to guarantee the perfect implementation of the Olympiad.

Security and Safety Team

- Ensuring security coverage for all event activities, including the opening and closing ceremonies and the exams.
- Supervising the safety of mentors and participants in their accommodations.
- Guaranteeing the safety and security of all

participants, staff, and visitors.

Partner Relations Team

- Negotiating and finalizing sponsorship agreements, and coordinating sponsorship benefits with partners.
- Marketing the Olympiad to potential partners, preparing guest lists, and overseeing partner-related activities.

Media and Communications Team

- Developing and executing an inclusive media and marketing strategy, including advertisements, interviews, press releases, and overall event promotion.
- Creating content for the IChO social media accounts, including X (Twitter), Instagram, and Facebook.
- Arranging extensive media coverage through radio, television, and press interviews.
- Publishing and distributing IChO daily newsletter in collaboration with the volunteer team.

Technology and Technical Support Team

- Providing necessary technical equipment such as computers, printers, internet access, and display screens.
- Supporting all technical systems to ensure the smooth execution of the competition and related activities.
- Managing the bulletin board at the mentors' hotel, displaying schedules and essential information for mentors during the Olympiad.
- Offering ongoing technical support to participants and organizers.

Procurement Team

- Managing the procurement processes, including contracting service providers and coordinating with vendors to meet the event's needs.
- Preparing and submitting daily cost reports and the overall Olympiad budget to the head of the

organizing committee.

• Efficiently and effectively purchasing all resources and supplies required for the Olympiad.

Accommodation and Transportation Team

- Transporting all participants and mentors between the hotel, IChO venues, events, and the airport.
- Managing all logistical arrangements, allowing participants to focus on the competition.
- Overseeing all aspects of participants' accommodation and transportation.
- Ensuring students are woken up in the morning, meeting their needs, and assigning leaders who speak the same language as the students.
- Appointing two main leaders to organize all student mentors and act as a point of contact with the organizers.

Integrated Experience for All

The Accommodation and Transportation Team simplifies housing processes and provides a modern environment that meets all possible needs, ensuring participants enjoy a luxurious and comfortable stay.





Accommodation for leaders, visitors, organizers, and the scientific committee:



Double Rooms 64 Single Rooms 216



Accommodation for students:

Student Double Rooms
165

Supervisor Single Rooms

16

Volunteer Shared Rooms

43

Volunteers Team

- Managing all aspects of volunteer coordination and support during the Olympiad.
- Ensuring a suitable number of volunteers to



guarantee the event's success.

• Ensures the Olympiad runs smoothly and that all participants receive the necessary support.

Exam Support Team

- Overseeing the preparation of exam papers, monitoring the marking process, and ensuring overall safety while performing the experiments.
- Managing the Olympiad exam system, translation arrangements, and preparation of exams venues.

A Warm Welcome for Global Delegations

The Ministry of Foreign Affairs enabled the visa issuance process for delegations from around the world. Welcoming them with extraordinary hospitality, 35 volunteers showcased Saudi traditions and culture by offering a warm reception with an authentic Saudi coffee aroma. Each delegate received a specially selected gift box containing the following:



To ensure the comfort of all participants, Mawhiba arranged direct transportation from the airport to the designated accommodations. Additionally, they organized the issuance and delivery of attendance and participation certificates for all participants.



Health Care Was Our Number One Concern

Health and safety were Mawhiba's top priorities. All participants were required to fill out a health survey during the Olympiad registration. To ensure their wellbeing during their stay in Saudi Arabia, Mawhiba, in collaboration with the Saudi Red Crescent Authority and King Saud University, established a dedicated medical center for emergencies at their hotel.

Mawhiba also paid close attention to each participant's specific needs, providing golf carts for students with mobility challenges. To avoid allergic reactions or other food-related issues, they ensured the quality of meals and labeled all ingredients for every dish.

Furthermore, to manage all processes with ease, Mawhiba assigned a supervisor and volunteer to each team to guide and support the students throughout the Olympiad, from their arrival at the airport until their safe return home.



Fast Arrival and Dedicated Buses

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To ensure smooth transportation, Mawhiba prepared 10 buses for students and 10 buses for organizers and supervisors, each with a capacity of 49 passengers, ensuring safe and efficient transit to all Olympiad events





Thorough Organizing and Guidance Efforts

Educational Supervisors Meeting participants' needs during the Olympiad.

Volunteers From Mawhiba Alumni 135 Fully organizing the Olympiad, divided into three groups:



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16 volunteers at the mentors' accommodation.



10 volunteers supporting the exam team.



109 volunteers assisting students.



High Standards for Skilled Volunteers

Mawhiba applied the following criteria for selecting volunteers from the Mawhiba Association:

Age: Between 18-28.

- **Priority:** Given to those who participated in the Mawhiba International Olympiad program.
- Language Proficiency: Fluency in English (spoken and written).
- **Preference:** Graduates of the Salam Initiative for Cultural Communication.

Key Roles and Reliable Support

Mawhiba assigned its International Chemistry Olympiad volunteers with various tasks focused mostly on guiding and assisting students during all events. Technically skilled volunteers were assigned to support the scientific committee, ensuring flawless coordination. All volunteers were required to have overall knowledge of the Olympiad program and respond promptly to any issues or emergencies by notifying their supervisors immediately.

Effective Communication Beyond Challenges

To overcome language barriers, volunteers used advanced translation applications for real-time conversations with students, mentors, and visitors from around the world.



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Strategic Accommodation Plan for Creative Minds

The King Saud University Hotel housed participants, providing them with a luxurious and comfortable experience. Its proximity to the Olympiad venue eased daily travel.



These features were the highlight of the student accommodation:

- A high-quality hotel buffet.
- Mental games to stimulate and prepare minds.
- Supervisors, organizers, and volunteers available to meet daily needs.
- Simplified currency exchange services.
- 24/7 technical support.

Exclusive Accommodation for Leaders

In accordance with international Olympiad regulations, Mawhiba arranged separate accommodations for mentors and visitors at the Marriott Riyadh Hotel. This hotel was selected for its extensive experience hosting global events, providing fully equipped meeting rooms, and its close proximity to important landmarks and services in Riyadh. To ensure a comfortable stay, 16 volunteers were assigned to cater to all their needs during their stay.





Colored Paths For Easy Access

The exam was held at King Saud University, and a volunteer guide accompanied the students to the practical exam building. Upon arrival, they encountered five guiding paths, each marked with a different color that led them to their designated area:





The exam hall was divided into four distinct areas, each associated with a different color. Each color has multiple paths labeled with letters, as illustrated below:



Similarly, students should follow the color indicated in their theoretical exam box on their badge. Referring to the previous example, the student should follow the blue area to the guide path labeled «D» and sit in seat number «1». Where the seats were labeled as illustrated below:







68	The International Chemistry Olympiad (IChO)	
Budget and Expenses		Total 6,553,463\$ million USD Dollar
Accomm	odation	1,615,520 \$ 24.7%
Transporte	ation	155,760 \$ 2.4%
Opening	and closing ceremonies	600,000 \$ 9.2%
Activities		250,000 \$ 3.8%
Media ar	nd Marketing	1,064,501 \$ 16.2%
Practical	exam Materials and equipments	150,000 \$ 2.3%
Gifts, mea	dals, Souvenirs	250,000 \$ 3.8%
Committe	ee costs	550,000 \$ 8.4%
Equipmer	nt and exam supplies (printing - devices)	200,000 \$ 3.1%
Meeting	and translation rooms	200,000 \$ 3.1%
Preparing	the theoretical exam hall, lunch and dinner after the openir	ng 732,000 \$ 11.2%

Any additional expenses

andclosingceremonies

12.0%

785,682 \$

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Scientific Committee Selection Process

Mawhiba established clear standards for establishing a competent scientific committee, focusing on expertise in chemistry and familiarity with various Olympiad processes, such as:

- 01 Academic professors and researchers.
- Specialists in the Saudi chemical 02 industry (e.g., SABIC and Aramco professionals).
- Graduates of the Saudi 03 Chemistry Olympiad program.
- Former program Mentors. 04
- Invited international experts (in 05 limited numbers).

This careful selection process resulted in a powerful scientific committee comprising elite experts and professors from diverse fields of chemistry. The committee was tasked with:

- Preparing the exams and managing 01 associated logistics.
- Developing preparatory problems 02 to help students gain insight and readiness for the diverse exam topics.

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Committee Organizational Structure

Due to its critical role, Mawhiba prioritized an effective and harmonious organizational structure for the scientific committee, which was established as follows:

Core Committee

- Consisted of 8 members with extensive 01 experience in institutions, laboratories, and all aspects of the Olympiad.
- Included experts in project management 02 and operational processes.
- Held bi-monthly meetings (later weekly) to 03 make decisions on problem formulation and review.

Question Authors

- Contributed to drafting and reviewing 01 preparatory questions.
- Led discussions during the Marking 02 process.
- Some members volunteered for Mock 03 exams, evaluating initial versions of the exam questions.

Committee Members Participating in the Olympiad

- Included students and recent araduates 01 from the Olympiad program.
- Played a significant role in Mock exams 02 and provided logistical support for the scientific committee during the event.

Tireless Efforts in Exam Development

During the initial phase, the scientific committee worked to produce over 200 pages of problems, which went through thorough review and verification by international students and teachers. The committee also organized a -40member team to oversee the marking process, ensuring accuracy and obligation to the timeline. Committee members dedicated a minimum of two weeks to finalize all tasks efficiently during marking and review sessions.

Early Challenges

Training and Preparing Saudi Students

Training Saudi students for participation in the Olympiad was a noteworthy challenge for Mawhiba, as the primary organizer of the 2024 Olympiad. In its commitment to hosting a fair event, Mawhiba implemented strict measures to prevent any information leaks, such as:



Restricting access to Olympiad materials, especially for individuals in contact with students.



Prohibiting core committee members from interacting with students for two years.



Requiring all committee members to sign non-disclosure agreements (NDAs).

Committee Commitments

The diverse responsibilities of committee members posed another challenge. The International chemistry Olympiad Administration set a strict timeline for problem submission. Despite their dedication, the available time for reviewing lengthy materials was limited, requiring extended review periods to ensure quality.

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Limited Experience in Question Design

Some committee members faced difficulties in drafting exam questions due to limited experience. Many proposed questions resembled textbook problems or questions from previous Olympiads. To avoid the discomfort of reusing material, Mawhiba ensured all questions underwent careful review and refinement.

Technical Challenges and Effective Solutions

To overcome the typical technical challenges faced by Olympiad organizers, Mawhiba proactively prepared for the event by utilizing advanced tools designed to facilitate:

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	L

Editing preparatory problems and questions, including detailed illustrations and chemical formulas.



Fast and accurate marking, ensuring precision and efficiency.



Managing examlogistics, from preparation to execution, with simplified coordination.



These tools ensure a flawless workflow, enhancing the overall organization and delivery of the Olympiads complex technical processes. The International Chemistry Olympiad (IChO)

Exam Technological Tools & Uses



Microsoft Teams Communication



Sharepoint Version Control & Copyediting



OlyExams Exam Logistics



Gradescope Marking

Did you know: During the Olympiad, more than **150,000 pages** were printed.



Preparatory Problems

Preparatory Problems Timeline



05

Mawhiba invited all problem authors (~20 contributors) to participate in the review and editing. 06

07

A draft of the preparatory problems was submitted to the International Steering Committee for review in January 2024. After receiving the committee's feedback, the preparatory problems were finalized by February 1,2024.

A comprehensive version including problems and solutions was distributed to participants' head mentors.

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Solutions were added to the public version in June 2024 after the completion of Saudi participant preparations. This comprehensive process ensured high-quality preparatory problems and smooth coordination with participating delegations.



Editing Process

- Texts went through multiple stages of editing, formatting, and reviewing before publication.

- Microsoft collaboration tools were utilized for editing.
- Each problem and its solution were stored in separate Word files, maintaining a unified style guide.
- Problems were compiled into a single document with solutions added after the questions.



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Preparations began as early as May 2024, led by the technical team.

Practical Exam

Laboratory Preparation

King Saud University provided spacious laboratories accommodating 350 students. Some laboratories designated for the Olympiad were fully renovated to ensure they were perfectly equipped for optimal practical exam execution.

@ @ <u>Re</u> 37 19 **Technical Specialists** were assigned to support the process.

Laboratories were allocated for the exam.



Practical Exam Tools

Mawhiba supplied equipment for 400 students, accounting for both the expected number of participants and the trial exams. Special measures included:

- Avoiding the use of glass tubes and heating devices to enhance safety.
- Opting for single-use plastic tools such as test tubes and liquid droppers to ensure efficiency and safety.



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Held in June 2024 with the participation of 8 Riyadhbased committee members and 12 King Saud University personnel.

Practical Mock Exams Summary

First Mock Exam

Findings:

- Highlighted the need for improving question formulation to simplify translations.
- Led to a reorganization of exam questions.
- Eliminated unnecessary steps like solution preparation, saving approximately 25 minutes during the practical exam.



Second Mock Exam

Conducted a week before the Olympiad.

Findings:

 Modifications to the procedure and concentrations had rendered two steps of the titration experiment unreliable, Luckily, no change in the equipment was needed, only fine-tuning of the quantities used by the students.

Final Mock Exam

Held in July 2024, with 8 volunteering Steering Committee members and representatives from future Olympiads with the remaining Scientific Committee members.

Results:

- Discussions were eased using OlyExams software, streamlining text revision.
- Valuable input from international experts expedited jury discussions and decision-making.



Exam Day

- **01** Conducted across 19 laboratories, equipped with 333 identical equipment.
- 02 Each laboratory was assigned a dedicated technician, with five additional technicians managing refills and replacements.
- **03** The practical exam included two separate experiments.
- 04 The equipment for the second experiment was pre-packaged in cardboard boxes to be used after the break.
- **05** After the students completed their work, science committee members performed the experiments to establish master values for marking.



Challenges & Recommendations

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Planning and Preparation

- **01** Significantly expand the number of personnel, equipment, and chemicals to avoid potential shortages.
- 02 Ordering chemicals in limited quantities can cause challenges if procedures require adjustments.
- **03** Preparing materials for 333 students is a real challenge. Early procurement is crucial, as some items may arrive late or require replacement due to supply issues.
- 04 Ensure clear assignment of responsibilities and efficient coordination among teams to guarantee smooth operations.

Mock Exams

- 01 Conducting several early trial exams helps to optimize chemical quantities and prevents issues during the actual experiments.
- **02** Avoid last-minute changes to experiments after laboratory setups are completed.
- **03** Assign enough testers to obtain accurate and reliable reference values during or after the exam for marking purposes.
- **04** Time Management for Jury Review.
- 05 The final review time is very limited (less than half a day). Focus efforts on improving texts, procedures, and marking scheme before the exam to reduce lastminute pressure.

Safety Data Preparation

- 01 Preparing safety data for chemicals is challenging due to varying national standards.
- 02 Some chemicals may be prohibited due to high-risk evaluations under global classification systems (e.g., GHS). Address these risks early to avoid disruptions.

Laboratory Coordination

- 01 Provide supervisors with a very thorough briefing about the procedures, including exam start and stop times, handling malfunctions, emergencies, and breaks.
- 02 Establish a mobile technical support team and electronic communication tools to assist supervisors in emergency situations.



Theoretical Exam



From the start, the scientific committee actively contributed to expanding and refining questions. Focus was placed on incorporating diverse aspects to ensure overall coverage of the approved exam topics. Problems were filtered based on specific criteria to finalize the preparatory problems by November 2023.

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Development of the Theoretical Exam

The development of the theoretical exam followed a process of continuous improvement, beginning with an initial selection of problems and evolving through several stages of review and refinement. The selection criteria emphasized ensuring a well-rounded exam that covered a broad range of chemical topics.

Early Phase



Final Exam Structure

The final structure comprised nine questions, a higher number than previous International Chemistry Olympiad (IChO) editions. The committee balanced question difficulty by including:

- Four long, multi-faceted questions 01 reflecting the modern Olympiad format.
- Five shorter questions reminiscent of 02 the style from two decades ago.
- Two research-related questions from 03 SABIC were merged into one.

A tenth question was designated as 04 a reserve.

Editing Phase

- The editing phase began after the 01 publication of preparatory problems in February 2024.
- A subgroup of 3 4 team members 02 was assigned to a problem to work with it throughout the olympiad.
- The team managed various exam drafts using Microsoft Teams/ SharePoint, provided by Mawhiba.
- The team extended introductory 04 texts and explanatory information to meet exam length restrictions.
- The team developed the official 05 solutions and initial marking ing schemes.

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Innovative Answer Sheets

- The exam adopted a separate question-and-answer sheet format, previously used in Olympiads, with a noteworthy innovation:
- Separate answer sheets from translated problems, which offere several advantages:
- 05 Enabled potential partial anonymity in marking (though different writing systems and languages would still identify some students).

- Reduced translation complications. 01
- Created a single definitive version 02 of question text.
- Decreased the volume of scanning 03 and copying required.
- Facilitated software-supported 04 marking with a uniform layout of the answer sheets.



Theoretical Mock Exams Summary

First Mock Exam (Remote)

June	Members	Former Saudi students
2024	at KAUST	studying abroad.

Why & How?

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Since only a portion of the Scientific Committee was present in Riyadh then, the first mock exam was arranged remotely. Participants took the exam on paper under self-enforced isolation conditions and then uploaded their anonymized answer sheets to the marking system.

Results:

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Revealed that the exam was too lengthy for the 5 - hour time limit.



Identified necessary wording improvements and structural adjustments.



The computer-assisted marking scheme proved valuable as it could be reused from this first testing stage.



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Second Mock Exam

16 July	
2024	

10 Volunteer from Scientific Committee members

Results:

Helped the individual problem teams to work together and become more familiar with the tools they would be using during the actual olympiad.

Last Mock Exam

19 July	External	Remaining Scientific
2024	invitees	Committee members
Volunteer members of the International Steering Committee		

Results:

QA

Spotted the opportunities for simple restructuring of sub questions which would significantly simplify both wording and marking procedures.



Criticises the time required to complete the exam.



The core team of the Scientific Committee ultimately made the final decisions on substantial cuts.



Marking and Arbitration

Jury Discussion





The theoretical exam was discussed smoothly, with supervisors offering suggestions to improve minor questions. One question, a chemical puzzle, presented a significant challenge. The jury modified its structure to enhance clarity while maintaining the intended difficulty level.



Technical Tools Comes To Rescue

1. OlyExams Platform:

IChO 2024 marked the fourth occasion of using OlyExams in the Olympiad, with mentors becoming increasinglyfamiliar with its features. Tools like AI-assisted translation and topic discussions within the platform simplify modifications, eliminating the need for public discussion sessions. Each exam paper included a unique QR code to ensure stringent monitoring during printing and scanning.

2. Gradescope for Marking:

For the first time this tool was used to accelerate the marking process with innovative tools for organizing answers and applying pre-set marking schemes. It also enabled graders to adjust marking schemes based on students' solutions without requiring manual re-

evaluation. As for Dispute Handling, Minor corrections and clarifications were managed within the program, in case of substantial issues it was escalated for personal arbitration.

Reliable and Fast Results

- Many delegations accepted the final scores directly from the system without requesting adjustments.
- A notable issue arose regarding the color of a solution (yellow/orange). This was resolved through a jury vote, avoiding the need for manual remarking.

Challenges and Recommendations

Subject	Challenges	Recommendations
Input in OlyExams	While mathematical and chemical formulas are now efficiently supported, tables remain time-consuming to input.	Optimize table handling within OlyExams to reduce time and effort.
Right-to-Left (RTL) Languages	Displaying text in RTL languages posed difficulties	Continue using translated text alongside the English version to ensure clarity and accessibility for RTL languages.

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Subject	Challenges	Recommendations
Communication Among Officials	General communication between officials needs streamlining.	Use direct communication channels like Telegram, with separate groups for: announcements and discussions.
Printing and Copying	Delays in printing and preparation due to limited resources.	Provide: High-speed printers and well-trained local support teams, as implemented in IChO 2024. At least 8 printers to accelerate printing and ensuresmooth operations. Adequate staff to finalize exam preparations on time. Create a comprehensive guide specifying required equipment and ensuring compliance with international standards for Olympiad events.

Subject	Subject Challenges Recommendations	
Supervisor Training	Gradescope is user-friendly, but supervisors may encounter challenges without sufficient training.	Conduct intensive training sessions for supervisors on Gradescope to minimize difficulties during marking.
Practical Arbitration Procedures	Complex quantitative data require careful arbitration to avoid conflicts between theoretical and practical results.	Implement detailed and transparent arbitration protocols to resolve discrepancies effectively.
Jury Voting	Adjusting marking schemes based on jury votes can lead to bias favoring certain delegations. Voting via OlyExams is slower than hand-raising but ensures fairness.	Continue using OlyExams voting for unbiased and transparent decision- making. Explore ways to enhance the platform's speed for voting without compromising integrity.

How Are International Chemistry Olympiad Exams Marked?





The Olympiad allocates 100 total points, with 60 points for the theoretical exam and 40 points for the practical exam. The marking process follows a step-by-step journey, ensuring accuracy and fairness:

- Authors review the answers independently to provide an initial score.
- Mentors independently mark the answers and provide their score.
- Both sets of Marks are compared to identify any discrepancies.
- Thorough discussions between the authors and Mentors resolves differences.
- Both parties agree on the final score for each student.
- The international jury reviews the results, eliminating any doubts about potential errors.
- Final marks are confirmed and shared with the mentors before the closing ceremony.

Results

Once all mentors accept their students' scoures, the marking team exports a CSV file of all scores using OlyExams. The team works to analyze students' performance in the competition, Making analytical charts illustrating the overall evaluation of the student's performance in the theoretical exam, assessing their level of theoretical understanding, along with an analysis of their performance in the practical exam, which evaluates their ability to apply chemistry concepts in practice. These insights offer a clear and comprehensive view, helping to identify areas for improvement and supporting students in achieving better outcomes in the future.

Analytical charts Of The Theoretical Exam



1.Theoretical (1) Ammonia scores

2. Theory (2) Electronic nose Scores







4. Theory (4) Potassium Scores



5. Theory (5) Unknown Scores



6. Theory (6) Penicillin Scores

7. Theory (7) SABIC Scores



8. Theory (8) Safflower Scores



9. Theory (9) Porphyrin Scores



10. Theoretical Exam Overall

Analytical charts Of The Practical Exam



1. Practical (1) Indicators Scores





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4. Analytical chart of The Overall Exams

For detailed results, visit the Olympiad's results page.





We have chemistry, We have mutual interests



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Scientific, Cultural, and Touristic Journey

Cultural and Scientific Harmony in Riyadh

In the heart of Riyadh, Mawhiba hosted global talents of diverse nationalities, ethnicities, and religions for the 2024 International chemistry Olympiad. This unique event, hosted by Mawhiba, offered a rare mix of scientific challenges and cultural and touristic experiences. With 30% of the participant time dedicated to scientific adventures and 70% to cultural and touristic activities, participants were preoccupied with a special opportunity to explore Saudi Arabia's rich heritage and scientific progress.

Through visits to historical sites, participants dived into the interesting stories of Saudi Arabia's history and cultural legacy. They also experienced the Kingdom's inspiring scientific advancements. Tourism was a major component, ensuring a fun experience, while Muslim participants were given a unique opportunity to visit Makkah and perform Umrah.



The International Chemistry Olympiad (IChO)



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The International Chemistry Olympiad (IChO)



Culture: Enrichment and Wealth

Cultural exploration was the core of Mawhiba's program, designed to introduce participants to the authenticity of Saudi culture. Main activities included engaging in traditional crafts, showcasing Saudi cultural heritage, and highlighting the Kingdom's fast development over recent decades.

Cultural Sites Diriyah

Mawhiba arranged a visit to Diriyah to enrich participants' understanding of Saudi Arabia's history and its cultural heritage.







Al-Zal Market

The visit to Al-Zal Market gave participants an opportunity to see heritage artifacts and antiques dated over 100 years old, alongside traditional clothes that reflect Saudi culture and identity.



The National Museum

Participants discovered 4,413 historical and antique pieces, showcasing the civilizations and eras that shaped the land of Saudi Arabia.





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The International Chemistry Olympiad (IChO)

Masmak Palace

Participants dived into Saudi Arabia's history through exhibits at Masmak Palace, showcasing the Kingdom's unification journey.



The Royal Institute of Traditional Arts

Students attended workshops and viewed artistic performances that reflected Saudi traditions and culture, and provided a deeper appreciation for the Kingdom's dedication to preserving its cultural heritage.



King Abdulaziz Center for Arabian Horses

Participants enjoyed observing purebred Arabian horses, learning about their care and the traditions surrounding their breeding at this center, offering a unique opportunity to explore the rich and special heritage of Saudi horsemanship.



The International Chemistry Olympiad (IChO)



King Fahd National Library

At the King Fahd Library, participants explored a wide range of cultural and scientific books, including works narrating the Kingdom's history.





Tourism: Nature and Entertainment

To relieve some of the tension of the Olympiad schedule, Mawhiba organized various touristic experiences. Participants explored modern entertainment and commercial venues and had the chance to experience the Esports World Cup activities and watch the competition.

Tourism Destinations:

The Boulevard

After five intense days of competition, including theoretical and practical exams, participants were treated to a relaxing and entertaining visit to the Boulevard, offering them a fully enjoyable and fun experience.

Esports World Cup

Participants attended world challenges in esports, engaging in a competitive and technologically advanced environment.





Riyadh Park

Participants spent time exploring entertainment modern and commercial facilities, enjoying diverse shopping and leisure options.

Science: Exploration and Innovation

As the heart of the Olympiad, the scientific aspect was highlighted through field trips showcasing Saudi Arabia's contributions to global innovation and sustainability. Mawhiba collaborated with its partners to demonstrate innovative research and advancements in the chemical industry, promoting an ideal environment for knowledge gaining and intellectual growth

Oriental Perfumes Exhibition

At the National Museum, participants explored the history of perfumes, their usage in ancient civilizations, and their cultural significance in Saudi Arabia.





Scientific Destinations:

King Salman Science Oasis

Participants explored the history of chemistry in Saudi Arabia and its crucial role in establishing the Kingdom's industrial foundation. The tour highlighted the outcomes of the petrochemical innovation dimensions, industry, and entrepreneurial influence.





Students attended workshops on technology applications in plastics and petrochemical products, highlighting advanced innovations in the industry.





A Unique Opportunity For Muslims

Mawhiba thoughtfully arranged post-Olympiad journeys for Muslim participants to the Holy Mosque in Makkah, including performing Umrah and engaging in religious tourism activities such as visiting libraries and other sacred sites. Participants in these journeys received gifts, including Qur'ans and religious books, as tokens of this spiritually enriching experience.

Reunion Ceremony A Celebration of Unity and Culture

After five days of preparation and completing practical and theoretical exams—an essential part of the Olympiad—Mawhiba organized a special Reunion Ceremony on the fifth day of the competition. This event brought together students and their mentors in a festive atmosphere, providing a unique opportunity to experience Saudi culture, connect with peers, and unwind after the academic challenges of the Olympiad.

The ceremony featured:

- An awe-inspiring display of Arabian falcons,
- showcasing a symbol of the Kingdom's heritage.
- Traditional Saudi coffee is served to guests, offering a warm and authentic welcome.
- Handicraft demonstrations by skilled Saudi artisans, highlighting the art of weaving palm fronds (khous) and their adaptable uses.

- Cultural exhibits in traditional tents, displaying artifacts such as:
- 1. Swords and tools used in daily life from centuries ago.
- 2. Items representing Saudi Arabia's rich and storied history.
- 3. Modern and traditional games, adding an interactive and entertaining element to the event.





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Efforts Lead Up To a Grand Ceremony of Recognition

Under the sponsorship of the Minister of Education Yousef Al-Benyan, and attended by:

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- Mr. Suleiman Al-Zaben, Chairman of Mawhiba Board of Directors.
- Dr. Amal Al-Hazzaa, Previous Secretary-General of Mawhiba.
- Dr. Abdullah Al-Salman, Acting President of King Saud University.
- Eng. Abdulrahman Al-Faqeeh, CEO of SABIC.
- The ceremony marked the ending point of the event, recognizing 333 talented students and announcing the results of the Olympiad.

Awards and Medals: Celebrating Global Talent from 89 Countries

Countries with 4 Awards Each (47 Nations):

Including Armenia, Australia, Austria, Azerbaijan, Brazil, Canada, China, Bulgaria, ChineseTaipei, Croatia, Czech Republic, Estonia, Finland, France, Germany, Greece, India, Indonesia, Hungary, Kazakhstan, Iran, Japan, Latvia, Lithuania, Moldova, Mongolia, Netherlands, New Zealand, Philippines, Poland,

South Korea, Romania, Saudi Arabia, Serbia, Singapore, Slovakia, Slovenia, Sri Lanka, Switzerland, Thailand, Turkey, Turkmenistan, Ukraine, United Kingdom, United States, Uzbekistan, and Vietnam.

C E C

Countries with 3 Awards Each (5 Nations):

Argentina, Denmark, Italy, North Macedonia, and Syria.

Countries with 1 Award Each (10 Nations):

Belgium, Costa Rica, Cyprus, Georgia, Luxembourg, Malaysia, Montenegro, Norway, Pakistan, and Venezuela.



The live broadcast of the Closing Ceremony on X (formerly Twitter) garnered over 1.5 million views, reflecting global interest in the event. Additionally, more than 2,500 attendees, including scientists, educators, and chemistry enthusiasts, gathered in person to celebrate the exceptional achievements of participants.



Countries with 2 Awards Each (6 Nations):

Cuba, Kyrgyzstan, Peru, Portugal, Qatar, and Spain.

Words Celebrating Efforts and Aspiring for a Bright Future

"Saudi Arabia's hosting of this remarkable event comes from the vision of His Royal Highness Prince Mohammed bin Salman bin Abdulaziz Al Saud, who stated:

(We will gather creative and talented individuals from all over the world to create something unique.)

This commitment underscores the Kingdom's dedication—through God's grace—to remaining as a world hub for young, talented, and creative minds in priority developmental fields worldwide."

Closing Speech by The Minister of Education Yousef Al-Benyan





"We extend our deepest gratitude to the scientific committee for their tireless efforts in creating the theoretical and practical challenges you experienced.

Icanassureyouthattheyworkedhardformonths to design these exciting exams, incorporating a great number of innovative elements, including revolutionary advancements from SABIC that you encountered in the exams and lab tours.

Your participation in the Reunion Ceremony was truly heartwarming, as it allowed us to share the richness of Saudi culture with you. The Olympiad has been deeply enriching for us all. Thank you for everything."

Remarks By Dr. J.L. Kiappes, Chair of the International Steering Committee for IChO

Well-Deserved Awards for Bright Minds

232 Awards Distributed: Ø 36 67 Gold Silver Medals Medals X Ę 99 30 Bronze Honor Certificates Medals

*All awards were distributed according to the policies of the International Chemistry Olympiad (IChO). Challenges and Solutions During the Award Ceremony

Challenge	Solution
Distributing a large number of awards.	• Streamlined and efficient procedures were implemented for winners to exit and receive their awards.
A flag error for Georgia (displaying the U.S. state flag instead of the country's flag).	• The flag was corrected on the first day to prevent future confusion, with additional measures taken to avoid such errors.
The large number of attendees required meticulous organization	• A detailed seating plan was executed to ensure the event ran smoothly and efficiently.

supervision.

and



Effective Collaboration for an Outstanding Hosting

Coordination and Approvals:

Ministry of Education

The Ministry of Education played an important role in hosting the event, securing approvals from the Minister of Education and the Royal Court, which were essential for confirming the hosting arrangement.

GovernmentSectorCoordination:

Collaborated with multiple government entities, including the Ministry of Foreign Affairs, the Red Crescent, and the Traffic Authority, to ease and speed up procedures.



Participant Accommodation:

Provided housing for students, creating a comfortable environment that enabled participants to focus on the competition.

Logistical Support:

Offered key facilities, including modern laboratories and the necessary equipment for scientific experiments.

Advancing Scientific Research:

The university's support confirms its commitment to promote education and research, affirming its position as a leading academic institution in Saudi Arabia.

Knowledge Exchange:

By hosting the Olympiad, the university enables participants to exchange expertise and knowledge, elevating the standard of education in chemistry.



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Exclusive Sponsor:

As the exclusive sponsor of the International Chemistry Olympiad, SABIC strengthened its reputation as a global leader in the chemical industry.

Organized an extensive scientific tour at its headquarters, improving participants' experiences and providing insights into the innovations and technologies put to use in the industry.



Becoming a Global Inspiration

Saudi Arabia hosted the largest international chemistry competition, with Mawhiba excelling in delivering inclusive and professional media coverage. It wasn't merely event reporting! It was a showcase of creative media distinction, aligned with Saudi Vision 2030, to position the Kingdom as a global platform for innovation and talent.

Professional Platforms for Event Coverage

Mawhiba established media centers at event venues, equipped with the latest technology to support journalists and media professionals. These centers included dedicated spaces for interviews, ensuring easy and professional coverage experience, managed by specialized teams:

Coordination Teams: Organizing media activities, scheduling interviews, and events.

Monitoring Teams: Supervised media coverage and provided immediate support to journalists.

Content Teams: Produced creative reports, news articles, and digital content reflecting the Olympiads atmosphere.

Simplifying Media Permits

Incollaboration with its partners, Mawhibaim plemented a clear and flexible process for issuing media permits. This allowed journalists quick and easy access to event locations, encouraging efficient coverage.

An International Event Accessible to All

Mawhiba provided live streaming on its official X (formerly Twitter) and YouTube accounts, broadcasting all Olympiad activities in real time. This accessibility enabled both journalists and audiences to follow the event from anywhere, expanding its media impact.

Comprehensive Media Resources

Mawhiba prepared a thorough media kit containing accurate and detailed information about the Olympiad and its agenda. This resource empowered journalists to deliver high-quality reports that highlighted the event's importance.

Direct Communication for Accuracy and Credibility

To enhance precision and credibility, Mawhiba established direct communication channels with official spokespersons, ensuring quick and accurate spreading of information. Journalists were also connected to key sources within the organization and partner entities, ensuring integrated and overall coverage.

Main Media Coverage Goals

Mawhiba's efforts were focused on achieving three main objectives:

- Easing access to information.
- Enhancing the accuracy of media coverage.
- Supporting journalists in delivering creative and impactful content.

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Media Resonance and Global Horizons

Mawhiba launched a series of successful promotional campaigns for the events accompanying the Olympiad through its various social media accounts. These campaigns garnered enthusiastic engagement from both local and international audiences, reflecting the widespread interest and excitement surrounding the event.






The most interactive countries with Mawhiba promotional campaigns

America, Saudi Arabia, Spain, France, Germany, Oman, UAE, Italy, Jordan, Kuwait.

Achievements and Figures For Media Center

50+ employees

180+ working hours

650+

Arabic and English content and 650 designs

250+ media professionals

8+ daily monitoring reports

85+ interviews



videos



The International Chemistry Olympiad was more than just a competition, especially in its 56th edition. Hosted by Saudi Arabia, it became an event celebrating authentic culture, human connection, and scientific excellence. Over a few days, the Kingdom transformed into a hub for scientists and thinkers, inspiring the next generation of young scientists and strengthening its global standing as a leading destination for big international events.

At the forefront of these efforts, Mawhiba led the charge, providing practical solutions to shared challenges through innovation, sustainability, and inclusivity. By fostering scientific collaboration and exchange, Mawhiba built bridges of knowledge between nations, peoples, and cultures. With unchanging ambition to host and support young, talented, and creative minds in various scientific fields, Mawhiba continues its journey toward achieving revolutionary scientific advancements that serve humanity and push forward the progress of science worldwide.



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