

# CATALYZER

NO.11

## ICHO2022

2022/07/19



## Pure Brightness

It is the 5th of the twenty-four solar terms

Pure Brightness (Chinese:清明, pronounced as *Qing Ming*), falls on April 4, 5 or 6 each year.

**O**n the days around Pure Brightness, the air is clear and scenes bright, hence the name. Pure Brightness is both a solar term and a festival, known as Tomb-Sweeping Day. The festival originates from ancestral beliefs and the worship ceremony in spring in ancient times. In the days around Pure Brightness, the voles which are more comfortable in the darkness disappear into their underground holes in the wake of the white tung's blossoming, and the rainbow can be seen in the sky after the rain.

# 1. THE 54TH INTERNATIONAL CHEMISTRY OLYMPIAD CLOSED



On the evening CST of July 18th, the 54th International Chemistry Olympiad (IChO2022) closed at Nankai University in Tianjin. After nine days of fierce competition, the 326 participants from 84 countries and regions around the world won 36 gold medals, 71 silver medals and 103 bronze medals. Meanwhile, 23 participants won honorary awards and 41 the “Golden Monkey Award” .

At 6 pm on the 18th, the grand closing ceremony of the IChO2022 was held in Nankai University Sports Center. Shu Wei, Executive Secretary of China Association for Science and Technology, Zhu Peng, Vice Mayor of Tianjin, Fan Qinghua, Secretary General of the Chinese Chemical Society, Xin Bing, Director General of Children and Youth Science Center of CAST , Lu Weimin, Executive Vice-chairman of Tianjin Association of Science and Technology, Yang Kexin, Executive Vice Chair of Nankai University Council, presented awards respectively to the top three winners of gold medals; winners of gold, silver and bronze medals; winners of the honorary award and ‘Golden Monkey Award’. They expressed warm congratulations and best wishes to the winners, and hoped that young people from all over the world would bravely scale the new height and win greater success in the new journey of studying and exploring chemistry, striving to benefit mankind with it.



Lu Shuangying, Vice-chairman of Tianjin Association of Science and Technology, Song Licheng, Academician of the Chinese Academy of Sciences and Professor of the College of Chemistry of Nankai University, Duan Lianyun, Professor of College of Chemistry and Molecular Engineering of Peking University, Wang Yingxia, Professor of College of Chemistry and Molecular Engineering of Peking University, and Sandro Marcotullio, Junior Programme Officer, Technology and Education Section, Swiss Embassy, attended the closing ceremony.



The 54th IChO was held in the form of a theoretical exam, covering inorganic chemistry, organic chemistry, physical chemistry, structural chemistry, and analytical chemistry, etc. At the closing ceremony, entrusted by Zhou Qilin, Chair of the IChO2022 Scientific Committee, Academician of the Chinese Academy of Sciences, and Professor of the College of Chemistry of Nankai University, Zhang Xinxing, member of the IChO2022 Scientific Committee and researcher of the College of Chemistry of Nankai University, made a review of the theoretical exam questions.



The nine exam questions were selected from the major events related to human life and health, as well as economic and social development, including the rapid nucleic acid test of the novel coronavirus that is demanded urgently in the world, the key energy storage materials supporting the national strategic carbon peaking and carbon neutrality goals, protein synthesis and modification that helps explore the mysteries of life, and the synthetic

chiral spiral ring catalysts design to improve the efficiency of chiral molecular synthesis. "This is not only to test the chemical knowledge of the participants but also to enable the youngsters with scientific enthusiasm and exploration spirit to appreciate the incalculable significance and value of chemistry in the process of benefiting mankind, and to learn more about ancient and modern China's chemical achievements," said Professor Zhang.

In order to enable participants to experience chemical experiment operations online, the Organizing Committee of the 54th IChO pioneeringly introduced virtual simulation experiments and online experiment questions. By adopting technologies such as computer simulation and virtual reality, the close combination of theory and experiment was realized so that participants could overcome time and space constraints and experience the fun of chemical experiments. Besides, the Organizing Committee set up a "Golden Monkey Award" for young participants who performed well in the experiment sessions.

The closing ceremony was filled with a strong atmosphere of Chinese and Western culture fusion. Accompanied by the cheerful and passionate melody of "Drum Music for Five Continents", Chinese artists performed enthusiastically with five different percussion instruments and a variety of Chinese and Western orchestral instruments at five landmarks of Nankai University, the host of this event, signifying that the young chemistry talents from five continents "gathering in Nankai online to participate in the grand event, with chemistry as the medium."

The Western-style pas de deux "Heart Swaying with Huxuan Dance" guided the audience to travel to the past and experience diversified cultures and rich history fostered along the age-old Silk Road in promoting cultural exchanges between the West and the East.

In the evening the choir from Nankai University, who had won many championships in international competitions, sang "Nankai University, My Beautiful Home," an adapted song, and "You and Me," the theme song of the opening ceremony of the Beijing Olympics in 2008. The singers from the host university showcased the aspiration to work with young people from different countries for a better tomorrow with chemistry.

Considerable time and dedication of numerous volunteers guaranteed the success of IChO. At the ceremony, volunteer representatives from Nankai University paid tribute with the dance "Try Everything" to the young people who forged ahead on the road of scientific exploration and their fearless youth.

In the speech of Chen Jun, President of Organizing Committee for IChO2022, Academician of the Chinese Academy of Sciences, and Vice President of Nankai University, he said that the IChO spirit would be passed on forever, and that he looked forward to jointly creating a better future for the IChO. Gábor Magyarfalvi, Chair of the Steering Committee of the International Chemistry Olympiad, expressed his heartfelt thanks to the host of this event, and to all institutions and individuals that had contributed to its success. He also extended warm congratulations to all participants and winners.



On behalf of the Organizing Committee of the 55th International Chemistry Olympiad, Günther Dissertori, President of the IChO2023 and Rector of ETH Zurich, sincerely welcomed all the young students, mentors, observers, and guests who love chemistry to Zurich, Switzerland, in 2023 to exchange views and spark new ideas. At the closing ceremony, Chairman Chen waved the flag of the International Chemistry Olympiad vigorously, and then handed it to Sandro Marcotullio, the representative of the next IChO host country.

The 54th International Chemistry Olympiad came to a successful conclusion. Farewell Tianjin! We will meet in Zurich in 2023!



# CLOSING REMARKS FROM THE EXECUTIVE CHAIRMAN OF IChO2022



Dear International colleagues and friends,

Dear Gabor and the members of Steering Committee,

Dear participants from the world, prestigious guests, ladies and gentlemen,

As the 54th International Chemistry Olympiad is coming to an end, on behalf of the Organizing Committee, I would like to express my heartfelt thanks to all the participants, mentors, observers, invigilators, teachers, volunteers, members of the Steering Committee, news media reporters, staffs of the co-host, organizers, co-organizers and partners, we are very grateful to all the friends who participated, supported and helped the IChO2022.

In these unforgettable nine days and nights, future scientists from all around the world brought their passion and dreams at IChO2022, presented the ultimate charm of chemistry through their efforts, met International peers and made friendships.

Everyone's outstanding performance has shown to the world that we are trying our best to adhere to the competition slogan-- 'Change, Creation and Fusion', in other sense that, whether in the competition of chemical knowledge, or when facing of many human challenges, we could actively promote science and technology, encourage innovation and creation, promote open integration to the humankind and, deliver the voice of China to the world.

Here at IChO, it had shown to us the members of the International chemical Olympiad family are highly unite and value the spirit of cooperation, from organizing various events to news distribution to the world, we sincerely admire your contribution and every little bit of help, for presenting wonderful moments of IChO2022.

In order to improve the experience of an remote game for all participants, and to make them to feel the warm hospitality of the host and provide a vivid cultural atmosphere, the Organizing Committee held more than 10 activities during the event to further display the charm of Tianjin, which integrates modern and traditional Chinese culture, and to share the Chinese story of scientific and technological innovation and rapid changes. Furthermore, to connect to IChO itself better, the Scientific Committee designed the experimental problem and online virtual simulation experiments, covering the fields of analytical chemistry, inorganic chemistry, organic chemistry, physical chemistry and experimental safety. Computer simulation, virtual reality and other technologies were used too, so that the contestants can break the restrictions of time and region and experience the fun of experiments via the Internet.

Congratulations to all the contestants on their satisfactory achievements. I look forward to seeing and wishing your dreams in the field of chemistry come true in the future, and bring glory for the international chemical society.

The 54th International Chemistry Olympiad is a grand event for International young chemistry lovers, an outstanding achievement of the 'double first-class' construction of Nankai University, and it will also be another important milestone of Nankai and Nankai chemistry in the new centennial.

The International Chemistry Olympiad spirit will be inherited forever. I hope our friends will remember China, remember Tianjin and this unforgettable 'chemical Olympiad' time. I am looking forward to the global recovery from the COVID, our friends will get-together with us at Nankai, at Tianjin and in China, and jointly create a better future for the development of International chemistry.

Welcome to Tianjin and Nankai, thank you very much once again.

Goodbye.

Prof. Chen Jun, Executive Chairman of IChO2022  
President of Organizing Committee for IChO2022

# CLOSING REMARKS BY CHAIRMAN OF IChO STEERING COMMITTEE



Dear participants of the International Chemistry Olympiad! We are recording this message in advance, anticipating a wonderful, albeit remote Olympiad in China. I was thinking that by the time you hear this, the Olympiad will have taken place and I might want to have reflections on the events of the Olympiad. But I realize this is not necessary. I am 100% sure that our hosts will do their best to have one of the most memorable Olympiads ever.

So let me thank them on behalf of our community, the members of the Science Committee, members of the Organizing Committee, and every single person who have contributed and our sponsors that contributed to the Olympiad.

I congratulate all students. At this moment when I am speaking they are all winners of their respective national competitions. By the time you hear of this, you will be winners among winners, some of you with medals with different colors.

At that moment, this will feel important, but in the long run, we all know that the important part is that you worked on challenging and intriguing questions. One of the perks of my position is that I get more than 5 hours to work with these challenging questions.

And chemistry is full of open questions. I wish you will be successful in solving those other questions that don't have a written answer key for them. Thank you again to all of you. And I declare the IChO 2022 closed.

Prof. Gábor Magyarfalvi  
Chairman of IChO Steering Committee

# IChO 2022

# WELCOME MESSAGE FROM SWITZERLAND — IChO2023



We are very excited to host the 55th International Chemistry Olympiad 2023 in Zurich at ETH. After more than 30 years of attending International Chemistry Olympiads, Switzerland hosts this exciting event next year for the first time.

Finding Solutions will be the main theme of the International Chemistry Olympiad 2023.

Being a lecturer myself, I am aware of the power of knowledge and a believer in sharing information and teamwork and to remain curious and passionate in finding solutions to the issues that are affecting our world. Passion, innovation, creativity, team spirit and most of all enthusiasm for chemistry will bring the world's best chemistry talents together. But apart from all the hard work at the competition we also will have fun and entertainment.

Most of all, the participation in an International Chemistry Olympiad influences everyone for a lifetime and can be groundbreaking for a further career. After long years of online Olympiads due to demanding times, we hope we will meet and greet you all in person in Zurich.

As the President of the IChO 2023 and Rector of ETH Zurich I look forward to welcoming all the young students, mentors, observers and guests for a wonderful time of exchange and inspiration.

Prof. Dr. Günther Dissertori

President of the IChO 2023 and Rector of ETH Zurich



# THEORY TEST WINNERS LIST

## AWARD SPEECH

I would like to express my heartfelt congratulations to these young fellows who win the awards! I look forward to your steady progress and higher achievements on the road of scientific exploration.

SHU Wei, Executive Secretary of CAST



People's Republic of China,  
First Place Zhou Fu



People's Republic of China,  
Second Place Xurui Zhang



People's Republic of China,  
Third Place Wen He

## AWARD SPEECH

The victory fully demonstrates your intelligence and love for chemistry... I wish all of your greater achievements in chemistry study and a more exciting journey in your future life!

ZHU Peng, Vice Mayor of Tianjin



# GOLD

Viktor V. Koshlan	Individual Participant
Wenze Li	People's Republic of China
Nathan Yihe Ouyang	United States of America
Myeongjin Shin	Republic of Korea
Davut Muhammetgulyyev	Turkmenistan
SEYEDMOHAMMADHOSSEIN BARAKATI	Iran
Kyuchoel Min	Republic of Korea
Phong Viet Nguyen	Vietnam
Berkan TARAK	The Republic of Türkiye
Masaki Naoi	Japan
Hanh Xuan Phan	Vietnam
Vladimir S.Mikhailenko	Individual Participant
Nikita V.Perov	Individual Participant
Minh Duc Tran	Vietnam
STANLEY CHEN (PINSI CHEN)	Chinese Taipei
Artem D.Gulyaev	Individual Participant
Pavel Atanasov Nikolov	Bulgaria

Fumiya Kashiwai	Japan
Tuan Nguyen Minh Pham	Vietnam
Takashi Ishikawa	Japan
ALEXANDRU CATALIN DIANU	Romania
Madiyar Kassymaly	Kazakhstan
Wee Wen Adrian Ong	Singapore
Akira Nakachi	Japan
Michał Piotr Lipiec	Poland
Kai-Chun Chen	Chinese Taipei
Hsin-Hung Chao	Chinese Taipei
Vincent Yi Fei Yap	Singapore
Václav Verner	Czech Republic
VLAD IOVA	Romania
Nir Cohen	Israel
ILIA KAHVAND	Iran
Yao-Lin Liu	Chinese Taipei

# THEORY TEST WINNERS LIST

## AWARD SPEECH

I hope and believe you will retain the enthusiasm for Chemistry, apply creativity and innovation into every aspect of your work and life, and contribute to a better future for humanity.

FAN Qinghua, Secretary-General of the CCS



# SILVER



Jack Howard Liu	United States of America
Suhyun Lee	Republic of Korea
Chern Howe Ryan Lim	Singapore
Sathira Jantarakulchai	United Kingdom
AMIR MOHAMMAD MOHAMMAD HOSSEINI	Iran
KIJAKARN NAMSAWANGRUNGRUENG	Thailand
Nivesh Aggarwal	India
Maftuna Lutfullo qizi Badalova	Uzbekistan
Mohammad Solaiman AlHadlaq	Saudi Arabia
JIRAROJ CHAWANASUNTORNPOJ	Thailand
SEYEDAMIRHOSSEIN RAZAVI	Iran
Ketevan Peranidze	Georgia
Mats Henrik Budäus	Germany
Kar Ern Samuel Lim	Singapore
WEERAPAT LI	Thailand
Temujin Orkhon	Mongolia
Ben Gilpin	United Kingdom
Márton Szabó	Hungary
Adam Szymon Sukiennik	Poland
Azimjon Ravshan o'g'li Jamolov	Uzbekistan
Sanzhar Bissenali	Kazakhstan
Liam Gary Hall	New Zealand
Mahit Rajesh Gadhiwala	India
Phoenix Wu	United States of America
Ikromiddin Axmadjon o'g'li Boymahammadov	Uzbekistan
Chinmay Khokar	India
Tim Bastian Enders	Germany
Neta David Eiger	Israel
Máximo Mele	Argentina
Roman Buksak	Poland
Nikita Nechayev-Slipchenko	Ukraine
Nyyazmuhammet Begenchmuhammedov	Turkmenistan
Daria Klymenko	Ukraine
Yaroslav Sekun	Ukraine
Sherzod Shaxobiddin o'g'li Shaymatov	Uzbekistan
Dilara ALTUNDAĞ	The Republic of Türkiye

Yakup Annaorazov	Turkmenistan
Jihwan Lee	Republic of Korea
Michael Schembera	Austria
NATHANI THERDPRAISAN	Thailand
Fatma İlay Tosun	The Republic of Türkiye
Krum Naydenov Aleksandrov	Bulgaria
TEODOR PADUREANU	Romania
Barbaros BOLAT	The Republic of Türkiye
NATHANAEL REZA PUTRA WIDJAJA	Indonesia
MUHAMMAD DIHYA ABY ABDI MANAF	Indonesia
Zhen Xuen, Brandon Low	Malaysia
Tomáš Heger	Czech Republic
NARİMAN SHİRİNLİ	Azerbaijan
Kevin Wang	Australia
Tanishka Rameshchandra Kabra	India
Nelushi Vithanachchi	Sri Lanka
Yangyi Qi	Sweden
Samuil Vladimirov Petkov	Bulgaria
Supatpong Juntarawatt	United Kingdom
Guillaume Guiard	France
KEVIN LIUS BONG	Indonesia
Gideon Alain Tzafri	United States of America
Lucio Saracco	Hungary
Yavor Ivaylov Hristov	Bulgaria
Daniel Hongru Wang	Australia
Paul Johann Dorfer	Austria
Almira Nurlanova	Kazakhstan
Leo Reddy	United Kingdom
Irmuun Altankhuyag	Mongolia
EMILDA PUTERI AULIA	Indonesia
Dániel Nemeskéri	Hungary
Leonid Asatryan	Armenia
Patrik Fábrik	Slovakia
Samuel Kolesár	Slovakia
Sanzhar Nurgaliyev	Kazakhstan

# THEORY TEST WINNERS LIST

## AWARD SPEECH

“Nothing, not even mountains and oceans, can separate people with shared goals and vision”

XIN Bing, Director General of Children and Youth Science Center of CAST



## BRONZE



<b>SALMAN HUSEYNOV</b>	Azerbaijan	<b>Aku Hertell</b>	Finland
<b>Owen Yi</b>	Australia	<b>Zdeněk Hartman</b>	Czech Republic
<b>Daniils Kargins</b>	Latvia	<b>Dhanvi Nautiyal</b>	United Arab Emirates
<b>Gerel Bayarmagnai</b>	Mongolia	<b>Dimitrije Gligorovski</b>	Serbia
<b>AHMED GHASSAN EZZEDDIN</b>	Syria	<b>E Rick Pua</b>	Malaysia
<b>SALAMA ABDULNASER OMRAN</b>	Syria	<b>Liis Siigur</b>	Estonia
<b>VLAD GABRIEL RISTACHE</b>	Romania	<b>Shon Hentz</b>	Israel
<b>Ron Angelo Atienza Gelacio</b>	Philippines	<b>Tiberiu Sprincean</b>	Moldova
<b>Artemi Smõšljajev</b>	Estonia	<b>Anton Barbuța</b>	Moldova
<b>Rostoslavs Rostovskis</b>	Latvia	<b>Archil Benashvili</b>	Georgia
<b>MAHSATI PIRIYEVA</b>	Azerbaijan	<b>Marcell Imre Papp</b>	Hungary
<b>Valentín Nico</b>	Argentina	<b>Adrien Castelo</b>	France
<b>Begzada Annayev</b>	Turkmenistan	<b>Chuhan Joyce Qi</b>	Canada
<b>Yifei Song</b>	New Zealand	<b>Lizi Darchia</b>	Georgia
<b>DANIZ SATTARLI</b>	Azerbaijan	<b>Frederike Saal</b>	Germany
<b>Valerian Mocreac</b>	Moldova	<b>Shyaamal Dwivedi</b>	United Arab Emirates
<b>MUHAMMAD GHAZAL ANAS HAMIDA</b>	Syria	<b>Rafael Moreno Ribeiro</b>	Brazil
<b>Dominik Stanislaw Duch</b>	Poland	<b>Tigran Harutyunyan</b>	Armenia
<b>Bashayer Ahmed Obaid Mohamed Alyammahi</b>	United Arab Emirates	<b>Fredi Manuel Barraza Hernández</b>	El Salvador
<b>Darko Stojchev</b>	North Macedonia	<b>Tal Sason</b>	Israel
<b>Hayk Aghekyan</b>	Armenia	<b>SALMAN EYAD ALDARWEISH</b>	Syria
<b>Juline Bernard</b>	France	<b>Rūdolfs Brahmanis</b>	Latvia
<b>Uroš Poleksić</b>	Serbia	<b>Florian Wuerfel</b>	Austria
<b>Kerui Yang</b>	Australia	<b>Hung Li, Joyton Fu</b>	Malaysia
<b>Aames Juriel Beladas Morales</b>	Philippines	<b>Ryaan Sidhu</b>	New Zealand
<b>Daniis Soško</b>	Latvia	<b>Adam Kleman</b>	Slovakia
<b>Felix Schubert</b>	Germany	<b>Azamat Salamatov</b>	Kyrgyzstan
<b>Bumchin Dolgormaa</b>	Mongolia	<b>Felipe Vergara</b>	Argentina
<b>Eve Coscoy</b>	France	<b>Sihan Yu</b>	Finland

# THEORY TEST WINNERS LIST

## AWARD SPEECH

"Nothing, not even mountains and oceans, can separate people with shared goals and vision"

XIN Bing, Director General of Children and Youth Science Center of CAST



## BRONZE



Vasanthamohan Sasangan	Sri Lanka	ATHANASIOS FEIDAKIS	Greece
Sara Winther	Denmark	Simen Jægtvik Aas	Norway
DANE JEMC	Slovenia	MATEJ NASTRAN	Slovenia
Ruiyi Li	Norway	ORESTIS LOUKAS ANEMOULIS	Greece
Henry Dean Lalman	Canada	Silas Waldvogel	Switzerland
Benuljith Mindula Karunaratne	Sri Lanka	Santiago Sirena	Argentina
Felix Koller	Austria	MUHAMMAD BAROTOV	Tajikistan
Hussain Shaker ALSaffar	Saudi Arabia	Alexander Svenstrup Poulsen	Denmark
Allan Han	New Zealand	Mihkel Tali	Estonia
Avishek Mazumder Santu	Bangladesh	Iulia Teleucă	Moldova
Laimis Jurkenas	Lithuania	Ray Zhao Zhou	Canada
Niels Manning	Netherlands	Moises Holanda de Souza	Brazil
Dunja Vuković	Serbia	Diego do Nascimento Gomes	Brazil
VAIOS KONSTANTINOS KAKAES	Greece	Sona Sagheyan	Armenia
Ivan Reshetnikov	Kyrgyzstan	Tomas Babelis	Lithuania
Anja Spasovska	North Macedonia	Ranasinghege Kavinda Chaturanga	Sri Lanka
Yasmin Mahmood Abdulla Mohammad Ali	United Arab Emirates	PATRIK POTOČNIK	Slovenia
DIMITRIOS KASIMATIS	Greece	Fearghal Desmond	Ireland
Elvis Alejandro Tovar-Facundo	Mexico	Đorđe Parojčić	Serbia
Sarwesh Parajuli	Nepal	Oleh Komarnytskyi	Ukraine
Adam Benjamin Plšek	Slovakia	Alberto Alava Cedeño	Venezuela
Pau Moliner Senar	Spain	Ali Abdulwahed AlYousef	Saudi Arabia
Thor Marner	Denmark		

# IchO2022

# THEORY TEST WINNERS LIST HONORABLE MENTION



## AWARD SPEECH

I hope everyone of you will scale new peaks, achieve greater success as you move forward in chemistry learning, and lead a fascinating life.

LU Weimin, Executive Vice-chairman of Tianjin Association of Science and Technology

Talal Hassan	Pakistan
<b>NINA CANKAR</b>	Slovenia
Anne Maricar Trinos Maralit	Philippines
Nore De Moor	Belgium
Love Sven Allan Sundin	Sweden
Emily Alejandra Crespín Guerra	El Salvador
Samantha Zhu Huizhong Ouyang	Canada
Emile Karl Chauvel	Luxembourg
Barnabas Labancz	Denmark
Pablo Faus Faus	Spain
Rodrigo Moreno-Plascencia	Mexico
Petr Mikhaylov	Cyprus

Hendrik Matvejev	Estonia
Markus Erik Johan Farnebäck	Sweden
Joao Pedro Siebra Vieira	Brazil
Abdullah Ameen AlMomtan	Saudi Arabia
Lemuel Agrava Acosta	Philippines
Mitchell Rikken	Netherlands
Gijs van Helsdingen	Netherlands
<b>SARVINOZ RAUFOVA</b>	Tajikistan
Yannik Luca Straumann	Switzerland
Nickolas George Metreveli	Georgia
Barabás Tahin	Sweden

# GOLDEN MONKEY AWARD

## AWARD SPEECH

I believe that with your excellent experimental ability and rigorous truth-seeking attitude, you will be able to give full play to all your expertise in the laboratory and contribute to the development of the world in the future.

YANG Kexin, Executive Vice Chair of Nankai University Council



Mohammad Solaiman AlHadlaq	Saudi Arabia
Zhen Xuen, Brandon Low	Malaysia
Phoenix Wu	United States of America
Nathan Yihe Ouyang	United States of America
Ranasinghege Kavinda Chathuranga	Sri Lanka
<b>MUHAMMAD DIHYA ABY ABDI MANAF</b>	Indonesia
Barbaros BOLAT	The Republic of Türkiye
Vasanthamohan Sasangan	Sri Lanka
Michał Piotr Lipiec	Poland
Jack Howard Liu	United States of America
Chern Howe Ryan Lim	Singapore
Roman Buksak	Poland
E Rick Pua	Malaysia
Daniel Hongru Wang	Australia
Allan Han	New Zealand
Benuljith Mindula Karunaratne	Sri Lanka
Barabás Tahin	Sweden
Rodrigo Moreno-Plascencia	Mexico
<b>EMILDA PUTERI AULIA</b>	Indonesia
Dominik Stanislaw Duch	Poland
Kevin Wang	Australia

Samuil Vladimirov Petkov	Bulgaria
Yavor Ivaylov Hristov	Bulgaria
Krum Naydenov Aleksandrov	Bulgaria
Wen He	People's Republic of China
Zhou Fu	People's Republic of China
Xurui Zhang	People's Republic of China
Wenze Li	People's Republic of China
<b>KEVIN LIUS BONG</b>	Indonesia
<b>NATHANAEL REZA PUTRA WIDJAJA</b>	Indonesia
Gideon Alain Tzafri	United States of America
Alexander Svenstrup Poulsen	Denmark
Tomáš Heger	Czech Republic
Pin-Si Chen	Chinese Taipei
Nelushi Vithanachchi	Sri Lanka
Nabiha Tahseen	Bangladesh
Daramfonabasi Henry Effanga	Nigeria
Christodoulos Pisas	Cyprus
Niloy Kumar Mondal	Bangladesh
Lautaro Ferreira	Uruguay
Avishek Mazumder Santu	Bangladesh

# CITIES OF CHINA

## Chengdu-Chongqing Urban Cluster



Chengdu-Chongqing urban cluster, with Chongqing and Chengdu as its center, serves as an essential platform for the development of the western region, strategic support for the Yangtze River Economic Belt, and a significant demonstration area for China to promote new urbanization. Developing the Chengdu-Chongqing urban cluster involves giving full play to its unique advantages of connecting southwest and northwest China as well as home and abroad, and promoting the strategic interaction between the 'Belt and Road' and the Yangtze River Economic Belt. This will facilitate the development of the central and western regions of China and the add a new engine for the national economic growth.

Chengdu-Chongqing urban cluster is among the regions in western China with the strongest economic foundation and strength. With its advantageous sectors, including electronic information, equipment manufacturing, and finance, it holds a significant position both nationally and internationally. Nowadays, Chongqing and Chengdu, as small and medium-sized cities, exhibit their characteristics and play a more pivotal role, whose counties (districts) and towns are densely dispersed, and towns at different levels are increasingly interconnected. Since cities in Chengdu-Chongqing urban cluster are closely connected in terms of geography, relationships, culture and trade, the regional cooperation has been continuously strengthened in transportation, agriculture, commerce, education, science and technology, labor services and other fields. The cooperation process between Sichuan and Chongqing has been accelerated due to the neighboring region cooperation. To sum up, the Chengdu-Chongqing region has gradually become an important economic center with national influence, a center for scientific and technological innovation, a new highland for reform and opening up, and a livable place for high-quality life.



# EVOLUTION OF CHINESE CHARACTERS

## Sound, Shape, Image, Number, Reason

In the previous issues we have introduced how Chinese characters evolved in terms of fonts--from oracle bone script, golden script, large and small seal scripts, cursive script, and regular script to the running script. In fact, the evolution of Chinese characters is also demonstrated in the methods of coinage, including using the sound or images .



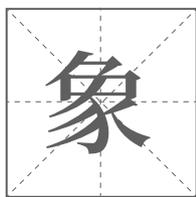
### I. sound

In the distant Taikoo Era, human beings gradually figured out some words that had a certain meaning and represented certain things from the sounds expressing their emotions (such as crying when sad, laughing when happy), or that arising from the wind and rain in nature. This feature is shared by English and Chinese. For instance, the English word 'dew' simulates the sound of water droplets dripping, and the word 'wolf' sounds like a wolf howling.



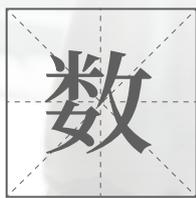
### II. Shape

In ancient times, human beings sometimes needed to describe things with figures or paintings. For example, out of the worship of mysterious nature or pursuit of beautiful objects, people depicted images of the '日 (sun)', '月 (moon)', '人 (man)', '山 (mountain)', etc.



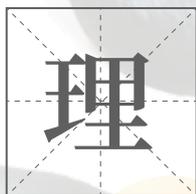
### III. Images

Hieroglyphs like '日 (sun)', '月 (moon)' are the basic components of word-formation. They combine to produce various 'images', such as '明 (light)' → 日 (sun) and 月 (moon) (sun and moon are representatives of light); '旦 (daybreak)' → 日 (sun) and '一' ('一' looks like the ground, so the sun rising above the ground means daybreak).



### IV. Number

In Chinese characters, the overlapping etymon of simple Chinese characters can form even more complex Chinese characters, which is also a smart way of word formation. For example, the Chinese character '木 (wood)' represents wood and trees, double '木' form a the new Chinese character '林 (woods)'; representing woodland; and triple '木' form a new Chinese character '森 (forest)'.



### V. Reason

With the maturity of the coinage, people pay more attention to the meaning behind Chinese characters, i.e. the 'reason'. For example, the original simple meaning of the Chinese character '明' is bright, yet its meaning can be expanded to 'the eyes can see clearly', 'be clear in ones mind', and 'things become obvious', etc.

# CLASSICAL CHINESE POETRY

## *To Wang Lun*

*Li Bai [Tang Dynasty]*

Li Bai is about to depart on a boat, when the farewell sound of singing & stamping comes from ashore. The depth of Peach Blossom Lake is one thousand fathoms, but no greater than the depth of Wang Lun's emotion to me.

translated by : Prof. ZHANG Zhizhong

## 赠汪伦

李白【唐】

李白乘舟将欲行，  
忽闻岸上踏歌声。  
桃花潭水深千尺，  
不及汪伦送我情。

Li Bai (701—762), born in Gansu or Sichuan Province, the West or Southwest of China, and as a great poet of romanticism in Tang Dynasty, he is revered as “poet-immortal” by later generations; together with Du Fu they are called “Li-Du”, twin poets best loved by the Chinese people. Li Bai loves drinking and poetry writing, as well as traveling and making friends. In his poems, Li Bai often resorts to rhetorical devices such as imagination and exaggeration, so as to successfully fashion self-image and give prominence to unique individuality of the poet. Therefore, his poems are heavily tintured with romanticism. Li Bai has now over 1000 extant poems.

This poem, as the title suggests, is presented to Wang Lun, one of the poet's closest friends, and their sincere friendship is manifested. The poet likens the things before his eyes, say, the deep water of Peach Blossom Lake, to the depth of farewell emotion, which is visual and vivid; “no greater than” further add to the touching force of the poem. The poem is simple and natural, fresh and fluent, distinctly tintured with a folksong flavor.



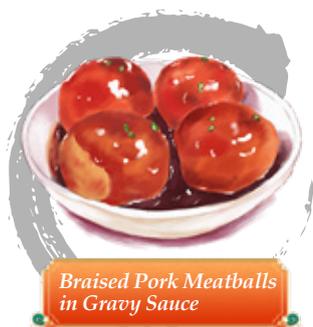
# EIGHT CUISINES

## Lu Cuisine

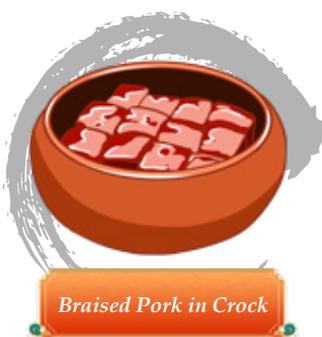
Lu Cuisine originates from the Spring and Autumn and Warring States Period. The Qi and Lu states were blessed with natural condition. The former, in particular, is more richly endowed as it is adjacent to mountains and the sea. Benefiting from the abundant aquatic products, salt and iron, the Lu Cuisine was fully-developed. Lu Cuisine emphasizes quality ingredients, using salt to bring out an umami flavor, and soup to reinforce it. As far as seasoning is concerned, the pure, salty, and fresh taste are most valued, paying full respect to the original flavors of the ingredients. It features a salty flavor, with proper timing for cooking. The most famous techniques involve souping making and seafood cooking.



### Special Dishes



Braised Pork Meatballs in Gravy Sauce



Braised Pork in Crock



Seaweed Soup with Poached Eggs



Fried Tofu with Starch Paste

### Chinese Yam in Hot Toffee



**01** Peel the Chinese yams, cut them into blocks, and coat them with starch.

**02** Pour oil into the pot till it can be completely over yams, add yams and fry them until the surface turns golden brown.



**03** Pour a little oil and sugar into another pan, and heat them until the sugar melts and bubbles.

**04** Add yams and stir-fry evenly to ensure the surface is coated with as much sugar as possible.

The finished dish: The dish looks bright and shiny, and tastes sweet and crisp. Pick up the yams with chopsticks, and there will be a crystalline thread of sugar. After dipping the yams into the water, the sugar coating will immediately coagulate into a crisp and translucent sugar film.





### ANSWER FOR Q9

A9. Carbon-14 is a low energy emitting element with a half-life of  $5730 \pm 40$  years. The decay process of carbon-14 is the same in any place on earth, irrelevant to geographical locations including latitude, longitude or altitude, or normal outside physical interactions like pressure and temperature, or the chemical composition of the substance exposed to carbon-14.

Plants absorb radiocarbons by photosynthesis, and animals eat plants either directly or indirectly, thus all living beings contain carbon-14. By metabolism, organisms make the concentration of carbon-14 in their bodies keep a dynamic balance with that in the atmosphere.

Once an organism dies, the exchange of radiocarbons in its body with those in the ambience is terminated, and carbon-14 would be reduced following the law of radioactive decay. Once the amount of carbons and the proportion of carbon-14 are determined, the age of cultural relics could be calculated.



### DAILY QUIZ

Q10. Which country is the largest tungsten producing country?

- A. China
- B. Canada
- C. Russia
- D. America

## CO-ORGANIZER



## PARTNERS



## SUPPORTING ORGANIZATIONS AND MEDIA PARTNERS



# Grain Rain

It is the 6th of the twenty-four solar terms

Grain Rain (Chinese: 谷雨, pronounced as *Gu Yu*), falls on April 19, 20 or 21 each year. Named according to the Chinese expression that 'rain gives birth to grains', this term and is featured of the continuous spring rain, which reveals its climate significance for agriculture, and the ancient farming culture in terms of climatic and penological changes. In this solar term, willow catkins fall, cuckoos cry at night, peonies bloom, and cherries ripen. These natural phenomena demonstrate that it is already late spring.



**54<sup>th</sup> IChO2022**  
International Chemistry Olympiad  
TIANJIN, CHINA

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THE ELEVENTH PLACE OF THE CHINESE ZODIAC  
Years of dog: 2030, 2018, 2006, 1994  
1982, 1970, 1958, 1946