

# Catalyzer

No.1 July 20, 2014

46<sup>th</sup> international  
chemistry olympiad

## Welcome message



**Nguyen Vinh Hien - Deputy Minister  
of Ministry of Education and Training**

*Welcome to Vietnam. Welcome to Hanoi - and a very warm welcome to the 46th International Chemistry Olympiad.*

We are honored to organize this prestigious event this summer, from 20th to 29th July, 2014. Student teams from nearly 80 countries will not only have the opportunity to compete in the Olympiad, but also to get acquainted with Vietnam and its capital, Hanoi.

We consider the International Chemistry Olympiad to be a unique scientific and human event; enabling the best young scientists from different countries, speaking different languages, and having diverse religions, beliefs and customs to get together for one common goal – to share their dedication to the study and beauty of chemistry.

As hosts of the 2014 Olympiad, we will offer you the warmest welcome and show you true Vietnamese hospitality.

We look forward to welcoming you to Hanoi Vietnam this summer!

## Significance of IChO

**Bui Duy Cam - Chairman of Organising Committee**



IChO is a competition amongst international secondary students with the purpose of enhancing global exchange on Chemistry. IChO is intended to enhance the ability, creativity and independent studying of students who are passionate about Chemistry. IChO also encourages friendly relations and international exchange among students.

In addition, being held in Vietnam the 46th IChO has other significant meanings as well. First, the event contributes to the implementation of the Vietnam's policy of foreign affairs and integration. Furthermore, the event is intended to inspire students both in terms of learning in general and learning Chemistry in particular, which is part of our national strategy for improving citizens' intellect, manpower training, and fostering talents.

As a result, the 46th IChO is more than just a Chemistry event, it is also an opportunity for Vietnam to promote our traditional culture to the whole world.

## IChO and HUS

**Nguyen Van Noi - Rector of Hanoi University of Science, VNU**



We are honoured to host the 46th International Chemistry Olympiad in Hanoi from 20th to 29th July. This should be a great event with the participation of nearly 80 nations and territories from around the globe, welcoming 300 students, mentors and observers. Following IMO in 2007 and IPHO in 2008, IChO

2014 an important international event to be held in Vietnam. The fact that Vietnam has been entrusted to host such prestigious annual competitions demonstrates the standing of contemporary Vietnamese education, since it is complex to organize such international Olympiads. For this particular Olympiad, Vietnam's Ministry of Education and Training authorized the trusted Hanoi University of Science to organize this event. We are honored to accept this great responsibility.



# Vietnam at a glance

## Geography:

Located in the Indochina peninsula, Vietnam lies in the middle of Southeast Asia. Vietnam borders China, Laos and Cambodia, with The East Sea to the east of Vietnam. The territory forms an S-shape of 331,690 km<sup>2</sup> with a sea area of approximately 1 million km<sup>2</sup>.

## Climate:

In general, Vietnam is positioned in the tropical climate region. However; there is a difference in each part of the country: the North has 4 seasons while the South has only two (dry season and rainy season). Vietnam has high humidity, averaging 80%, and plentiful rainfall ranging from 1200 – 3000mm per year.

## Population:

Vietnam's population, including a mix of 54 ethnic groups living together, is over 90 million.

## Culture:

Vietnam has a thousands of years of history with a culture which is a harmony of various components, due to the wide range of ethnic minority groups. In addition, it is associated with traditional craft villages as well as rice agriculture, which closely follow the lunar cycle. As result, Vietnamese people celebrate the New Year holiday according to the lunar calendar. People have family reunions along with Chung cake, apricot, peach blossoms and so many other nice customs such as visiting relatives, giving lucky money to children, going to the pagoda to pray for a wealthy and cheerful year.

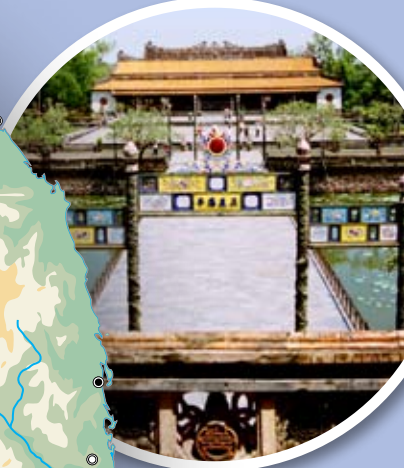
Vietnam is also a country with beautiful scenery of which Ha Long Bay, Phong Nha-Ke Bang National Park, Hoi An Ancient Town are some of the more familiar names to tourists. Vietnamese culture is also enriched with diverse kinds of folk arts that have been recognized as intangible cultural heritages by UNESCO such as ca tru, quan ho, and Hue's royal court music. Such distinguished cultural highlights are worth spending time to enjoy while you are visiting Vietnam.



Hoang Sa Islands



Hue City



Ho Chi Minh City



Phu Quoc Islands



Truong Sa Islands





## *A little Hanoi*

Located in the Red River Delta, in the North of Vietnam, Hanoi is well-known as the nation's capital and the center of culture, politics, economics and trade for the entire country. With a thousand years of honorable history, through many ups and downs during its lifetime, Hanoi still retains its hidden beauty with a marvelous mix of modern living and old-fashioned manners. This city now preserves many ancient works that attract tourists, especially those with a passion for architecture. The Old Quarter, One Pillar Pagoda, The Temple of Literature, the Opera House, all still stand silently but gracefully as historical evidence in the heart of Hanoi, in contrast to the hustle and bustle of the modern capital.

Not only famous for its unique architecture, Hanoi is also considered as a land of beautiful sightseeing. Many of the tourists who come here are immediately impressed by the beauty of the many lakes, such as Hoan Kiem Lake, West Lake, Truc Bach Lake, all of which are considered pearls of the city. Cycle around West Lake, enjoy the fragrance of lotus flowers and watch people doing their exercises in the morning and you will see another Hanoi which is young and full of vitality.



Visit Hanoi in a beautiful early summer morning and you will be fulfilled with different feelings which are hard to express in words. There is nothing quite like walking slowly along streets full of green trees or sitting on the roadside, sipping some "ice tea" and watching the flows of people passing by. If you are visiting Vietnam for the first time, don't hesitate to discover Hanoi by yourself: trying some local dishes such as "Phở" or "Bún chả" from

street vendors, walking around the Old Quarter's 36 streets and especially don't forget to go shopping and bring home some handmade souvenirs from the night market in the Old Quarter.

Having gone through many changes, the city still retains its charming beauty of the country's traditional education and culture. Explore Hanoi by yourself and you will never forget this place: the city of peace, harmony and friendly people.







Today	Sun 9am	10am	11am	12pm	1pm	2pm	3pm	4pm
Forecast	Cloudy	Cloudy	T-storms	Cloudy	Cloudy	T-storms	Cloudy	Cloudy
Temp (°C)	28°	29°	30°	31°	31°	29°	30°	30°
RealFeel®	35°	37°	38°	40°	40°	39°	38°	37°
Humidity	85%	82%	77%	72%	70%	62%	60%	60%

# Tentative program

Day	Session	Students	Mentors and Observers	Guests
20 July, 2014	Whole day	Arrival and registration at Daewoo Hotel Students transfer to La Thanh Hotel		
21 July, 2014	Morning	Opening Ceremony and Welcome Party at National Convention Center		
	Afternoon	Recreations at National Convention Center	Lab inspection Transfer to Song Hong resort, Vinh Phuc	Excursion Transfer to Ninh Binh Province
	Evening	Lab safety instruction	1st Jury meeting	Free time
22 July, 2014	Morning	Excursion	Translation of Practical Exam	Excursion
	Afternoon			Free time
	Evening	Free time		Free time
23 July, 2014	Morning	Practical Exam at Hanoi National University of Education	Excursion	Excursion
	Afternoon		Review Theoretical Exam Problems	
	Evening	Free time and recreations	2 <sup>nd</sup> Jury Meeting	Watching Water Puppet show
24 July, 2014	Morning	Excursion	Translation of Theoretical Exam	Excursion
	Afternoon	Meeting with High School students		
	Evening	Free time and recreations		Free time
25 July, 2014	Morning	Theoretical Exam at National Convention Center	Excursion to Ha Long Bay, transfer to Daewoo Hotel in Hanoi	
	Afternoon			
	Evening	Re-Union Party		
26 July, 2014	Morning	Excursion	Excursion	Excursion
	Afternoon		Marking	
	Evening	Free time	3 <sup>rd</sup> Jury meeting	Free time
27 July, 2014	Morning	Excursion	Arbitration in groups	Excursion
	Afternoon			Free time
	Evening	Free time	4 <sup>th</sup> Jury Meeting	
28 July, 2014	Morning	Free time		
	Afternoon	Closing Ceremony at National Convention Center		
	Evening	Farewell Banquet		
29 July, 2014	Whole day	Departures		



**to Roman Staňo**  
**July 20th**



**Head mentor of Slovakia**  
**Putala Martin**

*My first impression of Vietnam is the weather it's much warmer than in my country even on the rainy day.*

## Learning Vietnamese

Hello/ Hi	>> Xin chào
My name is...	>> Tên tôi là...
Thank you	>> Cảm ơn
Goodbye	>> Tạm Biệt
Sorry	>> Xin lỗi

## Emergency numbers:

**113: Police**  
**114: Firefighting**  
**115: Ambulance**





# Catalyzer

No.2

July 21, 2014

*Registration day*





# Lotus and Vietnamese culture



One Pillar pagoda – the spirit of ancient Thang Long.  
The pagoda is also called “Lien Hoa Dai” because it looks like a lotus flower emerging from the water’s surface.

Since my early childhood, the lotus has entered into my consciousness through my grandmother’s lullabies, through the delicate fragrance on my way to school, through the tasty lotus tea cups my grandfather often brewed, etc. For a long time now, the lotus has entered the hearts, life and culture of our nation. Growing from the mud, yet untouched by impurities, the lotus symbolizes the purity of heart and mind, which is the main reason for lotus to become Vietnam’s national flower.

The lotus has always appeared in Vietnamese daily life, in one way or another: the flowers are offered to deities, the seeds are used for tea, and the leaves are used to wrap green rice. Lotus seeds can also be made into a tonic medicine and anesthetic and into an ingredient for sweet soup and other recipes.

The lotus appears as subject matter quite early in the visual arts across the length of our nation’s history through architecture.

The lotus also appears in Vietnamese fashion. The harmonious combination of “Yem” and lotus flowers has greatly contributed to the timeless charm of Vietnam through our long history. “Yem” refers to an ancient Vietnamese bodice used primarily as an undergarment that was once worn by Vietnamese women of all classes. It is a simple garment with many variations from its basic form, which is a simple, usually diamond or square-cut piece of cloth draped over a woman’s chest with strings to tie it at the neck and back.

All in all, the lotus features in each and every aspect of our cultural life, proving itself to be an integral piece in the big picture of Vietnamese beauty.



Vietnamese lotus tea







## Adam Přáda

Czech Republic  
Silver medalist of 45<sup>th</sup> IChO 2013

"In terms of chemistry, I have always been fascinated by how clever chemists have been throughout history. They were able to discover so many facts about things they simply couldn't see, they only had microscopic methods.

Most people see IChO as a competition, but to me it is more than that. It seems like a holiday when you go to another country to meet students from all around the world. It doesn't matter whether or not you win a medal, IChO is one of the best events in your life, full of unforgettable memories.

Looking forward to IChO 2014, I expect completely new experiences every day: new friends, interesting new problems to solve. I am curious to explore the language, the architecture, the food as well as the weather and the nature here."



## Pham Dang Huy

Vietnam  
Gold medalist of 44<sup>th</sup> IChO 2012

I was so honoured to be a contestant of the International Chemistry Olympiad (IChO) so that I could both test my knowledge as well as meet international friends who shared the same interest in Chemistry. I was lucky when I continued learning in the same university class with some of them and kept doing research in Chemistry. One memorable thing was that I lost my luggage and had to wait forever for it to be returned. Next, I would like to share my tips for the two exams. For the practical exam, I think, you should read the procedure carefully and try to understand each step. Underlining all of the information that you think will be important when solving a problem is necessary for the theoretical exam. Finally, I just want to say, enjoy your time at IChO as much as you can because it will be an awesome time of your life.

## Furkan Mustafa Çetín

Turkey  
Gold medalist of 44<sup>th</sup> IChO 2012



"It has been two years since I was awarded the gold medal and my life has changed so much since then. Now I am working as an intern in Prof. David Leigh's laboratory at the University of Manchester and I have also had a chance to experience many new things. IChO is not just a competition. Believe me! As you read the Catalyzer, you have an amazing time at IChO, so probably you are very excited. Don't forget that you are at one of the most wonderful events in your life, let's have fun and try to make yourself relaxed. You studied a lot before you arrived here, so do your best in the exams with confidence. Lastly, please be yourself."







Today	9am	10am	11am	12pm	1pm	2pm	3pm	4pm
Forecast	Cloudy	Cloudy	T-storms	Cloudy	T-storms	T-storms	Cloudy	Cloudy
Temp (°F)	82°	84°	85°	88°	85°	85°	85°	85°
RealFeel®	103°	107°	108°	105°	102°	103°	106°	103°
Humidity	88%	84%	81%	71%	85%	82%	83%	84%



## We Are the World

### Michael Jackson

There comes a time when we heed a certain call  
When the world must come together as one  
There are people dying  
And it's time to lend a hand to life  
The greatest gift of all

We can't go on pretending day by day  
That someone, will soon make a change  
We are all a part of Gods great big family  
And the truth, you know,  
Love is all we need

### [Chorus]

We are the world, we are the children  
We are the ones who make a brighter day  
So lets start giving  
There's a choice we're making  
We're saving our own lives

Its true we'll make a better day  
Just you and me  
Send them your heart so they'll know that  
someone cares  
And their lives will be stronger and free  
As God has shown us by turning stones to bread  
So we all must lend a helping hand

### [Chorus]

When you're down and out, there seems no  
hope at all  
But if you just believe there's no way we can fall  
well well well well  
Let us realize that a change can only come  
When we stand together as one

### [Chorus: x2]

Thanks to Jacky, CHING C.K. for the correction

## Day 2: Monday, 21 July 2014

06:30-08:00: Breakfast at La Thanh Hotel

08:30-09:15: Transfer to National Convention Center

10:00-12:00: Opening Ceremony

- Short clip Introduction to Vietnam
- Stone musical instrument: "Âm vang đại ngàn"
- Dance: "Duyên nón ba tầm" - Meritorious artist Thanh Huong, Quang Huy & Tây Nguyên Music band
- "Đàn bầu" musical instrument: "Awaiting" - The Âu cơ Dance Company
- Song: "Hello Vietnam" - Singer My Linh
- Song: "We Are the World" - Hanoi-Amsterdam high school students
- Flag-raising ceremony
- Introduction to guests
- Opening speeches
- Introduction to participating delegates
- Song: "Vietnam – Our Homeland"
- Ending

12:00-13:30: Welcome Party at National Convention Center

13:30-14h15: Transfer to La Thanh Hotel - freetime

20:30-22:00: Lab safety instruction



to Rasmus Kisel

Estonia  
July 21



Why it keeps us awake, why  
you think we feel sleepy  
sometimes even when we  
are not tired, the reason is a  
hormone:

- a - Adrenaline
- b - Adenosine
- c - Thyroxine
- d - Serotonin





# Catalyzer

No.3 July 22, 2014

46<sup>th</sup>  
international  
chemistry  
olympiad



## Welcome message

**Mr. Pham Vu Luan - Minister of Education and Training**



On behalf of the Ministry of Education and Training of Vietnam, and on behalf of nearly 2 million teachers

and over 23 million students of Vietnam, I would like to extend the warmest welcome and gratitude to distinguished guests, teachers and students from 77 countries and territories for attending the 46<sup>th</sup>

International Chemistry Olympiad (IChO 2014), being held in Vietnam.

I would like to wish the international guests and students have the exciting days with good memories of Vietnam! Wish students achieve the best results and most importantly, this is a good opportunity for the contestants and we all are building international solidarity for a better world, a brighter future! Happy successful contest!

**Mr. Peter Wothers - Chair of the IChO Steering Committee**



First of all, and I am sure I speak for all of the participants here, I must say what a pleasure it is to be attending the

46<sup>th</sup> International Chemistry Olympiad here in Vietnam.

A team from Vietnam first participated in the IChO in 1996 – and with its immediate success, rapidly demonstrated the strong chemical tradition in this country. Now, just 18 years later, Vietnam is reaffirming its position in the chemical community by hosting this prestigious competition.

I have been very impressed with the hard

work and immense attention to detail that has been put into the preparations.

Perhaps wanting to give me the full Hanoi experience, I was taken between Universities on the back of a motor bike. This gave me a first-hand chance to marvel at the chaotic traffic here, and wonder and if it might be modelled as a very-non-ideal gas.

So I would like to thank our hosts – the Ministry of Education and Training, Hanoi University of Science, Hanoi National University of Education, and the sponsors for giving us all this fabulous opportunity.

I would simply ask all the visiting participants to make the very most of it – to experience the 'Flavour of Life' – not just the chemistry, but also the taste of Vietnam itself.

## 46<sup>th</sup> IChO Statistics

**Participating countries:**  
**77 (2 observing countries)**

**Attending Students: 291**

**Mentors/Head Mentors/  
Observers/Guests: 233**



# Unique Vietnam



**James Loke Wen Liang**  
Malaysia

*I have visited Vietnam before in Ho Chi Minh City and now in Hanoi. Everything is so amazing and I can't wait for these coming days." (James Loke Wen Liang – Malaysia).*



**Scott Xiao**  
Canada

*Scott Xiao loves his moose so much that decorate him with a Canadian caravat. Hope this mascot will bring you good luck Xiao!*



**Alisher Murodov**  
Tajikistan

*Our special hat is made from cotton by hand. It not only protects but also makes us more handsome.*



## Model toy figurine

In northern Vietnam, tò he (toy figurines) are a type of traditional toy made from the mixture of rice powder and natural colors. While making her rose, Manoy Tinar Trip from the Netherlands shared that it's not very difficult thanks to the help of the artisan.



## T'rung musical instrument

The T'rung is one of the percussion instruments of Giarai and Ba Na people in Vietnam's Central Highlands. Made from bamboo tubes of varying sizes and lengths, it looks like a trapezoidal. It is played with sticks. The interesting sound of the T'rung reminds people of the streaming water in Vietnam's nature. Aleksei Sadykov from the Russian team who tried his best said that playing the T'rung is fun though quite difficult. Hopefully, he can do even better next time!



## Krongput instrument

The Klong put is a traditional musical instrument of the Xe Dang, an ethnic group from Vietnam's Central Highlands. It is unique as it is the only instrument in the world that does not require any human touch in order to create a melody. This made our dear friend from India, Goel Shubham, exclaim "This is so interesting as there is nothing like this in my hometown, just a flute. Well, somehow, I could not create a melody, only some random sounds". Don't worry Goel, better luck next time!



## Juggling game

Choi Chuyen is a traditional Vietnamese folk game, especially in northern villages. For this game, you need 10 small sticks and a ball. The rule of the game is different from each area. Hugo Chao, a French student, tried his hand at Choi Chuyen for the first time, saying that the game was awesome despite it being difficult to pick up the ball.



## Break the pots

A handsome Russian guy, Sergey Break, was so excited with the game: break the pots. He shared that "This is the most attractive game that I have participated in here. I stood blindfolded in a position some distance from the pots and then used a hard stick to try and break the pots. My three adjectives for this game would be interesting, compelling and suspenseful".





## A FIRST LOOK AT THE LABORATORIES

The establishment of the laboratories began in 2012 on the 8th, 9th, 10th, and 11th floors of the Science & Technology Building. It was initially constructed to serve the research purpose of Vietnam's leading science institutes. However, when the good news arrived about us becoming the IChO host, the main purpose was immediately changed. Now all the facilities are being prepared for the practical exam of IChO 2014 and the International Biology Olympiad in 2016. Despite all the difficulties of the preparation and construction, the laboratories are

now ready for IChO 2014 and have received high evaluation from mentors and observers during yesterday's laboratory inspection. During yesterday's interview, Mr. Dang Tam Thu, Vice Rector of Hanoi University of Education, sent a message to all IChO 2014 contestants: "The preparation procedures have been completed. Moreover, all the exam questions have been performed for trial using the laboratories' equipment. The results turned out as expected. Now, once again, we are going into further details to ensure the accuracy and safety for the practical exam, on 23rd July, 2014."



**Abdulaziz Mohammed A. Alali**

**Saudi Arabia**

*Saudi Arabia costume is helpful in our desert climate. Due to that, men usually wear an ankle-length shirt woven from wool or cotton and for women are required to wear an abaya or modest clothing when in public.*



**Mirza Muhammad Shujaat**

**Pakistan**

*This is the traditional costume of Pakistan which has the same color with the national flag. Besides, it symbolizes for the peace and happiness.*



**Enkhneran Enkhbaatar**

**Mongolia**

*"Deel" is the name of our lady traditional clothes, nevertheless, this costume has a bit change to be more convenience and suitable for dresser.*





Today	9am	10am	11am	12pm	1pm	2pm	3pm	4pm
Forecast	Cloudy	Cloudy	Cloudy	Cloudy	T-storms	Mostly Cloudy	Partly Cloudy	Partly Cloudy
Temp (°F)	85°	87°	89°	91°	92°	94°	92°	91°
Real/Feel®	100°	103°	105°	113°	114°	116°	113°	108°
Humidity	80%	75%	70%	65%	65%	62%	64%	66%

### Day 3: Tuesday, 22 July 2014

<b>06:30-08:00</b>	Breakfast at La Thanh Hotel
<b>08:00-08:15</b>	Gather at hotel and prepare for going sight-seeing
<b>08:15-12:00</b>	Go sight-seeing >> Excursion to Bat Trang Pottery Village >> Excursion to Hoan Kiem Lake
<b>12:00-13:30</b>	Lunch at La Thanh Hotel
<b>14:30-17:30</b>	>> Excursion to Temple of Literature (Van Mieu) >> Excursion to One Pillar Pagoda (Chua Mot Cot) >> Excursion to Thang Long Imperial Citadel (Hoang Thanh Thang Long)
<b>18:30-20:00</b>	Dinner at La Thanh Hotel



**Stephen Zhouyu Li**  
USA

*I'm so good at drawing angry face*



**Robert Qihang Kao**  
USA

*A promising talent is playing "Jingle bell" on Vietnamese traditional Trung*

### Quiz hub

#### Quizzes

It is the smallest planet and has no substantial atmosphere.

It has a very dense, mostly carbon dioxide atmosphere.

Its atmosphere is about 78 percent nitrogen.

A red iron oxide dust covers its surface.

It is the largest planet. Ganymede is its largest moon.

It has spectacular rings. Titan is its largest moon.

William Herschel discovered it via a telescope in 1781.

It appears vivid bright blue. Triton is its largest moon.

**Key for No.2's quiz: B**

### Learning Vietnamese

#### Number:

0: Không	4: Bốn	8: Tám
1: Một	5: Năm	9: Chín
2: Hai	6: Sáu	10: Mười
3: Ba	7: Bảy	

#### Shopping:

What is this:

>> Đây là cái gì?

How much is this:

>> Cái này bao nhiêu tiền?





# Catalyzer

No.4 July 23, 2014



## TRANSLATION OF PRACTICAL PROBLEMS

On July 21, more than two hundred mentors and observers had a chance to meet up at the first jury meeting held to discuss on the problems for the practical exam. Showing their concern on the exam, they animatedly discussed, making the atmosphere tense and heated up through each deliberated problem. The meeting lasted from 8:00 pm to 2:30 am of the next day. Many ideas were put on the table to consult with the purpose of improving the exam problems. Finally, all the participants showed their satisfaction on the 3 problems. They are expected to be right in competitors' power, giving them the chance to shine and also encourage their indulgence in Chemistry.

Today, there comes the last phase of the procedure, translation. Each team works their best to make sure that there is no unexpected mistake in this stage so that their students move a step closer to the medals of IChO 2014. This phase

is considered an important one in the procedure of compiling exam questions. In other words, mistakes in translation could pose a severe risk in the quality of the whole contest. Hence, it requires a high concentration of the mentors and observers from attending countries.



*Teachers are working intensively on translation of practical problems*

All of the translated exam problems will be kept safe by the highest level of national security and transported to Hanoi University of Education, ready for the practical exam tomorrow. With this careful preparation, the exam is hoped to be successfully held.



*PhD. David Octavio Corona Martinez, Mentor of Mexican team expresses his satisfaction on the difficult yet interesting problems when being asked about the exam questions in this Olympiad.*



# Shape the clay

Lying on the east bank of the Red River, about 13 kilometers from Hanoi, Bat Trang is a small village established between the 14th and 15th centuries. This peaceful place is famous for its ceramics and pottery products. Thanks to its long-lasting history and development, the village's works have been accumulated over the years with many special designs that have been exported all over the world.



## Highlight of the trip

David Pires Tavares Martins, from Portugal team, may be one of the delegates who has the most unforgettable memory of Bat Trang. Even though his broken leg was a great challenge to his mobility, David's enthusiasm for activities, such as shaping and coloring pottery, was never in doubt. Having had a good first impression of his ingenuity, the pottery shop owner generously gave David a ceramic product as a souvenir, together with a nice wish: "Hope that you will be a successful chemist and achieve the Nobel Prize in Chemistry in the near future." The shop owner's goodwill message is typical of the friendliness and hospitality that Vietnamese people so often display to foreigners throughout the world.



46<sup>th</sup> IChO  
Hanoi 2014

JUGA ❤️  
CROATIA  
SERBIA  
MONTENEGRO  
SLOVENIA  
MACEDONIA

IPAN  
WITH  
DNECKTIE

GEORGIA  
LUKA  
LEVAN  
KAZAKH  
BZHASSUL  
TARA  
YSERIK



# The Temple of Literature



The Temple's grounds are home of two distinct but related institutions: the shrine to Confucius named Van Mieu, and the former university for mandarins called Quoc Tu Giam, literally the "Temple of the King Who Distinguished Literature". The former was first built in 1070, and the latter was established in 1076. In early days, Van Mieu was opened only for nobles, royalty and other members of the elite. Six years later, Quoc Tu Giam was eligible to educate the growing civil service, becoming Vietnamese first university.

In 1484, the King Lê Thánh Tông erected 116 steles of carved blue stone turtles with elaborate motifs to honor talent and encourage study. The complex of doctors' steles are a valuable historical resource for the study of culture, education and sculpture in Vietnam. Until now, there are 82 steles remaining. They depict the names and birth places of 1307 graduates from 82 triennial royal exams.

Nowadays, Vietnamese students often go there to express their gratitude to ancestors and pray for better achievements in study, making the place very crowded before examinations. IChO students also visit the Temple for both sightseeing and wishing luck in following exams.



han  
ston 2014  
AJIK  
Baur's  
WORLDWIDE

NEW  
ZLD  
2014  
B  
B  
XLVII ICHO  
ARGENTINA

DON'T STUDY  
CHEM  
ISTRY  
AUS

SYRIA  
I-C=O

Mongolia  
2014  
IChO





**Today**

	12am	1am	2am	3am	4am	5am	6am	7am
Forecast	Mostly Cloudy	Cloudy	Cloudy	Cloudy	Cloudy	Cloudy	Cloudy	Showers
Temp (°F)	84°	83°	82°	80°	81°	82°	83°	84°
RealFeel®	96°	93°	92°	90°	91°	93°	95°	98°
Humidity	84%	82%	84%	86%	86%	85%	85%	83%

**Good luck  
with the  
practical  
exam!**



**Nadav Gropper**  
(Israel)



**Espino Rodriguez Andres**  
(Mexico)



**Guillermon Nicolás  
Bragunde Martínez**  
(Uruguay)

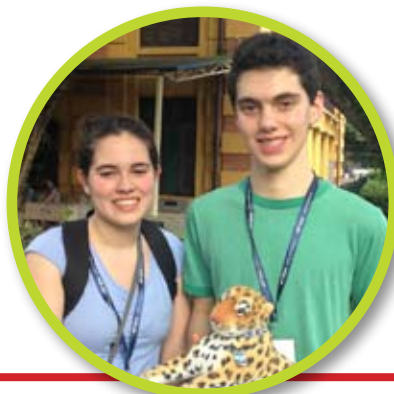


**Lê Phương Linh**  
(Việt Nam, Guide)



**Syria team**

"What a wonderful time in Bat Trang pottery and ceramic village!" It was made by hand and this reminds me of our traditional product, which was made by hand, too.



**Argentina**

Carlitos, our mascot in every IChO, is our close friend. Notably, it appears to bring luck for us in each Chemistry Olympiad.



**Andrei Siamionau**  
**Belarus**

I truly enjoy our trip today especially the journey to Ho Chi Minh Mausoleum. After listening to the tour guide, I think that he is a big hero in Vietnamese People's hearts as well as mine.



**Baturalp Yalcin**  
**Turkey**

Hey! Can you see our nation's flag on the wall? That's my piece of art!

Keys for No.3' quizzes	
Quizzes	Answer
It is the smallest planet and has no substantial atmosphere.	Mercury
It has a very dense, mostly carbon dioxide atmosphere.	Venus
Its atmosphere is about 78 percent nitrogen.	Earth
A red iron oxide dust covers its surface.	Mars
It is the largest planet. Ganymede is its largest moon.	Jupiter
It has spectacular rings. Titan is its largest moon.	Saturn
William Herschel discovered it via a telescope in 1781.	Uranus
It appears vivid bright blue. Triton is its largest moon.	Neptune

**QUIZ HUB**

**Choose the correct answer:**

We all can look up to the sky and see its beautiful color. This is due to the phenomenon:

- Diffusion of light
- Avogadro's law
- Rayleigh scattering
- None of the above





## Practical exam

Yesterday morning was an important event for all the contestants of IChO 2014 because it was time for the practical exam. Unlike normal days, it was hard to see any relaxed faces; instead, the students seemed a little bit worried and some of them even skipped breakfast. Despite that, 75 teams still arrived at Hanoi University of Education to take part in the exam, full of excitement. The test started at 9 am and lasted for 5 hours in a very formal atmosphere. At 2 pm, all teams were picked up by their guides and returned to La Thanh Hotel for a well-earned rest.

In general, all the students considered that the exam questions were not too challenging hard. According to Thomas Vialon (France), the exam questions were not so difficult but they were pretty long. Although the test only lasted five hours it covered all the general knowledge of Chemistry. He said "The practical test was quite well-organized with modern equipment and laboratories. I highly appreciate the help from the Vietnamese organizing committee, especially when they arranged the guides to lead and pick us up before and after the test." As for the Netherlands team, they had a mixed performance - half good half bad. They didn't have enough time and had one question that they had never practiced before but that one was okay. Ymro Nils Hoogendoorn, who already participated in the IChO last year said that the test this year was quite compared last year. He also had less time to finish it. As for the labs, they think that it is comparable to the lab they use in the Netherlands.



On the day of July 23rd, at 6:30 pm, the second Jury meeting was started to review the theoretical problems. There were 2 sessions: the first one focused on the problems 4, 7, 8 and 9, the other handled the problems 1, 2, 3, 5, and 6 of the theoretical exam. Members of all delegations have worked tirelessly to make sure there exit no mistakes in all problems so that any misunderstandings which hinder the students' success can be avoided.

**Elia Roel**  
Israel

*"The test was difficult but if you prepare well you can do it well. However, you might lose concentration in the middle because the test composes of smaller parts so you need to choose what order you will do that."*

**Joaquín Ignacio**  
**Lema Pérez**  
Uruguay

*The first student coming out from the lab !*







**Lawrence Ayamuze Joseph**  
Nigeria

*"This is the second time I have joined IChO and I am ready to win a medal"*



**Duy-Martin Tat (left) and William Paulsen Lohrmann**  
Norway

*Who will keep the product?*

*If it is perfectly finished, we will chop it in two and each will keep a half.*



**Olgert Dallakyan**  
Armenia

*I decorate this cup as I want and then I will give it to my new friend as a souvenir from the IChO.*



**Switzerland**

*The name of this pet is Saint – Bernard. He is a rescuer who helps us to find lost people under the snow.*

## Directing toward ancestors' land

**B**oth mentors and observers from participating countries and territories had a chance to discover Vietnamese spiritual culture through a trip to the Hung King's Temple on July 23rd, 2014. During this trip, participants enjoyed the imposing landscapes and immersed themselves in the solemn atmosphere directed towards the Vietnamese ancestors, who devoted their entire lives to shape our sacred country. Burning incense to the ancient kings refreshed delegates' minds and gave them a deeper understand of Vietnamese culture as well as the respect shown to the Vietnamese tradition of ancestor worship.

The Hung King's Temple is located alongside the mountain of Nghia Linh, Phu Tho province. According to the principles of feng shui, this complex of temples is very special. There is a folk concept that wherever 100 sacred animals (dragons, elephants, turtles and phoenixes) turn their heads towards, this would be good land. It is believed that amongst the 100 elephants pointing to the temple, one was pointing in the wrong direction, therefore, its head was cut off as punishment. Nowadays, the neck of that elephant still leaks some red water, which looks like blood. Besides, the mountain of Nghia Linh is also

said to be the head of a rock dragon laying alongside the three mountains of Troc, Van and Pheo. Therefore, not only is the Hung King's Temple used for worship to Vietnam's ancient Kings, it also a sacred land that protects our country.





# Vietnamese Taste with a bite of Chemistry



**V**ietnamese cuisine is all about balance. It is reflected in the way that ingredients are selected. This balance, they believe, is not only pleasing to the taste buds but beneficial for the body as well. It is the precarious balancing act of the five basic taste sensations - salty, sweet, bitter, sour and spicy - that give Vietnamese food its depth and intrigue.



that once mixed with other ingredients it loses its fishy odour.



sticky rice (Xoi), grilled meat rolls (Nem nuong) and dishes with coconut as an ingredient.



dumplings with wrappers made of tapioca starch (Banh bot loc), thick noodles (Banh Canh), etc.



digest and relieve the heat from the inside.



**Salt – Sodium chloride ( $\text{NaCl}$ )**, common salt, is a useful raw material. Several useful substances can be obtained from it, including chlorine, hydrogen and sodium hydroxide. Salt is widely used in the food industry as a preservative and flavor enhancer. In Vietnamese cuisine, fish sauce (“nước mắm” in Vietnamese) is a special condiment emblematic of the salty taste. The unique characteristic of fish sauce is its salty flavor and fishy smell. An interesting characteristic of fish sauce is

**Sweet – Sucrose ( $\text{C}_{12}\text{H}_{22}\text{O}_{11}$ ) is sugar.** The organic compound commonly known as table sugar, cane sugar, beet sugar or, usually, just sugar. Saccharose is an obsolete name for sugars in general, especially sucrose. It is best known for its role in food. Sugar plays an essential role in every typical dish in Southern Vietnam cuisine: sweet gruels (Che), sweet and sour fish broth (Canh chua), steamed

**Spicy – Capsaicin ( $\text{C}_{18}\text{H}_{27}\text{NO}_3$ )** is an active component of chili peppers. Because of the burning sensation caused by capsaicin when it comes in contact with mucous membranes, it is commonly used in food products to give them added spice or “heat”. In central Vietnam, people enjoy spices in their daily meals. Typical spicy dishes that you simply should not miss when visiting central Vietnam are cuisine such as spicy rice with mussels (Com Hen),

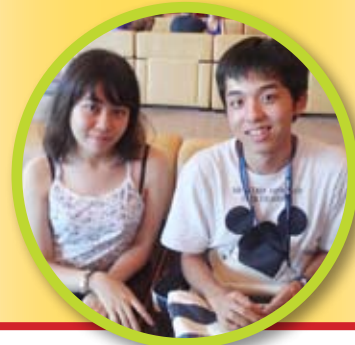
**Sour – Acetic acid ( $\text{CH}_3\text{COOH}$ )** is a colorless liquid that when undiluted is also called glacial acetic acid. Household vinegar is roughly 4% - 8% acetic acid by volume, making acetic acid the main component of vinegar, apart from water. Acetic acid has a distinctive sour taste and pungent smell. In tropical countries like Vietnam, people believe that ingredients added to food with a sour taste, for example lime juice or pickled vegetables, will make the dishes easier to

**Bitter** – According to medical specialists, foods with bitter tastes play an essential part in digestive activities. They help the body with nutritious absorption, blood regeneration, and metabolic stimulation. With its great benefits, Vietnamese people enjoy the bitterness of bitter melon, bamboo sprouts, tea leaves and various types of herbs, not only for balancing tastes but also for improving health.



**Bundit Diloknawarit**  
**Thailand**

*Look at my face! It's the result of an experiment!!!*



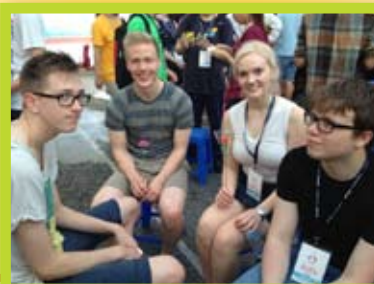
**Masada Koichiro**  
**Japan**

*"I live near Hokkaido prefecture" – "Hajime mashite!" means "Nice to meet you!" and "Watashi wa..." means "My name is..."!!!*



**Spain**

*"We have never seen this conical hat before. It looks so unique." Do these boys look so cute in their conical hats?*



**Iceland:**

*We are so excited by Vietnamese traditional toys particularly "to he" (toy figurine)*



6:30 – 8:00	Breakfast at La Thanh Hotel
8:15 – 8:30	Gather at the hotel's entrance for excursion
8:30 – 12:00	Excursion to Museum of Ethnology
12:00 – 13:30	Lunch at La Thanh's hotel
14:00 – 18:00	Meeting with Hanoi-Amsterdam High school students
18:30 – 20:00	Dinner at La Thanh's hotel



First total synthesis of madangamine D, a molecule of biomedical interest

**Source:** *Universidad de Barcelona*

My name is... >> Tên tôi là...  
I come from... >> Tôi đến từ...

**Anh** >> used to call elder males  
**Chị** >> used to call elder females  
**Em** >> used for both younger males and younger females  
**Bạn** >> used for people who are at the same age or social status

<b>I miss you</b>	<b>&gt;&gt;</b>	<b>Anh nhớ em</b>
<b>I love you</b>	<b>&gt;&gt;</b>	<b>Anh yêu em</b>
<b>You are so beautiful</b>	<b>&gt;&gt;</b>	<b>Bạn/em xinh quá</b>

Plastics have changed the life styles and conveniences in home from refrigerators to mixes and from washing machines to water filters.

- **Polymers**
- **Carbon**
- **Monomers**
- **All of them**

**Keys for No. 4's quiz:**  
**C. Rayleigh scattering**





# Catalyzer

No.6 July 25, 2014

46<sup>th</sup>  
international  
chemistry  
olympiad



**Mr. Ho Quoc Viet**  
Deputy principal

*"We do hope that today's Culture Exchange Event will be a guide for you to have a better understanding of Vietnam's culture, our youth and our Hanoi-Amsterdam High School for the Gifted."*



**Mr. Nguyen Huu Do**  
Director of Hanoi Education  
and Training Dept.

*"In the near future, we are trying our best to put Hanoi-Amsterdam High School for the Gifted Student on the world's education map as a high quality education institution that produces talented intellectuals. Each of you here can help us bridge the gap and make our dreams come true!"*



## CULTURAL EXCHANGE PROGRAM AT HANOI AMSTERDAM HIGH SCHOOL FOR THE GIFTED

On the afternoon of July 24, having received an invitation from Hanoi Amsterdam High School for Gifted Students, IChO 2014 contestants visited and joined a cultural exchange program at the school. On the way, the students had a chance to contemplate the realistic images of Hanoi from the bus in a pretty muggy afternoon. On arriving at the school gate, all the foreign contestants were warmly welcomed by excited Amsterdam students. They cheered and waved colorful flags enthusiastically. Maarten Peter Sijm, a Dutch delegate excitedly confessed, "I feel like I'm back home, seeing that the school is named after my country's capital".

A lion dance and other traditional dances were also performed as a way to welcome all the delegations. After gathering in front of the main gate, all the students enthusiastically took photos and then followed their guides and instructors to the main hall.

Opening performances and a clip introducing a Hanoi-Amsterdam

High School foundation attracted the audience. They were also enchanted by the next show which introduced the traditional costumes of Vietnam's 54 ethnic groups. In particular, many of the Southeast Asian students felt excited on realizing the similarities between Vietnamese and their own clothes.

Performances were held to lighten the initial formal atmosphere with colorful performances by international students.

In the second part of the program, rather than returning to the hotel early to prepare for the exam, games such as happy dancing and bamboo dancing were held and were so funny that no one wanted to stop.

At the end of the program, the groups of students gathered to take photos and write entries together. We would like to thank all of the Amsterdam teachers and students for such a wonderful event.





# Student exchange program



## Bui Linh Chi Hanoi Ams. Student

"We have been expecting and preparing for this event for about one month. There are approximately 100 volunteers from my school taking part in the program with great care and enthusiasm. We are really pleased that today has been a big success."



## Maarten Peter Sijm The Netherlands Team

"I am so surprised to know that there is a school named Amsterdam in Vietnam. I feel like coming home!"



A Cyprus member brought the sweet melody of the holy "River flows in you" on stage.



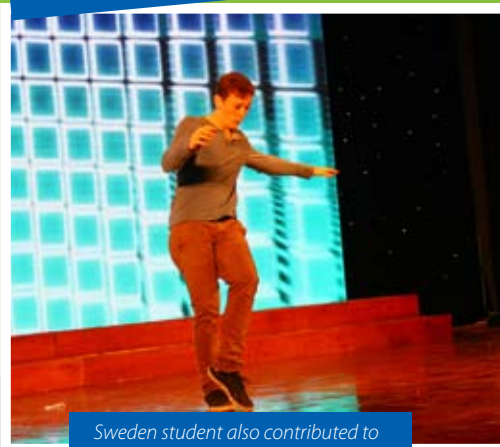
A famous Italian Opera song is professionally shown by two very young singers.



Korean team made the crowd exploded with the "Growl - EXO" dance performance.



Indonesia team played a magic animated tone.



Sweden student also contributed to the program a very great breakdance.



Japanese delegation showed their traditional costumes and games.



All students enjoyed the traditional bamboo dance and games.





## Vietnam Museum of Ethnology - a rendezvous for Vietnamese ethnic values



Despite today's hot weather and the overcrowded space, many IChO participants were excited to explore Vietnam's Museum of Ethnology - while some others simply used the time to review their notebooks. The museum itself comprises two parts: the indoor and outdoor exhibitions. The indoor exhibition is located in a two-storey building shaped like a Dong Son bronze drum – an historic symbol of Vietnamese culture. It is surrounded by large outdoor grounds which display housing architecture typical of Vietnam's various ethnic groups.



As this museum is located in the heart of Hanoi, you don't need to travel to different locations throughout

Vietnam in order to experience the native culture. Visiting the museum, you will have a great chance to admire the vivid living spaces of Vietnamese people represented in pictures, documents and objects made by local residents.

The museum houses collections of the country's 54 ethnic minority groups

such as Kinh (Viet), Thai, Hmong, Dao to name just a few. The collections are divided into several categories: clothes, jewelry, agricultural production tools, musical instruments. There are also diverse collections of objects used in celebrations like religious rituals, weddings, and funerals, for example. Many of the cultural highlights of each ethnic group are ingeniously introduced through distinguished facts which outline their charm and win over visitors' hearts.



Leaving the indoor exhibition, we can easily recognize the outdoor exhibition with its vast collection of traditional houses representing the different Vietnamese ethnic groups. All of them are built by indigenous people of the culture from the areas where the houses derive. Inside the houses, artifacts are displayed to mirror real life. This affords visitors the exciting opportunity to experience the lives of indigenous residents in their own spaces: how they eat, sleep, work and connect with other members in the community. Many participating IChO students expressed that this was the first time they had been able to enter such unusual accommodation.

In addition, many exhibitions, cultural events, and art performances are held here frequently to further introduce Vietnamese traditional culture to those with an interest. For example, today, a water puppet show was put on during the trip to showcase one of Vietnam's most unique art performances.



### Gamarjoba Italy

*This is our first time in Vietnam. We are not used to some things here especially traffic and food, nevertheless, I like most here is the people!*



### Denmark

*Hey Lea! We are Theodor, Kristopher and Kelvin. We wish you a good health and good luck with the exam tomorrow.*



### Kyrgyzstan

*Do you know our traditional drink is mare's milk or horse milk.?*



### Uzbekistan:

*On these hot days, in our country, we often wear a traditional hat for men – tubeteika!"*





Today	9am	10am	11am	12pm	1pm	2pm	3pm	4pm
Forecast	Partly Cloudy	T-storms	Partly Cloudy	Partly Cloudy	Partly Cloudy	T-storms	Partly Cloudy	Partly Cloudy
Temp (°F)	89°	90°	92°	94°	95°	88°	93°	90°
RealFeel®	110°	114°	118°	120°	121°	118°	118°	114°
Humidity	76%	76%	68%	64%	60%	86%	70%	79%

## Day 6: Friday, 25 July 2014

05:30-07:00	Breakfast at La Thanh Hotel
07:00-07:15	Gather at hotel lobby
07:15-08:00	Transfer to National Convention Center
09:00-14:00	Theoretical Exam
14:30-15:30	Lunch at National Convention Center
15:30-16:00	Transfer to La Thanh Hotel
19:00-19:30	Gather at hotel lobby, transfer to Daewoo Hotel
19:30-21:30	Re-Union Party at Daewoo Hotel
21:30-22:00	Back to La Thanh Hotel



**Mohammad Deeb Mandourah**  
Syria



**Ross Aaron Shillito**  
New Zealand



*Wish you health  
and luck with the exam*



## WANTED!

Japanese team is looking for their beloved friend called Funasshi. If anyone sees Funasshi, please contact them at room 610, E Building. Thank you!



Representatives of the IChO 2014 Organising Committee made their way to the E Hospital to visit Iranian contestant Iman Foroughmand who had to be hospitalized this morning with a high fever. During his time in hospital, Iman received special care from a volunteer for the Iran team as well as from the staff of E Hospital. In answer to the organising committee's questions, he was optimistic about his situation. He affirmed that he would probably be well and able enough to take the theoretical exam the following day. Considering his medical condition, conquering this exam would be a sweet victory indeed. Good luck Iman!

**Latest news,** thanks to the intensive care from the hospital, Iman has returned safe and sound to the hotel and ready for tomorrow exam.

## VIETNAM FACTFILE

Vietnam has been the setting for some excellent action movies for nearly three decades now. This has elevated Vietnam into our consciousness, but how much do you know?

*Choose the correct answer for each question*

- The monetary unit used in Vietnam is the Renminbi.  
a) True b) False
- 67% of the Vietnamese are Buddhist. What percentage of the population are Roman Catholic?  
a) 30% b) 25% c) 8% d) 13%
- Vietnam is slightly larger than New Mexico.  
a) True b) False
- What was the estimated population of Vietnam in 2008?  
a) 86,116,568 b) 3,977,000  
c) 7,977,000 d) 17,977,000
- The population density for Vietnam is 24.5 persons per sq km.  
a) True b) False

**Key for No. 5's quiz:**  
**A - Polymers**



# Catalyzer

No.7

July 26, 2014



## Georgia

Georgia, the team participating in IChO for the first time, quietly sat down in front of the test room and discussed some Chemistry problems with each other.



## SUÁREZ VÁSQUEZ Michael Alexander Austria

"I'm really confident about my performance. It was a really really long test and it was difficult. I struggled a lot. The test definitely included something new, compounds and topics I have never met before, in the previous years. But it was really challenging and really interesting to discover."



## THEORETICAL EXAM

The theoretical exam finally came. Yesterday morning, nearly 300 international students gathered early at the National Convention Center to attend the 5-hour exam from 9AM to 2PM. The bus from the La Thanh Hotel to the National Convention Center was unusually quiet, with less chit chat than usual and a variety of facial expressions. Some were excited for the incoming test; others looked more serious and nervous. Alexan BC, from Slovenia said that he could not sleep the day before, unsure of whether this was due to the construction work near the hotel, or the intensity of the forthcoming exam. Croatian member, Aloha BC's tired face predicted that the problems would be pretty hard. Since the practical exam did not go as expected, it was hoped that the theoretical exam would turn out better.

The exam went well, even though some of the students were tired, with headaches, some even needing support from the medical team, no mistakes were recorded. At 2.15 PM, the alarm at the National Convention Center rang softly, all the contestants quickly submitted their answer sheets and flocked out of the examination room. Most students acknowledged that this year's theoretical exam may have been easier but the

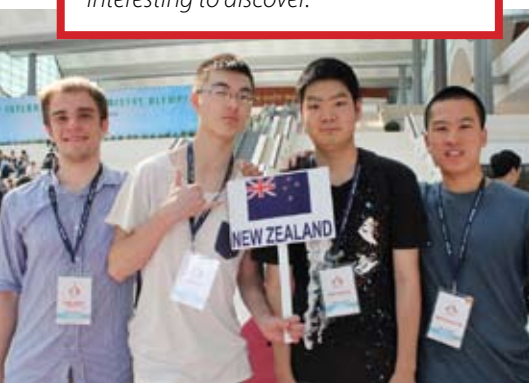


challenge was the lack of time. New Zealand students also added that there were too many problems. Before going for lunch, the Turkmenistan team told us that they found the theory part this year very interesting, with new challenging problems which haven't been seen before. Although not all participants were satisfied with their performances, it seems that they are all now relaxed and excited about the forthcoming reunion party at the Daewoo Hotel.



## Peru

The Peru team playing cards as a way to release stress.

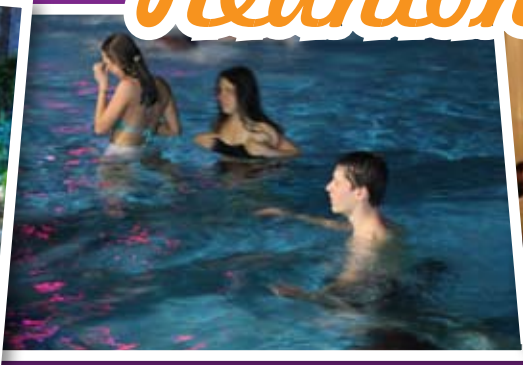




# EXAM View



# Reunion Party







# Halong bay

## - an ideal destination

Halong Bay is one of Mother Earth's most amazing natural wonders and one of Vietnam's most prized treasures. With the variety of nearly 2000 islands, both small and large, rising from the emerald waters of the Gulf of Tonkin as well as its charming beauty, each year thousands of domestic and international tourists spend their holidays in this attractive destination. Due to the time limitations of a tour, tourists cannot experience all the beautiful islands. However, below is some information about some of Halong Bay's most famous islets.

### Ngon Tay Islet



En route to Titov Island, visitors see a stone rock resembling a thumb jutting out of the sea. Nature has sited Ngón Tay (Finger) Islet

here as a gentle reminder of the many interesting finds to be discovered in Halong Bay.

### Dua Islet

Approximately 7km east of Bai Tho (Poem) Mountain, this islet has the shape of a



wand standing erect in the sea. It clarifies the geological and geomorphologic significance of Halong Bay. Dua Islet serves both as an interesting tourist site and also as a "lighthouse" for seagoing boats.

### Xep Islet



Xep Islet, or Layer Islet, is a huge, multi-layered, square piece of stone which looks like an Egyptian pyramid erected in the middle of Bai Tu Long Bay, Cam Pha District.

### Kettle Islet

En route to Quan Lan – Ngoc Vung islands; Am Rock or Kettle Islet is situated in Bai Tu Long Bay. An island jutting out of the seawaters, it is said to be the teapot of the Jade Emperor, who accidentally dropped it into Halong Bay, so its handle was broken.



### Cho Da Islet

The image of rock fashioned in the shape of a dog, sitting with its back to the sea and standing



guard for the safety of seagoing boats, has stood for millions of years.

### Trong Mai Islet

Trong Mai Islet (Rock of Cock and Han), this famous islet, has become a symbol of Halong Bay and indeed Vietnam's



tourism. The islet is about 10 meters high above the sea level in the shape of a couple of cocks rising from the blue sea. According to the story told by locals, Trong Mai Islet represents the faithfulness of love.

### Swan Islet

The perfect combination of three stones piled on top of each other creates a great sculpture



sharing the shape with a swan. Gazing from afar, the islet resembles a beautiful swan swimming on the sea and losing its herd. Swan islet is a truly wonderful sculpture of nature that impresses many tourists on their Halong Bay cruises.



**Klāvs Ozols**  
Latvia

*Everything here is different from my country. Although the weather is not very favorable, I have enjoyed all my trips very much.*



**Croatia**

*Look! Am I similar to Vietnamese women?*



**Moldova**

*The weather is too hot today. We're super tired.*



**Liechtenstein**

*It's amazing to meet new people from all over the world every day and learn something about their home countries.*





Today	9am	10am	11am	12pm	1pm	2pm	3pm	4pm
Forecast	T-storms	Partly Cloudy	Partly Cloudy	Partly Cloudy	Partly Cloudy	T-storms	Partly Cloudy	Partly Cloudy
Temp (°F)	84°	86°	88°	90°	91°	87°	86°	86°
RealFeel®	101°	106°	109°	111°	113°	112°	111°	106°
Humidity	81%	77%	72%	68%	68%	80%	86%	82%

## Day 7: Saturday, 26 July 2014

06:00-07:00	Breakfast at La Thanh Hotel
07:15-07:30	Gather at hotel lobby
07:30-12:00	Excursion to Trang An, Bai Dinh Pagoda, Ninh Binh province
12:00 -13:30	Lunch at Ninh Binh province
18:30-20:00	Dinner at La Thanh Hotel

## QUIZ HUB

Choose the correct answer for the question

Sterilization is the process of complete elimination of micro-organisms. The chemicals used for sterilization are classified as:

- A. Antiseptics
- B. Disinfectants
- C. Both A and B

## KEYS FOR NO.6'S

### VIETNAM FACTFILE

Vietnam has been the setting for some excellent action movies for nearly three decades now. This has elevated Vietnam into our consciousness, but how much do you know?

**1. The monetary unit used in Vietnam is the Renminbi.**

The correct answer was False  
The monetary unit used in Vietnam is the Dong. The Renminbi is the currency used throughout China.

**2. 67% of the Vietnamese are Buddhist. What percentage of the population are Roman Catholic?**

The correct answer was 8%  
Other religions include; Hoa Hao, Cao Dai, indigenous beliefs, and Islam.

**3. Vietnam is slightly larger than New Mexico.**

The correct answer was: True  
Vietnam is 329,566 sq km, and New Mexico is 314,925 sq km.

**4. What was the estimated population of Vietnam in 2008?**

The correct answer was 86,116,568  
The projected population for Vietnam in 2020 is 100 million people, and the projected population for Vietnam in 2040 is 115 million people.

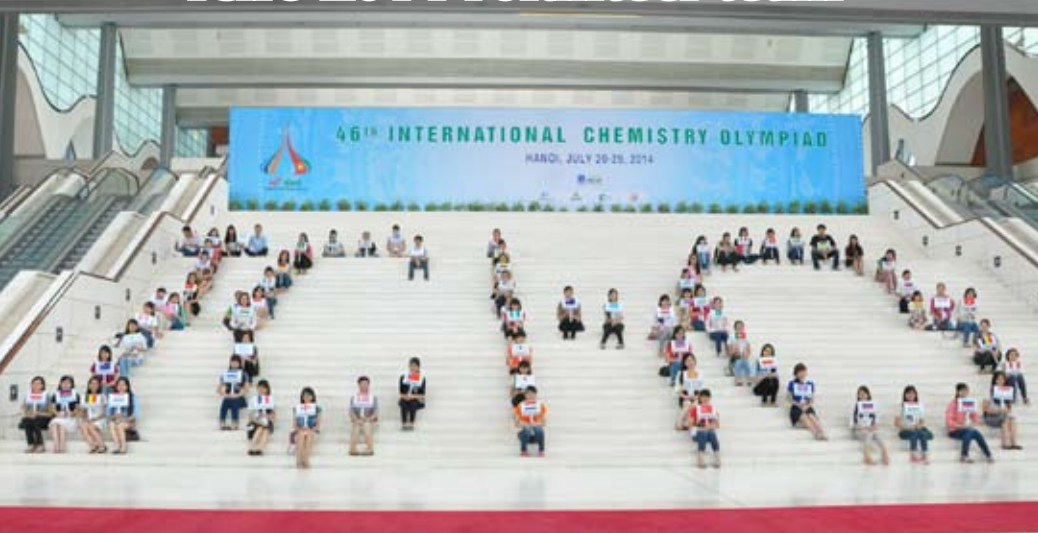
**5. The population density for Vietnam is 24.5 persons per sq km.**

The correct answer was False  
The population density for Vietnam is actually 224.5 persons per sq km.  
40% of players have answered correctly.



Wu Ruiheng  
China

## ICHO 2014 Volunteer team

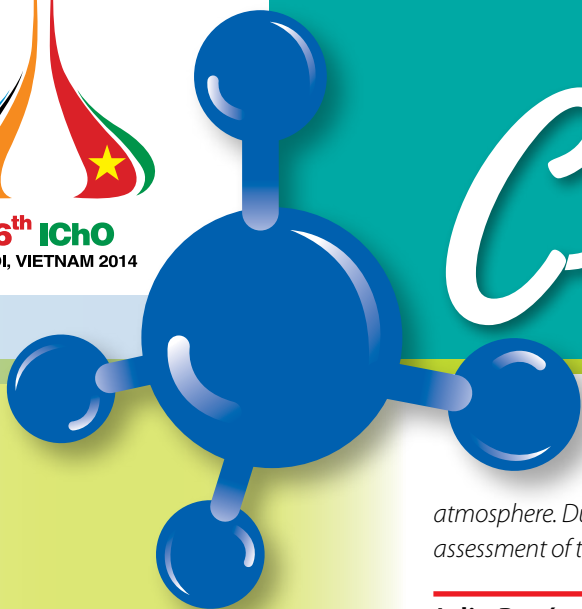


## Revise:

A Syria member brought the sweet melody of the holy "River flows in you" on stage.

(Mohammad Deeb Mandourah).





# Catalyzer

No.8 July 27, 2014

46<sup>th</sup>  
international  
chemistry  
olympiad

After five hard working days at Song Hong resort in Vinh Phuc province, all Head mentors and Mentors came back to Hanoi in the afternoon of July 25<sup>th</sup> to enjoy the cheerful Reunion Party. The party was full of joy in such a cozy but vibrant atmosphere. During that time, they shared some of their impressions on Vietnam as well as their assessment of the 46<sup>th</sup> IChO's problems.

## Peter Wothers - Chair of the IChO Steering Committee



**Interviewer:** As I know, you were here in Vietnam once, in January for assessing the initial preparation of the host. Besides, you also came earlier for the preparation of the 46<sup>th</sup> IChO. So, after a long time of monitoring the Olympiad, what are your comments on the preparation of Vietnam for IChO 2014?

**Peter Wothers:** Well, the preparation requires a long time to undergo. Vietnam had to consider both exam questions and logistics. Especially, to compile exam questions and make it interesting and pitch right to the caliber of the Olympiad needs lots of time. Both require several months of careful planning and preparation. Up to now, witnessing the event going on, I highly appreciate the efforts of Vietnam.

**Interviewer:** After two exams of theory and practice, how do you assess the exam questions this year?

**Peter Wothers:** In my opinion, the exam questions are very interesting. They inspire students and provide them chances to shine. These questions also show the specific characteristic of Vietnamese chemistry. Very nice!

**Interviewer:** Thank you for your answers. May you enjoy Hanoi for the rest of IChO 2014!

## Julio Benítez Castro - Head mentor of Uruguay



This is the first time I have been to Vietnam. In the first few days, I was not used to the weather, which is hot and humid and it

made me quite tired. I also have a positive impression of your country's preparations, everything so far has been very good. About the exam, from my point of view, it was a bit long and students needed more time to complete all the problems. They are all happy to have finished the exam and now they are ready to relax.

## Alireza Shayesteh - Mentor of Iran



This is the first time I've come to Vietnam. I think Vietnam is a good country with very fine nature. However, the food is

the only thing that I am not familiar with,

other things are fine. From my point of view, the questions for practical and theoretical exams this year were good. Actually, at first they are even longer but we shortened it in the jury meeting. My students did not solve all the problems, but they did not do bad so we're expecting medals but we don't know which colors they would be.

## Oyvind Jacobsen - Head mentor of Norway



I appreciate the way your country has hosted this competition. All my students have had a great time here and they would

like to come back. I also want to say

something about the exam. Generally, all the problems in the exam are suitable for students' ability. The practical exam is more appropriate for students. Although, my students could not finish all the theoretical problems, due to their length, they were all satisfied with this exam.

## Warnier Corentin - Mentor of Belgium

## Katrín Lilja Sigurðardóttir - Head mentor of Iceland



My first impressions on Vietnam are its hot weather and Vietnamese people are always smiling. I always try every kind of

Vietnamese foods, but sometimes it is

a little bit difficult because in every bite, I'm surprised. About the exam, I think the problems were long and not easy so if students were complaining I can understand why but it was designed on purpose to select the best contestants. It has to be pitched at a certain level so that there aren't too many gold medal candidates. This is normal.





# Hanoi Old Quarter The Pride of Hanoians



Hanoi, one of the oldest capitals in Asia, celebrated its 1000th Anniversary in 2010, and has been an eternal inspiration for generations of Hanoian artists. Despite housing countless shops and stalls, Hanoi's Old Quarter still retains its simple non-bustling traits.

Turning back the clock a few hundred years, Hanoi's Old Quarter was inherently an ancient metropolis where artisans from nearby villages surrounding the capital accumulated. At that time, the name of a product was used to name the street in which that product was traded. Even today, some of these streets still trade their traditional goods. For instance, "Thuốc Bắc" (Herbal Medicine) is now still a venue for patients to source herbs to treat their sickness, or "Hàng Bạc" (Silver Street) is still a credible address for ladies to look for some silver jewelries. However, through the many rises and falls of history, many streets no longer keep their original handicraft. Fortunately, commodities sold at those places now are still traditional ones. For example, Hang Bong & Hang Gai now trade in embroidered pictures, and silk products; Hang Trong is famous for fine art galleries, Hang Hom for lacquerware and bamboo products, and so forth.



Nonetheless, even for locals, it is challenging to remember which items can be found in which street. Yet, for foodaholics, finding the right street is usually more easy. In case you cannot remember where to go for a snack, here is some simple advice for foodies: Head to Cha Ca if you want some fish cakes (cha ca); appetizing sticky rice (xoi) at Nguyen Huu Huan; delicious Hanoian Pho at Ly Quoc Su; Bun Cha (Rice Vermicelli with grilled meat) at Hang Manh; fried Pho at Bat Dan; and various kinds of hot pot (lau) at Phung Hung, to name just a few.

Indeed, despite many changes, Hanoi's Old Quarter still preserves its role as the capital's trading center, just as it has for scores of generations.

## *Mentors visit Hanoi*

Yesterday morning, Saturday 26th July, almost all the teacher delegations joined the city tour and visited three of Hanoi's most famous tourist attractions: the water puppet Theater, Hanoi Citadel and the Temple of Literature.

It was the first time that many of the delegates had the opportunity to really enjoy water puppets; one of Vietnam's typical and outstanding traditional art forms. While the audience couldn't fully understand the show, thanks to the music, they could still follow the pace of the performance and enjoy it.



Afterwards, they had a quick look at the Ho Chi Minh Mausoleum and Hanoi Citadel. Finally, they had the chance to visit the oldest university in Vietnam: the Temple of Literature. They strongly admired its architecture - a peaceful and perfect place to nurture national talents who would soon could become the greatest leaders.

On the way between the venues, Uruguay's head mentor, Mr Julio Benítez Castro, was astonished by the number of motorbikes in Hanoi because he had previously thought that his country had plenty of motorbikes. But now he realized it was nothing compared to the quantity of motorbikes in Vietnam.





In the early morning of Saturday (July 26th), students departed from La Thanh Hotel to enjoy the beautiful rural scenes along the Hanoi – Ninh Binh highway, en route to the fascinating landscape complex of Tràng An - Bái Đính. This tourist area is both a scenic and religious complex covering a total area of 539 hectares, including both the ancient and the newly renovated Bái Dinh Pagoda, parks, caves and a system of lakes. It is once the ancient capital of Vietnam, and is now part of Ninh Binh province.

The old Bái Dinh Pagoda is located on the western slope of Dinh mountain, nestled in a quiet forest, while the new Bái Dinh Pagoda is on the other side of Dinh Mountain. With its incredible scenery and quiet atmosphere the old pagoda gives visitors the impression of being in a fantasy land where they can find peace in their minds. On the other hand, the new Bái Dinh Pagoda is famous for being the largest in Vietnam (if not Asia), with one of Asia's largest gold-plated copper statues.

As recently as June this year, Tràng An Scenic Landscape Complex was recognized by UNESCO as a mixed natural and cultural world heritage site, during the 38th session of the organization's World Heritage Committee in Doha. The site is endowed with 47 grottoes and caves, 31 valleys and the hallowed cultural area of Bái Dinh Pagoda.

The caves are dozens to hundreds of meters long and are often linked together by valleys, making the setting even more attractive and mysterious. Each cave has its own beauty with many stalactites in a profusion of colors, arousing visitors' imaginations.

Throughout the two-hour rowboat trip, students praised the amazing scenery in the colorful caves. Black coots were seen swimming, wild goats climbed freely in some of the mountain crevices, and the verdant rice paddies alongside the Sao Khe riverbank attracted participants to such an extent, that they could almost overlook the humid atmosphere before the rain.



# Trip to ancient Kingdom







## Today

	9am	10am	11am	12pm	1pm	2pm	3pm	4pm
Forecast	Rain	Cloudy	Rain	Cloudy	Cloudy	Cloudy	Rain	Rain
Temp (°F)	83°	86°	87°	89°	91°	90°	88°	87°
RealFeel®	96*	100*	100*	104*	106*	103*	101*	102*
Humidity	81%	74%	70%	64%	62%	64%	70%	75%

## Day 8: Sunday, 27 July 2014

06:30-08:00	Breakfast at La Thanh Hotel
08:15-08:30	Gather at hotel lobby
08:30-16:00	Excursion to West Lake Water park and Times City.
18:30-20:00	Dinner at La Thanh Hotel



**KARL ERIK LILLO**  
ESTONIA

# Happy Birthday

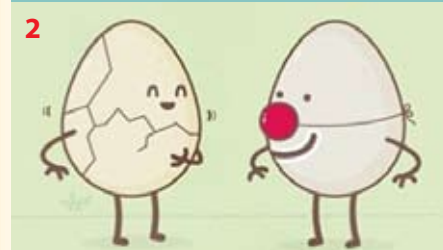
## QUIZ HUB

Find the English phrases to describe each picture

1



2



3



**Edwin Ariel Figueroa Vasquez**  
El Salvador:

*This is the first time I try this costume. Do I look same "Liên anh" (gentlemen) in "Quan ho" (a kind of traditional folk music)?*



**Yusuf Mert Demi Demilerk**  
Turkey

*Although I do not belong to this religion, I still feel great to be here today.*



**Árný Jóhannesdóttir**  
Iceland

*The boat here is so unique and strange. Besides, most of time I lie on it because of the low cave.*



**Macedonia**

*What a big pagoda with monumental architecture! I have never seen this before.*



## Cat - the silent inventor .....

In 1811, while the French chemist Bernard Courtois was working in the lab, his beloved cat was sitting on his shoulder. Then a loud and unexpected knock at the door scared the cat and it jumped down on the desk full of flasks carrying chemicals. One of these contained alcoholate of algae and another was filled with salt of iron. Two chemicals were unexpectedly mixed together, followed by a strong reaction with heavy smoke. From this "fortunate" accident, Bernard discovered a brand-new element, which was "iodine". Nowadays, everyone hears about iodine, but few people know that the naughty cat was a co-inventor of this element.

## KEYS FOR NO.7'S: C





# Catalyzer

No.9

July 28, 2014

**Worawan Bhanthumnavin**  
- *Observer from Thailand team*



It is really hard to predict how many medals Thailand team can get, but I hope that they would all get medals.

**Padmakar Ambadas Sathe**  
- *Head mentor of India*



After a few days in Vietnam for the first time, I really do enjoy myself. The food is in good quality, especially the seafood. However, I find the schedule for mentors are very tight and busy. About the problems, in my opinion, the problems for practical and theoretical exam are quite good actually. It can distinguish students very well.



## *The last jury meeting*

After a hard working day assessing the results of the practical exam, as well as the 3rd Jury meeting about the criteria to evaluate the students' answer sheets, the whole day (27th July) was spent discussing the marks of students with the author of the theoretical problems.

In the morning, the "arbitration" session was organized at the Daewoo Hotel, where the author worked with the marking committee to deliver the most optimal marks for students. However, many arguments arose from each country as a result of this process before their students' final score could be agreed. Representatives of each delegation came in and discussed the marks of their students, their opinions about the marks as well as the way that the students had answered the questions.

Every satisfactory explanation, which has been assessed by the author

and examiners, will give the students more chance to receive bonuses and improve their mark. Mrs Worawan, an observer from the Thai team, said that it is really hard to predict how many medals her team may get, but she hoped that they would all receive one. She complimented the authors and examiners for their well-organized and well-handled process, as well as their manner and comfortable attitude during the argument stage.

Tonight, all the delegations would have the last jury meeting to discuss the allocation of medals and the highest score. However, the list of medals would be kept secret until the closing ceremony, to ensure that the result is as objective as possible. The atmosphere is filled with the hope that each delegation will have earned the best results for their team. However, no matter the results, we hope they will all still be happy given that all tried their very best at this, the 46th IChO in Vietnam.



## New Sun Park & West Lake Water Park

Wanna break from the heat? Let's go to the New Sun Park & West Lake Water Park!!!

New Sun Park, an amusement complex with more challenging games than the usual merry-go-rounds found in downtown parks, includes rides such as the Giant Wheel or Thang Long roller-coaster, Octopus swing, Pirate ship, Super swing, Cable ferris swing, Bumper car, Giant ferris wheel.

Adjacent to the New Sun Park is the Water Park, a first rank attraction not only in Hanoi but also in Northern Vietnam. A huge amount was invested at the time to create this 35,560 m2 complex, the most modern facility in South East Asia at the time of its construction.



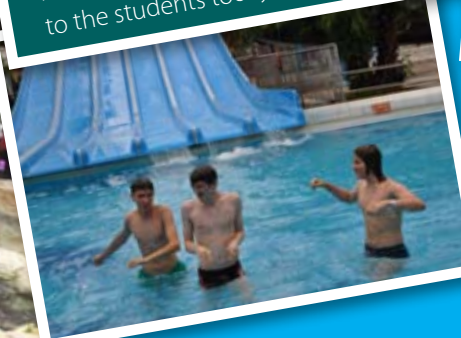
## Times City

The Vincom Mega Mall Times City in Hanoi boasts the country's biggest aquarium. More than 30,000 creatures from around the world, including rare ones, now call this place home. The new aquarium also boasts several species which can be seen in Vietnam for the first time, including penguins, huge Spider Crabs and Moon Jellyfish (*Aurelia aurita*).



Consisting of high-speed slides for individuals; black thrilling slides and carpet slides with a height of up to 14.5m, many water slides seemed to be one of the most exciting activities to the students today.

Artificial currents along the 450m long "lazy-stream" also attracted those who simply wanted to enjoy some relaxing moments. The gentle tide guides you around the park while sunbathing and sightseeing the poetic West Lake just outside the complex.







How many times have you fallen in love with the beautiful and charming Vietnamese girls in their Ao dai? Well, when thinking about Vietnamese women, we cannot ignore the importance of the Ao dai. Allow me to tell you a little of how wonderful and unique it is.

The Ao dai is a traditional costume, often worn at important or ceremonial occasions such as weddings and funerals or used as schoolgirl's uniforms. The first versions of the Ao dai date back to 1744 when Lord Vu Vuong Nguyen Phuc Khoat of the Nguyen Dynasty decreed that both men and women should wear similar trousers and gowns. During the 1960s, a garment shop called Dung in Sai Gon introduced a new version with raglan sleeves. This created a diagonal seam running from the collar to the underarm

and, fortunately this style could solve the most difficult problem in sewing the Ao dai: wrinkles under arms.

The Vietnamese Ao dai appears to be both traditional and modern. Its laps flow over wide trousers that brush the floor. The pants should reach the feet and also flow along the floor. Two-side splits in the gown make it comfortable to wear and easy to move in.

Amazingly, the color chosen represents different meanings. Young girls often wear pure white Ao dai on their way to school and back home to symbolize their purity. Only married and older women choose Ao dai in strong and rich colors, often with white or black pants. Nowadays, the Ao dai has become so popular that female staff in offices, especially at hotel receptions, wear them as uniforms.

The Ao dai has gradually changed over time. Its length has been cut shorter, often just below the knee. And some alterations such as a low-scooped neckline are now more common. Furthermore, colors are not rigidly controlled and there are many new types of fabrics. It seems that there is no more elegant and charming an outfit, that suits all Vietnamese women of different ages, than the Ao dai.

*Ao dai -  
accentuating  
the beauty  
of  
Vietnamese  
women*







Today	9am	10am	11am	12pm	1pm	2pm	3pm	4pm
Forecast	T-storms	Partly Cloudy	Partly Cloudy	Partly Cloudy	Partly Cloudy	Partly Cloudy	Partly Cloudy	T-storms
Temp (°F)	83°	85°	88°	90°	92°	90°	89°	86°
RealFeel®	99°	108°	110°	111°	113°	110°	107°	101°
Humidity	82%	77%	69%	63%	60%	63%	67%	77%

## Day 9: Monday, 28 July 2014

06:30-08:00	Breakfast at La Thanh Hotel
08:00-12:00	Free time
12:00-13:30	Lunch at La Thanh Hotel
13:45-14:00	Gather at hotel lobby. Transfer to National Convention Center
15:00-18:00	Closing Ceremony
18:30-20:30	Farewell Banquet at National Convention Center
20:30	Back to La Thanh Hotel



Iman Foroughmand  
Iran

# HAPPY BIRTHDAY

## FUN WAY TO THINK

Find the English phrases to describe each picture:



### Peru

Greeting from Peru team. As you can see we are wearing T-shirt with name of our country. Besides, there is an image of our traditional hat used in winter days.



### Singapore

We love Vietnamese "Phở" that is the reason why we choose T-shirt with the symbol of iPhở as our group's uniform.



### Finland

We are trying doing pottery for the first time. It's a bit difficult but we enjoy this.



### Hungary

Wow. Travelling by boat is so great. Especially, being boatmen is more awesome.

1



2



3



## KEYS FOR NO.8'S: "Fun way to think":

1. Take control
2. You crack me up
3. Just in case



## Laughing gas

Humphry Davy, a Cornish chemist discovered a unique and even odd physiological property of Nitrous oxide ( $N_2O$ ). Some people were skeptical of this result. Davy, thus, decided to announce his fascinating discovery in a ball full of noble families. When he brought a large pot to the ball, all gentlemen and ladies in gorgeous costumes had been waiting for him.

He opened the lid and an incredibly strange scene happened. The ladies laughed out loud uproariously, sweat broke out all over their bodies. Some aristocrats even jumped onto the tables and broke expensive crystal vases. Davy witnessed the scene, smiled and declared that this was Nitrous oxide, also called "laughing gas".





46<sup>th</sup>  
international  
chemistry  
olympiad

# Catalyzer

No.10

July 29, 2014



Congratulations  
to **the winners**

Award  
results





## Gold Medal

Sun Jiarui	<i>Singapore</i>
Roman Didenko	<i>Ukraine</i>
Pham Mai Phuong	<i>Vietnam</i>
Chen Xi	<i>Singapore</i>
Khokhlov Khrystofor	<i>Ukraine</i>
Lin, Chung-Yueh	<i>Taiwan</i>
Fukunaga Toshiya	<i>Japan</i>
Chang, Chien-Hsun	<i>Taiwan</i>
He Qilin	<i>China</i>
Richard John Goodwin Simon	<i>United Kingdom</i>
Hirbod Heidari	<i>Iran</i>
Furkan Bahar	<i>Turkey</i>
Mateusz Szczęsny Szczygieł	<i>Poland</i>
Bundit Diloknawarit	<i>Thailand</i>
Pham Ngan Giang	<i>Vietnam</i>
Štefan Stanko	<i>Slovakia</i>
Filip Maria Andreea	<i>Romania</i>
Eunsong Lee	<i>Korea</i>
Morian Sonnet	<i>Germany</i>
Andreev Yury	<i>Russia</i>
James Surya	<i>Indonesia</i>
Boltaev Bekhzodbek Matyoqub Ogli	<i>Uzbekistan</i>
Kuzin Sergei	<i>Russia</i>
Adam Přáda	<i>Czech Republic</i>
Sergey Zaytsev	<i>Russia</i>
Wu Ruiheng	<i>China</i>
Wojciech Łyczek	<i>Poland</i>
Robert Qihang Kao	<i>United States</i>



## Silver Medal

Maximilian Keitel	<i>Germany</i>
Sadykov Aleksei	<i>Russia</i>
Iman Foroughmand	<i>Iran</i>
Adil	<i>Kazakhstan</i>
Watchara Ouysinprasert	<i>Thailand</i>
Do Viet Hung	<i>Vietnam</i>
Xie Fangbai	<i>China</i>
Yu, Fu-Ray	<i>Taiwan</i>
Yen, Wei-An	<i>Taiwan</i>
Stojalnikova Violeta	<i>Lithuania</i>
Mandric Vlad Mihai	<i>Romania</i>
Brandon Tan Kai Jie	<i>Singapore</i>

Derek Schawn Wang	<i>United States</i>
Aliaksandra Radchanka	<i>Belarus</i>
Andrei Loika	<i>Belarus</i>
Stephen Zhouyu Li	<i>United States</i>
Oleh Hordiyshuk	<i>Ukraine</i>
Baturalp Yalçın	<i>Turkey</i>
Doan Quoc Hoai Nam	<i>Vietnam</i>
Calugaru Dumitru	<i>Romania</i>
Furkan Tozkoparan	<i>Turkey</i>
Andrew Chen	<i>United States</i>
Sirajuk Khongviwatsathien	<i>Thailand</i>
Borsik Gábor Bence	<i>Hungary</i>
Vladyslav Neshta	<i>Ukraine</i>
Samuel Jacob Alsop	<i>Australia</i>
Milosavljević Aleksa	<i>Serbia</i>
Grigaliunas Matas	<i>Lithuania</i>
Wibie Christianto	<i>Indonesia</i>
Hyunwoo Lee	<i>Korea</i>
Osaïd Muhammad Ather	<i>United Kingdom</i>
John Zhou	<i>Canada</i>
Murhekar Aniket	<i>India</i>
Wong Wen Jun Lawrence	<i>Singapore</i>
Martin Balouch	<i>Czech Republic</i>
Wonki Hong	<i>Korea</i>
Morita Shumpei	<i>Japan</i>
Zhang Lipei	<i>China</i>
Putu Ivan Budi Gunawan	<i>Indonesia</i>
Andrei Shved	<i>Belarus</i>
George Thomas Fortune	<i>United Kingdom</i>
Goel Shubham	<i>India</i>
Karol Jakub Rząd	<i>Poland</i>
Yusuf Mert Demirlenk	<i>Turkey</i>
Masada Koichiro	<i>Japan</i>
Plangger Immanuel	<i>Austria</i>
Chan Jer Yong	<i>Malaysia</i>
Ivan Stefan Bogdan	<i>Romania</i>
Abu Bakar Abdul Hamid	<i>Indonesia</i>
Mukhsumov Javlonbek Xusniddin Ogli	<i>Uzbekistan</i>
Forman Ferenc Sándor	<i>Hungary</i>
Sunghwan Won	<i>Korea</i>
Kiem Dominik	<i>Austria</i>
Meng Ying Ge	<i>Canada</i>
Mohammadparsa Jabbary	<i>Iran</i>
Nopsinth Vithayapalert	<i>Thailand</i>
Miroslava Palacková	<i>Slovakia</i>
Gelzinyte Elena	<i>Lithuania</i>
María Clara Llamosas	<i>Argentina</i>
Mohammadmobin Hosseini	<i>Iran</i>
Angyal Péter	<i>Hungary</i>
Gaxiola Lopez Julio Cesar	<i>Mexico</i>
Kristopher Torp Jensen	<i>Denmark</i>








## Bronze Medal



Kevin Wang	<i>Australia</i>
Mark Nicholas Yep	<i>New Zealand</i>
Robin Jules Quessard	<i>France</i>
Pupeza Alexandru	<i>Moldova</i>
Roman Staňo	<i>Slovakia</i>
Mihael Erakovic	<i>Croatia</i>
Hashim Nabeel M. Al Khunaizi	<i>Saudi Arabia</i>
Andrei Siamionau	<i>Belarus</i>
Babel Kushal	<i>India</i>
Hayashi Kyoka	<i>Japan</i>
Nešić Marko	<i>Serbia</i>
Juan Manuel Perez Bertoldi	<i>Argentina</i>
Rasmus Kisel	<i>Estonia</i>
Kumar Aditya	<i>India</i>
Leo Jiang	<i>Australia</i>
Leal Sanchez Edith Alicia	<i>Mexico</i>
Krajuškina Maria	<i>Estonia</i>
Georg Dieter Michael Benno Christoph Berger	<i>Germany</i>
Todd Tao Huang	<i>Canada</i>
Alejandro Salinas Illarena	<i>Spain</i>
Shlamovitz Ivan	<i>Argentina</i>
Espino Rodriguez Andres	<i>Mexico</i>
Isari Masuda	<i>New Zealand</i>
Ross Aaron Shillito	<i>New Zealand</i>
Beykov Pencho Boykov	<i>Bulgaria</i>
Anna Sylwia Fabich	<i>Poland</i>
Omar Fawaz I. Arafat	<i>Saudi Arabia</i>
Domagoj Lasic	<i>Croatia</i>
Blanco Santiago Francisco Saul	<i>Mexico</i>
Stephen Andrew Roche	<i>Australia</i>
Karl Erik Lillo	<i>Estonia</i>
Alejo Thomas Perlov	<i>Argentina</i>
Draksas Dovydas	<i>Lithuania</i>
Edwin Ariel Figueroa Vasquez	<i>El Salvador</i>
Valerio Lomanto	<i>Italy</i>
Koprivica David	<i>Serbia</i>
Mike Cornelis Wouter Marinus Pols	<i>Netherlands</i>
Wölflehner Tobias	<i>Austria</i>
Kevin Eiji Iwashita	<i>Brazil</i>
Eleftheriou Giorgos	<i>Cyprus</i>
Artur Souto Martins	<i>Brazil</i>
Edgars Klētnieks	<i>Latvia</i>
Mirza Muhammad Shujaat	<i>Pakistan</i>
Saad Fahad S. Albawardi	<i>Saudi Arabia</i>
Zhassulan	<i>Kazakhstan</i>
Guvanch Gurbandurdyev	<i>Turkmenistan</i>

Hugo Chao Cui	<i>France</i>
Katherine Louise Rolph	<i>United Kingdom</i>
Leong Sheng Yuan	<i>Malaysia</i>
Lorenzo Terenzi	<i>Italy</i>
Scott Xiao	<i>Canada</i>
Selaković Miloš	<i>Serbia</i>
Issam Alannouf	<i>Syria</i>
Anne Marie Omlor	<i>Germany</i>
Ymro Nils Hoogendoorn	<i>Netherlands</i>
Chan Song Moon	<i>Brazil</i>
Stanislav Chvíla	<i>Czech Republic</i>
Bruno Marinič	<i>Slovenia</i>
Theodor William Lundberg	<i>Denmark</i>
Lukas Severin Lüthy	<i>Switzerland</i>
Boltaev Boburbek	<i>Uzbekistan</i>
Karvonen Tuomas Aki Olavi	<i>Finland</i>
Rahimov Murad	<i>Azerbaijan</i>
Terzi Vladimir	<i>Moldova</i>
James Loke Wen Liang	<i>Malaysia</i>
Rodrigo Jose Mundo Dueñas	<i>El Salvador</i>
Sütő Péter	<i>Hungary</i>
Victor Xie	<i>New Zealand</i>
Deglan Jesus Rivas Romero	<i>Peru</i>
Kelvin Justiva	<i>Denmark</i>
Serikzhan	<i>Kazakhstan</i>
Isaeva Ezozakhon	<i>Uzbekistan</i>
Suárez Vásquez Michael Alexander	<i>Austria</i>
Elia Roei	<i>Israel</i>
Nejc Kejžar	<i>Slovenia</i>
Michaela Krákorová	<i>Czech Republic</i>
Khalid Maqbool	<i>Pakistan</i>
Temuujin Narankhuu	<i>Mongolia</i>
Mihkel Kotli	<i>Estonia</i>
Georgiev Kristiyan Krasimirov	<i>Bulgaria</i>
Mona Koder Hamid	<i>Sweden</i>
Shang Gary Jiarui	<i>Switzerland</i>
Mitrev Boris Valeriev	<i>Bulgaria</i>
Andrea Usenik	<i>Croatia</i>
Maarten Peter Sijm	<i>Netherlands</i>
Miguel Angel Aguilar Ramos	<i>El Salvador</i>
Duy-Martin Tat	<i>Norway</i>
Siddiqui Maheen Kausar	<i>Pakistan</i>
Bat-Orgil Batjargal	<i>Mongolia</i>
Jakub Obuch	<i>Slovakia</i>
Aydogdy Bazarov	<i>Turkmenistan</i>
Ritums Cepītis	<i>Latvia</i>



	Quantity	%
 Gold	28	9.62
 Silver	63	21.65
 Bronze	92	31.62



#### EDITORS:

Nguyễn Quang Hưng  
Nguyễn Tiên Giang  
Phan Tuấn Nghĩa

#### JOURNALISTS:

Phạm Thùy Dương  
Phạm Thu Hằng  
Đặng Thị Thu Hiền  
Nguyễn Thu Huyền  
Nguyễn Ngọc Ly  
Bùi Minh Đức  
Nguyễn Thị Minh  
Ngô Thị Thu Ngân  
Trịnh Ngọc Quỳnh  
Nguyễn Thị Thùy Trang  
Phạm Thu Trang

#### DESIGNER:

Lê Thế Minh

*"No one can hold hands with*

*each other forever", so goes a Famous Vietnamese idiom. And so today our 46th IChO journey has come to an end, although the memories will last in our minds for a very long time.*

*The Catalyzer team would like to send our heartfelt thanks to all of you. First and foremost, we would like to thank the*

*organizing committee and steering committee for creating such a wonderful opportunity for us all to work together. Secondly, to all the mentors and students from 77 countries and territories from around the world – we would like to send our thanks to you for joining IChO 2014 and for your enthusiastic cooperation. Last but not least, to the more than 100 volunteers including guides, the bulletin team and general assistants – your roles as a 'bridge' connecting all the participants and us is very much appreciated.*



**PHÂN BÓN  
PHÚ MỸ**  
Cho mùa bội thu

