Japan-Asia Youth Exchange Program in Science

SAKURA Science
High School Program
Activity Report 2016
SAKURA Science High School Program
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The SAKURA Exchange Program in Science (SSP) aims to nurture the interest in science and technology among young people (high school students and adults under 41 years old) in Asia, by improving their levels of knowledge in these fields so that they may contribute to the development of their home countries and Asia. We expect to achieve these objectives by inviting these people to our country and providing them access to Japan’s science and technology.

This project takes the form of a grassroots movement, with Japanese universities and research institutions initiating the invitation to members of Asian universities and research institutions. We hope this approach will help establish and strengthen collaborative relationships, increase the number of supporting institutions in Japan, and result in more active exchanges in science and technology across Asia.

However, as it would be difficult for high school students to operate a grassroots movement, JST has become the organizer, or receiving institution, for the “SAKURA Science High School Program (SSHP)” to invite and receive visiting students in Japan.

Our intent in designing this program was to help nurture Asian high school students’ dream of becoming scientists, and we have made every effort to prepare the best program in Japan toward this goal.

First, students have an opportunity to experience Japan’s cutting-edge technology at institutions. Second, the aspiring scientists can meet and receive encouragement from leading researchers in Japan. Third, students visit the campus and laboratories at prestigious universities, to learn about the educational environment and atmosphere of scientific institutions in Japan.

Each year, excellent Asian students respond to our call for participation, from students of leading high schools to winners etc. of mathematics contests. These students are the future leaders of their respective home countries. It was a surprise to the lecturers at SSHP, including Nobel Prize recipients, that the students actively asked highly advanced questions in English. The students also had lively discussions with students at the high schools and universities that they visited. These high school students forged friendships across borders and inspired Japanese students in the process as well.

We conducted a survey of the participating students and discovered the following:
1. A majority of the students regarded Japanese research as advanced and recognized the prominence of Japanese universities.
2. A majority of the students were surprised by the kindness of the Japanese people, the cleanliness of the cities, and the sophistication of the culture, and were impressed with Japan and its people.
3. A majority of the students valued the lessons from the Nobel laureates concerning the difficulties of continuing experiments and research, the importance of becoming fond of performing research, never letting go of the dream of becoming a researcher, and being confident and proud as an Asian, remarking that such encouragements left deep impressions.

As a young program, some insufficiencies remained in our program offerings, but we believe that our goal was largely accomplished with the warm assistance of program supporters. We would like to express our sincere appreciation for all those who were involved in its implementation.

SSP is designed to be beneficial for science and technology in Asia. At the same time, we realize that it is also a multifaceted program that provides substantial contribution to the internationalization of Japan. We hope to build on our past experiences as we continue to improve the program with your support.
Message to the Students from Dr. Toshihide Maskawa

Director General, Kobayashi-Maskawa Institute for the Origin of Particles and the Universe, Nagoya University

Toshihide Maskawa

The SAKURA Science High School Program is in its fourth year as of 2017. Dr. Toshihide Maskawa (2008 Nobel Laureate in Physics; Director General, Kobayashi-Maskawa Institute for the Origin of Particles and the Universe, Nagoya University) has supported us from the very beginning by hosting special classes and other activities. This is a message from Dr. Maskawa to the high school students who participate in this program.

**********

The Asian high school students who visit Japan through the SAKURA Science Program have undergone a strict selection process, and my impression is that they are all extremely sharp and accomplished. I myself did not have the best grades when I was younger. I remember one incident in middle school, where I mispronounced the English word “money” as “mo-neh” (Japanese slang for “no more”). The entire class laughed at me, and English became my least favorite subject from then on.

I later put everything into studying for university entrance examinations, as I wanted to research elementary particles theory with Dr. Shoichi Sakata at Nagoya University. I figured that even if I scored zero on the English exam, things would work out if I compensated for it with excellence in science and mathematics. So I gave up on English but somehow managed to be accepted into the university. I continued to struggle with English throughout my life but have been helped by my professors and friends in situations where English would be needed.

In Japanese, the origin for the word “study” comes from “forcing yourself to do something that you are hesitant to do.” On the other hand, the English word study comes from the Latin term studium, meaning “passion, enthusiasm.” I believe that studying is essentially something you should do with enthusiasm. I was entirely devoted to mathematics and physics, and I tried to pursue anything that caught my attention. It is extremely important to pursue something with passion.

I also love discussions, because by throwing out your own theory, you may be able to correct your own way of thinking. My mentor, Dr. Shoichi Sakata, also encouraged his students to take an active part in discussions. I still have the words of Dr. Sakata up on the wall of my laboratory:

Those who lend their ears are bright
Those who believe prejudice are dim

Here is the meaning:
(Those who listen to the opinions of others are wise
Those who only believe in prejudiced opinions are ignorant)

I strongly would like high school students to mingle with other people who have different opinions, but hold your own opinions and decide what to do in the future.
Outline of the SAKURA Science High School Program 2016

Sakura Science High School Program started in 2014 as one of the programs in Sakura Exchange Program in Science, and the year 2016 was the 3rd year for the program.

In the fiscal year of 2016, the SAKURA Science High School Program invited 1,176 highly talented high school students from 34 countries and regions belonging to Asia and Pacific island countries.

The students came to Japan in eight groups and participated in a diverse set of programs over seven days and six nights, including special classes run by leading Japanese scientists (including Nobel laureates), visits to prominent universities and research institutions, mingling with Japanese high school students, and Japanese cultural learning experiences.

Participated high school students renewed their impressions about Japan after experiencing Japanese science and technology and culture, and went back to their home countries. Every year, many students who participated Sakura Program came back to Japan as a student or researcher etc., and its number is increasing.

Hopefully, Sakura participants devote themselves into study and research more and become the science leaders of Asia in the future.

<table>
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<tr>
<th>Area</th>
<th>Country or Region</th>
<th>Students</th>
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<td>Solomon Islands</td>
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<tr>
<td></td>
<td>Tonga</td>
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<td>Total</td>
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<td>989</td>
<td>187</td>
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Number of Participants by area

(Unit:person)
On the afternoon of Friday, April 15, 2016, 11 high school students (*) from 4 Asian countries in Group 1 of SAKURA Science High School Program 2016, and 4 supervisors made a courtesy visit to Mr. Hiroshi Hase, the Minister of Education, Culture, Sports, Science and Technology. (*11 students: 2 from Cambodia, 4 from India, 2 from Laos, 3 from Vietnam)

Each of the visiting students and supervisors stated their impressions of the program to Minister Hase, including those regarding their visits to the universities and research institutions, as well as comments concerning their participation in Nobel Laureate Dr. Hideki Shirakawa’ s experiment class.

Minister Hase responded, “I think programs like the SAKURA Science High School Program, which allow youth to experience the science, technology, and culture of other countries, are highly valuable. Learning more about other countries can help increase the motivation to improve yourself and will provide an opportunity to strengthen pride in your home country as well.”

After taking commemorative photographs, Minister Hase warmly shook hands with each of the students and gave passionate words of encouragement.

Minister Hase receiving a bouquet from an Indian student
Group 1
Activity Report

| Schedule |
|-----------------|---------------------------------|
| April 10 (Sun.) | Arrive in Japan  
Orientation (India, Laos) |
| April 11 (Mon.) | Orientation (Cambodia, Vietnam)  
Visit Japan Agency for Marine-Earth Science and Technology at Yokosuka HQ  
Visit Kamakura |
| April 12 (Tues.) | Visit Tamagawa Academy Upper Secondary Division; meet with Dr. Toshihide Maskawa |
| April 13 (Wed.) | Visit Universities  
Team A: Visit Tokyo University of Science; experiment class with Mr. Yoshiharu Yamada  
Team B: Visit Shibaura Institute of Technology; experiment class with Dr. Hideki Shirakawa |
| April 14 (Thur.) | Visit National Museum of Emerging Science and Innovation  
Visit Edo-Tokyo Museum |
| April 15 (Fri.) | Visit Universities (Team A: University of Tokyo; Team B: Keio University)  
Visit Mr. Hiroshi Hase, Minister of Education, Culture, Sports, Science and Technology (11 students only)  
Closing ceremony and farewell party |
| April 16 (Sat.) | Leave Japan |

Activity Report

* April 12 (Tues.) Visit Tamagawa Academy Upper Secondary Division; meet with Nobel laureate Dr. Toshihide Maskawa

Group 1 members visited Tamagawa Academy Upper Secondary Division, a designated Super Global High School (SGH) and Super Science High School (SSH), and interacted with its students.

Eight booths set up in the gym introduced Japanese culture through activities such as origami paper folding, calligraphy, manga comics, and traditional toys of Japan. Origami was particularly popular, and many students sat in a circle in the gym, exclaiming in delight as a paper crane was completed.

In the afternoon, students met with Nobel laureate Dr. Toshihide Maskawa. Dr. Maskawa passionately stated, “It is important to have yearning and aspiration when you are young. I hope you will embark on a fearless life journey to this end.”

In addition, he encouraged the students by giving them tips on problem-solving methods. “When you face a setback, determine whether you are at the point where you are able to resolve it. If you are not, analyze the problem, identify what skills are necessary to solve it, and step back from it for a while. Then when you gain the skills to solve it, you will remember the issue immediately and resolve it. This method helped me during my own research.”

(SV: Supervisor)
April 13 (Wed.) Visit Tokyo University of Science; experiment class with Mr. Yoshiharu Yamada

The 78 students of Group 1 visited Tokyo University of Science (Kagurazaka Campus). After viewing a video that introduces the university, they then toured the Math Exploratorium on campus. The students, true to their interest in science, seemed fascinated by the various apparatus that visualized mathematical theories. They asked the instructor many questions and were immersed in the world of mathematics.

In the afternoon, the students enjoyed an experiment class at the university lecture hall. The instructor for the class, titled “Science is exciting!” was Mr. Yoshiharu Yamada of Osaka Municipal Ikuno Technical High School. Using everyday objects like plastic straws, plastic cups, and toothpicks, the students worked on seven different experiments. They spent an enriching time with mysterious and engaging experiments, like spraying boiled water on their hands and noticing how cold it felt, as well as using the CCD camera on a smartphone to view infrared light through cola.

April 13 (Wed.) Visit Shibaura Institute of Technology; experiment class with Dr. Hideki Shirakawa

Team B visited the Shibaura Institute of Technology and learned about the university and its international program from Prof. Tachibana at the Center for Promotion of Educational Innovation. He also explained that the research building, which was a symbolic structure on the Toyosu campus, was shaped like a gate to symbolize the institution as a “gateway to your future dreams.”

In the afternoon, the students participated in an experiment class taught by Dr. Hideki Shirakawa (Nobel Prize in Chemistry in 2000). The experiment would be deemed a success if the students were able to conduct electricity by manipulating the experimental material and make the material light up. Exclamations of delight were heard as one team after another successfully completed the experiment.

April 15 (Fri.) Visit University of Tokyo (Team A), Keio University (Team B)

Team A visited the Institute of Industrial Science (IIS) at the University of Tokyo. After a lecture regarding IIS, the students visited three laboratories. The first was the shared laboratory, where the students observed virtual experiments using driving simulators, a new single-rider vehicle, and the development of personal mobility vehicles (PMV).

Next, they visited the Social Big Data ICT Collaborative Research Center, where they explored how big data could be analyzed in real time as they are uploaded en masse onto SNS and other services, using actual submissions of Tweets from the Great East Japan Earthquake as an example.

The last place they visited was a “laser sintering” research facility. The students were introduced to cutting-edge technology that uses adhesion to materialize the shape of an item based on three-dimensional data, allowing more efficient production of detailed and complex prototypes, including artificial legs for the disabled.

On the same day, Team B visited Keio University Yagami Campus. After listening to an explanation regarding the Faculty of Science and Engineering and international programs, they toured campus facilities such as research offices, laboratories, and media center. They also mingled with international students who were currently enrolled at the university.

Participant Impressions

Mr. David Eang (Cambodia)
As we visited various places in Japan and had new experiences, I realized that Japan has not only cutting-edge science and technology, but also a long history and rich culture. I was fortunate to visit Japan.

Mr. Manghat Spinath Nair (India)
We received a warm welcome in Japan that reminded me of a saying in my country: “Welcome guests like gods.” With the supports from the people who worked in and behind the program, we had a wonderful stay in Japan. I would like to boast about my experiences in Japan to everyone back home.

Ms. Thipphaphone (Laos)
Through our meeting with Dr. Hideki Shirakawa and Director Mamoru Mohri of the National Museum of Emerging Science and Innovation, I learned that it is important to “have confidence and never give up in the face of adversity to accomplish our dreams.”

Ms. Hoang Huong Thao (Vietnam)
While participating in the High School Program, we learned the importance of not only cutting-edge science, but also teamwork. This weeklong trip helped broaden our perspectives. My experience in Japan will be a memory I would never forget.
**Group 2 Activity Report**

**Schedule**

<table>
<thead>
<tr>
<th>Date</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>April 17 (Sun.)</td>
<td>Arrive in Japan, Orientation</td>
</tr>
<tr>
<td>April 18 (Mon.)</td>
<td>Visit JAMSTEC Yokosuka HQ  &lt;br&gt;Visit Kamakura</td>
</tr>
<tr>
<td>April 19 (Tues.)</td>
<td>Visit Embassy of India in Japan (limited to people from India)  &lt;br&gt;Visit Universities  &lt;br&gt;Team A: Visit Tokyo University of Science; lecture by Dr. Jin Akiyama  &lt;br&gt;Team B: Visit Shibaura Institute of Technology; experiment class with Dr. Hideki Shirakawa</td>
</tr>
<tr>
<td>April 20 (Wed.)</td>
<td>Visit National Museum of Emerging Science and Innovation, Kitasato Institute, Kitasato University (meeting with Dr. Satoshi Omura)</td>
</tr>
<tr>
<td>April 21 (Thur.)</td>
<td>Visit Shibuya Junior &amp; Senior High School</td>
</tr>
<tr>
<td>April 22 (Fri.)</td>
<td>Visit Universities (Team A: University of Tokyo; Team B: Keio University)  &lt;br&gt;Closing ceremony and farewell party</td>
</tr>
<tr>
<td>April 23 (Sat.)</td>
<td>Leave Japan</td>
</tr>
</tbody>
</table>

**Activity Report**

**April 19 (Tues.) Mathematics magic show by Dr. Jin Akiyama of the Tokyo University of Science.**

The 71 students of Team A visited the Tokyo University of Science. After visiting the Math Exploratorium and Museum of Science, they participated in a mathematics class with Dr. Jin Akiyama in the afternoon. Dr. Akiyama welcomed the students in his usual style, with his long hair wrapped in a bandana. He quoted the English poet William Blake: “The cistern contains; the fountain overflows,” encouraging the students to not only retain knowledge, but also display creativity.

The students experienced the world of topology in an activity where they used thin paper tape to create shapes by combining squares and hearts. They enjoyed 15 demonstrations, including a number-guessing quiz using binaries, while learning about the theories and logic of mathematics. It was a three-hour mathematics magic spectacle.

**April 20 (Wed.) Visit Kitasato Institute and Kitasato University, meeting with Dr. Satoshi Omura, Professor Emeritus (Nobel Prize in Physiology or Medicine in 2015)**

On April 20, Team A visited the Kitasato Institute and Kitasato University in Minato Ward, Tokyo. At Kitasato University, the students visited facilities such as the Laboratory of Bioorganic Chemistry and Graduate School of Infection Control Sciences, and listened to Dr. Toshiaki Sunazuka describe his research. The Sunazuka group is conducting research on the use of natural chemical substances produced by microorganisms, in active collaboration with other universities and...
companies. He described the activities of their research group, pointing to educational opportunities in the future.

After the campus tour, it was finally time for the students to meet with Nobel laureate Prof. Satoshi Omura. Dr. Omura explained, “This is the very place where Ivermectin, the remedy for Onchocerciasis (river blindness), was born.” He received enthusiastic applause from the people when he concluded by saying, “This medicine is extremely potent for Strongyloidiasis as well, which is prevalent in East Asia.” The visit to Kitasato University ended with a commemorative photograph with Dr. Omura.

April 21 (Thur.) Meeting with students of Shibuya Kyoiku Gakuen Senior High School

On April 21, Group 2 visited Shibuya kyoiku Gakuen Senior High School in Shibuya Ward, Tokyo. They participated in a campus tour upon arriving and being divided into small groups. They visited classrooms where classes were being held as normal, and were able to observe how Japanese high school students studied mathematics and chemistry.

One of the students from Indonesia attended a math class, and tried to solve a question written on the blackboard together with Japanese students. A Bangladeshi student jointed a chemistry class said, “We usually learn from the textbook, but here, students can learn from experiments. That’s really great.”

The students then gathered in the gymnasium to participate in a “newspaper tower contest.” Each group was given 10 pieces of newspaper, and the group that created the highest tower was the winner (glue, tape, and scissors were banned).

Each group first started to discuss what kind of tower they were going to build. Some students drew their idea on a piece of paper to explain to their team members. Even if the tower was going to be so high, it could be bent if its structure wasn’t strong enough.

Time past so quickly. The winning group created a tower that was 392 centimeters high, while the lowest was only six centimeters. (The lowest one seemed to be collapsed in the middle of building time.)

The session ended with a commemorative group photograph, and the participants left the high school with reluctant goodbyes.

Participant Impressions

Ms. Zufa Iqbal (India)
During our stay in Japan, we were able to meet with prominent scientists and researchers from universities and research institutions. I learned from them that it is important to make persistent effort and continue to devote ourselves to our individual subjects.

Mr. Alif Muhammmad Sudarmanto (Indonesia)
We learned that after Edo was built by an individual Shogun, the city later developed to become the modern and technologically advanced city of today, despite significant losses in a massive earthquake and air strikes. I understood that cutting-edge science and technology can grow even from nothing.

Ms. Jarin Anan Ridika (Bangladesh)
Through visiting different places in the program, I learned the importance of “creativity.” Even when looking at a traffic signal, I felt that various things can be invented as long as there is creativity, which would then lead to the development of science and technology.

Ms. Pueblos Luchin Valrian (Philippines)
The best memory from this trip was that I was able to become friends with high school students from other countries. Our bond became stronger as we laughed, learned, and were inspired by the same experiences. These memories will live in my heart forever.
## Schedule

<table>
<thead>
<tr>
<th>Date</th>
<th>Activity</th>
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<tbody>
<tr>
<td>May 8 (Sun.)</td>
<td>Arrive in Japan, Orientation</td>
</tr>
<tr>
<td>May 9 (Mon.)</td>
<td>Visit Japan Agency for Marine-Earth Science and Technology (JAMSTEC) at Yokosuka HQ</td>
</tr>
<tr>
<td></td>
<td>Visit National Museum of Emerging Science and Innovation</td>
</tr>
<tr>
<td>May 10 (Tues.)</td>
<td>Visit Chiba Prefecture Kashiwa High School</td>
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<tr>
<td></td>
<td>Visit University of Tokyo (meet with Professor Takaaki Kajita)</td>
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<tr>
<td>May 11 (Wed.)</td>
<td>Team A: Visit Tokyo University of Science; lecture by Dr. Jin Akiyama</td>
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<td></td>
<td>Team B: Visit Shibaura Institute of Technology; experiment class with Dr. Hideki Shirakawa</td>
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<tr>
<td>May 12 (Thur.)</td>
<td>Visit Sony ExploraScience</td>
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<td>Visit Kamakura</td>
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<tr>
<td>May 13 (Fri.)</td>
<td>Visit Universities (Team A: Tokyo Institute of Technology; Team B: Keio University)</td>
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<td>Closing ceremony and farewell party</td>
</tr>
<tr>
<td>May 14 (Sat.)</td>
<td>Leave Japan</td>
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## Activity Report

### May 9 (Mon.) Visit the Japan Agency for Marine-Earth Science and Technology (JAMSTEC)

The students of Group 3, who had just arrived in Japan the day before, visited the Japan Agency for Marine-Earth Science and Technology (JAMSTEC) at its Yokosuka headquarters in Yokosuka City, Kanagawa Pref. After being introduced to the facilities within the headquarters, they participated in a tour of the facilities.

The Marine Science Museum featured the Manned Research Submersible “Shinkai 6500,” which can dive 6,500 meters down the ocean depths. A full-scale model was displayed in the exhibit room. It was possible to go into the cockpit, so the students went in one by one, and took photos pretending to be the pilots. Models of marine life could be seen from the cockpit window, so the students could experience the simulation of an actual deep-sea investigation.

At the hyperbaric chamber building, the group viewed an apparatus that could simulate the water pressure in the deep sea. The apparatus could simulate water pressure of an environment of up to 15,600 meters deep. It is used for pressure tests of investigative equipment and material. The staff also used instant noodle cups for a demonstration of what the water pressure environment in the deep sea is like, and students saw that a regular-sized container shrinks down to the size of a small sake cup under pressure at 1,000 meters deep. Every student seemed fascinated at being able to see something that they only knew about through books.

### May 10 (Tues.) Visit Chiba Prefecture Kashiwa High School and meet with Japanese students

Kashiwa High School is a designated Super Science High School (SSH), which has a science and mathematics track that provides specialized education on science and mathematics. On this day, the students from Asia were welcomed with applause by the Japanese students, and they then viewed a video on annual school events, including the culture festival and sports day.

After the viewing, the students were divided into groups, and waited for the opportunity to interact with the Japanese students. Following introductions, they enjoyed a variety of games that were prepared by the Kashiwa students themselves, including playing cards, origami, musical chairs, and kendama (cup-and-ball game).

While the students initially seemed hesitant to approach each other, the room eventually filled with exclamations of delight, and the students enjoyed their international
Some Japanese students shared homemade lunches during lunchtime. Although it was a short visit, the students from Asia were able to have a taste of the high school experience in Japan.

**May 10 (Tues.) Nobel laureate Dr. Takaaki Kajita introduces the Institute for Cosmic Ray Research at the University of Tokyo**

On this day, the Asian students visited the Institute for Cosmic Ray Research (ICRR) at the Kashiwa campus, University of Tokyo. The Director of the center is Dr. Takaaki Kajita, who was awarded the Nobel Prize in Physics in 2015. Dr. Kajita was able to meet the students despite his completely packed schedule, and the students waited for his arrival with anticipation.

“Hello everyone!” The students stirred as Dr. Kajita breezily entered the room. He promptly began introducing the ICRR. He provided an overview of the research center, explaining, “The Institute for Cosmic Ray Research is located here on the Kashiwa campus, but there are four observation facilities and bases respectively within and beyond Japan, including the Super-Kamiokande. We are conducting observations and research on cosmic rays from various angles.”

Time flew by as students actively asked questions, such as “How will cosmic ray research help our daily life?” and “What is the speed of the neutrinos?”

After the ICRR, the students were introduced to the Atmosphere and Ocean Research Institute at the University of Tokyo. With Professor Hiroyasu Hasumi acting as facilitator, three project researchers from each of the “Dynamic Marine Meteorology,” “Behavior, Ecology and Observation Systems,” and “Marine Microbiology” groups presented their research with slides. The presentations were visually compelling, perhaps because all of their researches were based on field study, and the students seemed to be highly interested. They asked many questions, and spent an enriching time.

**May 13 (Fri.) Visit Tokyo Institute of Technology Ookayama Campus**

At the Tokyo Institute of Technology, the students were first introduced to the university and its international programs, and then went on a tour of the campus. A particularly notable facility was the Environmental Energy Innovation Building (EEI), where cutting-edge research in environmental energy technology is being conducted. Their energy derives from the 4570 solar panels installed on the building, which allows the building to be nearly entirely self-sufficient from electricity, decreasing carbon dioxide emissions by 60% and alleviating the cause of global warming. The students seemed overwhelmed by the world-class exterior of the environmentally friendly building.

After learning about the ecosystem and fuel cells, and touring the research facilities for solar power technology and other advanced technology, the students passionately asked questions as they imagined how they would apply what they saw in their home countries. During the lunch mixer with current international students, the high school students were able to learn about campus life and the cultures of different countries.

**Participant Impressions**

**Ms. Mondal Rimi (India)**

Thanks to the SAKURA Science Program, I was able to have an unforgettable experience. It was wonderful to meet with prominent scientists to learn about their research, and experience the city of Tokyo.

**Mr. Muhammad Nabhan Bin Kamrarudzman (Malaysia)**

I felt honoured and grateful to be in Japan. I believe that I can apply the experiences and knowledge that we gained in Japan to my own studies, and hope I will be able to contribute to the development of Asia in the future.

**Ms. Phoo Pwint Khaing (Myanmar)**

How could I possibly express my happiness of being able to participate in this program? I am from a small village in Myanmar, and Japan was a place that I could only experience through anime and movies. After visiting the country in person, I found it to be even more amazing than I had imagined.

**Ms. Lee Nien-en (Taiwan)**

Dr. Jin Akiyama of the Tokyo University of Science looked somewhat like Einstein, and his class was unique. He taught us that mathematics can be found everywhere in our daily lives, and his passion towards the subject was tangible.
Group 4
Activity Report

Schedule

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<td>July 4 (Mon.)</td>
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<td>Visit Kamakura</td>
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<td>July 5 (Tues.)</td>
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<td></td>
<td>Team A: Visit Tokyo University of Science; mathematics class with Dr. Jin Akiyama</td>
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<td>Team B: Visit Shibaura Institute of Technology; experiment class with Dr. Hideki Shirakawa</td>
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<td>July 6 (Wed.)</td>
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<td>Meet and experience Japanese culture with students of the Affiliated Upper Secondary School, Nagoya University</td>
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<td>Visit Edo-Tokyo Museum and Akihabara</td>
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<td>Tour of Tokyo city (including the Imperial Palace)</td>
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<td>July 9 (Sat.)</td>
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Activity Report

July 5 (Tues.) Visit Tokyo University of Science Kagurazaka Campus

The students in Group 4 were divided into two teams, and the teams respectively visited the Tokyo University of Science Kagurazaka Campus and the Shibaura Institute of Technology Toyosu Campus. The group that visited the Tokyo University of Science first received a welcome by specially appointed Professor Tamotsu Shinotsuka of the Center for Promotion Internationalization. Professor Shinotsuka encouraged the selected students with these words: “It is a very special opportunity to be able to participate in a program like this. I hope that your experience during the program will be enriching for you.”

July 5 (Tues.) Math Spectacle Show with Professor Jin Akiyama

In the afternoon, Team A, which visited the Tokyo University of Science, took part in the Math Spectacle Show led by Professor Jin Akiyama. When Prof. Akiyama arrived, he attracted the attention of the students from the very beginning.

Prof. Akiyama first showed a magic trick in which he created a heart shape with red and pink pieces of paper. While the demonstration seemed easy, many students struggled to reproduce the same results, and those who successfully created the shape proudly showed it to their friends.

Next, Prof. Akiyama demonstrated how a trigonal pyramid could be cut by scissors, made into a plane, and connected them like a jigsaw puzzle. He also demonstrated reverse-transformation solids, showing how a truncated octahedron with a drawing of a pig could be rotated to flip the surface inside out and transform it into a rectangular parallelepiped to look like a piece of ham.

Prof. Akiyama also led a game where students would guess a number based on logic, demonstrated his patented drill that creates triangular and square holes, and explained how triangle tires could run smoothly. The participants left the show with lingering excitement over a math class that was worlds-apart from what they were used to.
July 5 (Tues.) Visit Shibaura Institute of Technology Toyosu Campus

Seventy-two students of Group B visited the Toyosu Campus, Shibaura Institute of Technology on this day.

In the brand-new school building that was constructed in 2006, walls of the corridor side are made with glass, so the class activity at each classroom could be seen from corridors. Asian high school students sat foot in the school building that is full of design characteristics and felt the atmosphere of the class immediately, and they looked tense, but excited.

At first there was orientation by Specially-Appointed Professor Tachibana of the Education Innovation Promotion Center. and he explained the general information of the university. All high school students listened to the explanation attentively and seriously while taking a memo. At the questions and answers session, many questions were asked, such as about entrance examinations for foreign students, tuition fees, and scholarships etc. It seemed the Asian high school students’ interests in studying abroad are very high.

After the orientation, the students were divided into small groups, and went for the campus tour. They observed the laboratories in the campus etc., and looked having fun chatting with the guide student.

During the lunchtime, the Asian students had an opportunity to hear a voice from foreign students about campus life, and it seemed to be a good chance for Indian and Chinese students to make a vision in their future clearer by exchanging information with the students who are from the same country.

July 6 (Wed.) Visit Nagoya University, discussion with Nobel laureate Professor Toshihide Maskawa

On this day, the students left the hotel early in the morning to take the bullet train to Nagoya. At Nagoya University, they participated in a discussion with Dr. Toshihide Maskawa (2008 Nobel Prize in Physics, Director General of the Kobayashi-Maskawa Institute for the Origin of Particles and the Universe). Vice President Hideyo Kunieda was kind enough to participate as a moderator, and he began the discussion as a conversation between himself and Professor Maskawa.

When asked “Why did you decide to study elementary particle physics?” Prof. Maskawa responded, “I became interested when I read an article on elementary particle physics by Nagoya University Professor Shoichi Sakata. My father was opposed to my desire of going to university but allowed me one chance to take the entrance exams. I studied desperately and was accepted into Nagoya University, where I began doing research at Prof. Sakata’s laboratory.” In addition, he explained that he had the idea of the Kobayashi-Maskawa matrix, which parameterize six types of quarks, when he was about to get out of his bathtub. His explanations were in terms understandable to high school students.

Prof. Maskawa responded thoughtfully to all the questions by the students, representing four countries, and he ended the discussion with a message of encouragement to all participants.

Participant Impressions

Ms. Tshering Yangzom (Bhutan)

Abraham Lincoln once said, “The best thing about the future is that it only comes one day at a time.” Every day that I spent in Japan, a country that I had only seen on world maps, passed like a dream. Even looking at the architecture in the city, I was surprised with how advanced science and technology was becoming in places beyond my field of vision. I would like to be an engineer in the future, so it was a fascinating experience.

Ms. HAN, YUEQI (China)

During the experiment class with Nobel laureate Dr. Hideki Shirakawa, I was unable to make the organic EL device emit light. However, I learned through my failures and realized that mistakes are truly the key to success. The world is full of halfway efforts, but we need to have the will to learn from anything. As we implement ideas, I think we should solve problems one by one, toward the goal of making the world a better place.

Mr. Ameen Ahmed (Maldives)

From the first day I arrived in Japan, I had felt that the upcoming days would be full of hope. In reality, the days were happier than I had even imagined. The things I saw and heard aroused my curiosity and broadened my perspectives. I also made friends from other countries through the interactions with Japanese high school students experienced Japanese lifestyle. I am confident that visiting Japan is something you should experience at least once in life.

Ms. Thawirat Wongsut (Thailand)

We learned about science, mathematics, technology, and Japanese culture during our stay in Japan. I thought this program is not only effective for learning about science and technology, but also for gaining knowledge of and experience with Japanese culture. I was also able to make friends from other countries. I thank everyone involved, as well as my friends. You will all continue to live in my heart forever.
On this day, the students of Group 5 visited Tokyo Metropolitan Koishikawa Secondary Education School, a joint junior and senior high school that emphasizes science and mathematics education and has been selected as a SSH (Super Science High School). All 160 students from the fifth grade welcomed the visiting Asian students and took the initiative to make their own committee and prepared for the event.

The program began with a welcome ceremony. The school principal Toshio Naramoto and the student representatives and moderators spoke in very fluent English, demonstrating the focus of the school on international exchange. The students of Koishikawa School actively mingled with the visiting students during the socializing time after the ceremony and enjoyed their conversations.

This was followed by a science experiment class and mathematics class. The students were divided into eight groups: physics, chemistry 1 and 2, biology, geology, and mathematics 1, 2, and 3. They participated in the experiments and classes with the Japanese students.

In chemistry class, the students conducted an organic chemistry experiment to "scientifically research color" and "create a poultice and indicator." Each class proceeded in unique ways, with the geology class simulating "liquefaction" in earthquakes, and the physics class conducting experiments on "Air column resonance." The mathematics class solved equations and approached geometry questions using origami paper.

All classes had meaningful and fun activities, and it was apparent that the instructors put in much effort and time in selecting the topics and making preparations for the program. Many Japanese students in the class interpreted the experiment methods for the visiting students and worked collaboratively with them. It was an enriching day of international science exchange.
July 14 (Thur.) Special class with Nobel laureate Prof. Ryoji Noyori

The students in Group 5 went to the National Museum of Emerging Science and Innovation on July 14 (Thur.) to attend a special class with Dr. Ryoji Noyori, Nobel laureate in Chemistry in 2001, and Distinguished Professor at Nagoya University. Dr. Noyori reflected on his upbringing during the war, mentioning the air strikes that hit his hometown, the city of Kobe. He grew up in the dark post-war era, but when the news of Dr. Hideki Yukawa being awarded the Nobel Prize came in 1949, things suddenly looked much brighter. This was what inspired Dr. Noyori to dream of becoming a scientist.

Dr. Noyori also explained “catalytic asymmetric synthesis,” the research that led to the Nobel Prize. The science-loving students from all over Asia listened intently, not hiding their enthusiasm for Dr. Noyori’s passionate presentation.

Dr. Noyori’s research resulted in the asymmetric catalyst called “BINAP,” which is used in the production of various chemicals, drugs, and perfumes today. Dr. Noyori repeatedly encouraged the attending students that “the times are always changing” and that “we must use the power of science to protect the environment, but you are the ones who are leaders of the next era!” Environmental issues such as flooding due to rising sea levels are becoming serious problems among Asian nations. The students from Asia, who have the potential to make great contributions to the development of their home countries, wore serious expressions as they considered this message from Dr. Noyori.

July 14 (Thur.) Students from Nepal visiting the homelike Embassy of Nepal in Tokyo

The ten students and two supervisors in Group 5 from Nepal headed to the Nepal Embassy Japan (Meguro, Tokyo) on July 14, the fifth day of the program. The Embassy sat in a quiet residential neighborhood of Meguro. As the Embassy building itself looked like a normal house, it almost seemed as if the students were visiting a friend as they were welcomed by Counselor Gahendra Rajbhandari.

Counselor Rajbhandari encouraged the students to learn much in Japan during their remaining few days of the program and to fully enjoy the country before going home. He was also kind enough to promise the embassy’s support of the SAKURA Exchange Program in Science itself.

Participant Impressions

Ms. Cheng Kejia (China)

My impression of Japan has always been that it is clean, orderly, and beautiful, with advanced technology. After coming here in person, I found all that to be true. China, my home country, is a nation that is seeing rapid progress and growth toward a better future like Japan. We learned many things in Japan on this trip, but we must continue to learn, because our generation has the responsibility to make not only our home countries, but the world, a better place.

Mr. Gabriel Ng Chun Yi (Singapore)

When we landed at the Japanese airport, I was initially surprised at how spotless it was, then thought it was only clean because it was an airport. However, when I saw that there was no trash anywhere in the city, not even bird droppings, I thought that even the birds of this country must be intent on maintaining cleanliness. One thing I learned in Japan is the idiom, “It is an ill bird that fouls its own nest.”

Speaking about Japanese food, I thought Onigiri or riceball is so delicious. I enjoyed shopping at convenience stores to buy various kinds of Japanese food.

Mr. Anantharajah HARISHANKAR (Sri Lanka)

My home country, Sri Lanka, is a developing country, so when we saw the “Shinkai 6500” at JAMSTEC and ASIMO at the National Museum of Emerging Science and Innovation, I was speechless with surprise and it was the best experience. In addition to learning about science, we were welcomed warmly at Koishikawa Secondary Education High School and made many friends in the relaxed atmosphere. I am glad that I was able to participate as a representative of my country, and I give my sincere gratitude for all those who supported us.

Mr. Krishna Gopal Shrestha (Supervisor, Nepal)

In response to the earthquake that occurred in Nepal in 2015, we received great assistance from Japan. Japan supported us not only the aids in the infrastructure and economy issues but also in the exchange program of high school students this time. Attending SAKURA program, students will be able to think more about the world. Moreover, I think that they can make more choice more freely than before about future. I would like to express my sincere gratitude to all those who concerned in SAKURA program who gave us such opportunities.
Schedule

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<tr>
<td>July 18 (Mon.)</td>
<td>Orientation (Fiji and Papua New Guinea)</td>
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<td>Visit Sony ExploraScience</td>
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<td>Visit Asakusa</td>
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<tr>
<td>July 19 (Tues.)</td>
<td>Visit universities</td>
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<td></td>
<td>Team A: Visit Tokyo University of Science Kagurazaka Campus; lecture by Dr. Jin Akiyama</td>
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<td>Team B: Visit Shibaura Institute of Technology Toyosu Campus; experiment class with Dr. Hideki Shirakawa</td>
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<tr>
<td>July 20 (Wed.)</td>
<td>Visit Tokai University Takanawadai Senior High School; lecture by Professor Ryoji Noyori</td>
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<tr>
<td>July 21 (Thur.)</td>
<td>Visit JAMSTEC Yokosuka HQ, National Museum of Emerging Science and Innovation, and Edo-Tokyo Museum</td>
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<td>July 22 (Fri.)</td>
<td>Visit Universities (Team A: Tokyo University of Marine Science and Technology, Team B: University of Tsukuba)</td>
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<td>Closing ceremony and farewell party</td>
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<td>July 23 (Sat.)</td>
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Activity Report

**July 20 (Wed.) Overwhelmed by the dynamic performance of the brass band at Tokai University Takanawadai Senior High School**

The students of Group 6 visited Tokai University Takanawadai Senior High School (Minato Ward, Tokyo), a SSH (Super Science High School), and interacted with its students.

Upon arrival, the visiting students met with the 1,600 students of the junior and senior high school in the gym. The school principal Mr. Tomomichi Katagiri gave a welcome speech to the visiting students, who seemed somewhat nervous with the attention from so many students.

Then the students at Tokai Univ. Takanawadai High. began the performance. They are well-known as one of the most famous student brass bands in Japan. They performed a Finger 5 medley and Deep Purple medley for this occasion. The students from Asia clapped or tapped along, enjoying the powerful and upbeat music.

After the brass band performance, the "chopsticks tower design contest" started with the Japanese students. Divided into small groups, the students competed to create the highest tower using only chopsticks and rubber bands.

Each group showed its uniqueness, with some discussing carefully with each other to make a sturdy foundation and others focused on stacking the chopsticks to gain the height. The teams worked and struggled together, spending some fun time with each other. The students of different nationalities banded together toward a common goal.

**July 22 (Fri.) Students from Pacific island countries visit Tokyo University of Marine Science and Technology**

The 54 students (including supervisors) from Pacific island countries visited the Tokyo University of Marine Science and Technology Shinagawa campus.

Tokyo University of Marine Science and Technology is the only national university in Japan that conducts education in and research on marine science. After listening to the explanation by Prof. Shuichi Satoh, Dean of the School of Marine Science, the students attended a lecture on the topic of "aquaculture and nutrition for fish."

The island country students are always cheerful, even in the rain.
students of island countries, raised numerous questions to Prof. Satoh, including, “What is the difference between fish in hatcheries and the wild?” and “Do hatcheries for freshwater fish exist?”

Afterwards, the high school students enjoyed informal conversation with university students. The university students had all participated in an overseas internship through a program called the “Overseas exploration team” and had advanced English skills that allowed for lively conversation with the visiting high school students.

Next, the students visited the “Laboratory of Fish Nutrition.” Many kinds of fish are kept here, and scientists research the nutrition necessary for their growth and development, as well as aquaculture methods that produce less excretion and are environmentally friendly. The students closely observed fish such as rainbow trout, carp, and yellowtail swimming in the rows of water tanks, and they took many photos with their smartphones.

Participant Impressions

Ms. Zhang Yuji (China)
Professor Noyori told us that “Knowledge should not be produced for self-righteous reasons, but should instead be connected to the rest of humanity.” The world is needing even more collaboration between countries. As program participants, we may become leaders of our home countries in the future, but there are no national borders in science. We must help each other and contribute to the collective effort of making the world a better place together.

Ms. Raiwalu Adi Ruci Vasitai Roko (Fiji)
The SAKURA Science Program taught me to look at science from a new angle. I now understand that science is fun, strengthens the bond between people, and has practical use. The special class by Professor Jin Akiyama and visit to JAMSTEC were especially interesting. We were also able to learn about innovation and culture in Japan through visiting the Edo-Tokyo Museum. In addition, I learned that the Japanese treasure nature.

Ms. Abon Rosie (Marshall Islands)
I would like to begin by thanking JST for preparing for and inviting us to such a wonderful program. We are full of gratitude for being able to gain new knowledge. We will share our experiences after going back to our home countries. It feels sad to leave Japan behind, and I think everyone is feeling the same way.

Ms. Overhoff Tulaulelei Kikuo (Micronesia)
I think Tokyo is a very beautiful and fascinating city. I have never seen a toilet with as many buttons as Japanese ones. In my country, we have this saying: “Give a man a fish and you feed him for a day; teach a man to fish and he eats for a lifetime.” This is just how important knowledge is. When I return home, I will tell everyone about what I experienced in Japan.

Mr. Mongami Kentun Tkedelulk (Palau)
My home country, Palau, needs scientists and researchers that can help solve the problem of rising water levels and other environmental issues. After returning home, I plan to recommend Japan as a study abroad site to other youth. This is because Japan offers an environment where one can study the cutting-edge science and technology that Palau needs. I think we can become talented scientists and researchers if we are able to study in Japan.

Ms. Mageu Kimberley (Papua New Guinea)
In my country, there is a saying that “The more at work the livelier you are. Collaboration leads to a better world.” I think that we as aspiring scientists have the responsibility to work together to change the world. I hope to become a leader that can help achieve innovation while valuing our own culture, and I will remember what we learned through this program.

Mr. Manase Maloafua Nus (Samoa)
I was inspired by meeting prominent scientists such as Nobel laureates and feeling their passion for innovation. Another valuable takeaway was the international network that we were able to create through meeting students from other countries. I believe we are only limited by our imagination. I hope we can break through our perceived limits, bring together our knowledge, and work toward creating a better society.

Ms. Vaji Doris Ann (Solomon Islands)
Through seeing the science and technology of Japan firsthand, I understood why Japan became a developed country. I hope to use this experience to contribute to the development of my own country. Many of us plan to major in science and build a career in science, and I think this experience will have a great impact on our future career choices.

Ms. Das Anjos Octavio Duarte (East Timor)
Besides being able to experience the science, technology of Japan, the educational system of this country left a strong impression on me. There are well-equipped facilities and materials for educational use, and students are not only learning theories from books, but also conducting hands-on experiments to learn from practice. I believe this is why the Japanese have such a high educational level. Once I return home, I hope to bring this to the attention of the Minister of Education and use what I learned to increase the quality of education there.

Mr. Schaaf Philip Ashley (Tonga)
I learned from the Nobel laureates that we should “think of unique ideas, and hold on to your creativity and conviction.” I plan to study enthusiastically and never give up on what I enjoy, even in the face of setbacks. I would like to aim for the Nobel Prize and continue sharing what I learned through the SAKURA Science Program in my home country.
Group 7
Activity Report

Schedule

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<td>January 16 (Mon.)</td>
<td>Visit National Museum of Emerging Science and Innovation (lecture by Chief Executive Director Mamoru Mohri)</td>
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<td>Visit Edo-Tokyo Museum</td>
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<td>Visit Embassy of Pakistan in Japan (Pakistan group only)</td>
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<td>January 17 (Tues.)</td>
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Activity Report

**January 16 (Mon.) Visit the National Museum of Emerging Science and Innovation**

The students of Group 7 arrived in Japan on January 15, full of excitement for the next few days. The group did not show any weariness from the travel and the day after arrival visited the National Museum of Emerging Science and Innovation (Koto Ward, Tokyo). They met Chief Executive Director Mamoru Mohri (Astronaut) at the museum and listened to how Director Mohri watched a solar eclipse and became entranced with the mysteries of the universe. They also watched beautiful footage of the earth from space, and the students listened intently to Dr. Mohri’s fascinating talk.

Next, the students had free time to tour the museum. They were most excited for the demonstration of the bipedal robot ASIMO. They were fascinated by the child-sized ASIMO kicking a ball, jumping, and even performing a sign language dance.

**January 16 (Mon.) Visit the Embassy of the Islamic Republic of Pakistan**

On the afternoon of the 16th, the high school students from Pakistan were invited by the Ambassador of Pakistan in Japan to visit the Embassy in Tokyo. The concept of the program resonated deeply with Ambassador Farukh Amil, and as someone who loves children, he gave us his full support for inviting students from Pakistan.

Despite his busy schedule, Ambassador Amil made an impromptu decision to lead everyone to the observation deck of the Roppongi Hills, as he wanted to show the students the night view of Tokyo. The usually reserved students from Pakistan seemed excited about this rare and valuable opportunity. The students were also fed delicious Pakistani cuisine in Japan and were escorted back from the embassy in an official vehicle, with smiles lighting up their faces.

The students from Pakistan love having their photo taken.
January 18 (Wed.) Visit Tokyo University of Science, mathematics class with Professor Jin Akiyama

The students from Group 7 visited the Tokyo University of Science Kagurazaka campus. They were introduced to the university and its international programs and were told that the institution was the oldest private university in Japan that provided natural science education. They then toured the Museum of Science and Math Exploratorium on campus.

Professor Jin Akiyama is the Director of the Math Exploratorium, a fun space to see, touch, and experience the displays created based on mathematical theories. The students had their curiosities piqued as they talked with the instructor and seemed fascinated by the mysterious world of mathematics.

In the afternoon, the students participated in a mathematics class taught by Prof. Akiyama. There were many props prepared in front of the blackboard, much like the backstage wings of a theater. The students sat in anticipation of the lecture that was about to begin.

"Welcome to Spectacle Math-Magic Show!!" The class that began with this call by Prof. Akiyama was truly a spectacle of magic that completely overturned any impression of mathematics as being unapproachable. Prof. Akiyama pasted the ends of pink and red tapes crossed with each other and proceeded to tear the tape. Suddenly, square rings and two connected hearts mysteriously appeared. The students’ eyes were transfixed on the Professor’s hand movements. They then had the opportunity to recreate the magic on their own using the strips of tape given to them. Exclamations were heard across the room, as the students held up red and pink hearts. This was based on a mathematical theory called topology.

Next came a triangular paper pyramid with an equilateral base. This was cut with scissors to create a flat plane. The professor gathered pieces of paper cut in the same shape, and the pieces came together like a jigsaw puzzle. This was the visualization of a mathematical theory called the "tetrahedral-triangular tiling theory." Curious and exciting "math-magic" tricks like this were brought out one after another, and before the students knew it, the entire hall was engaged and drawn into the world of Prof. Akiyama.

Through this lively class, the students learned that mathematics is not meant to be difficult at all; rather, it is something that exists in daily life and helps to enrich it. The students left the hall with beaming faces.

Participant Impressions

Ms. Shi Zhaomin (China)
I had long been searching for an answer to why Japan rose to be the second most advanced economy in the world, with its population of 100 million and a small land with little resources. I wondered if the reason lies in something that we cannot find in my own country. With things like walkways for the blind, and the service sector who always greet you with a smile, I understood that the answer lies in people who continue research to improve people’s lives, rather than to gain fame.

Mr. Liu Gengchen (China)
I was able to expand my world by participating in this program. I became friends with wonderful high school students from Pakistan and Japan, experienced cutting-edge science and technology every day, and discovered the uniqueness of Japanese culture in their food. I was also surprised with how advanced the air conditioning was and realized that this kind of every day technology was created through the efforts of researchers striving to improve our lives.

Mr. Warda Murtaza (Pakistan)
I would like to tell everyone back home about what I experienced through attending classes taught by Nobel laureates and visiting research facilities and cultural institutions. Pakistan is rich with natural resources, but it is still a developing country. I hope to make use of the experience and knowledge we gained through the SAKURA Science Program toward the development of our country. We learned many valuable things in Japan, and I hope to continue treasuring them moving forward.

Ms. Aisha Suhail (Supervisor, Pakistan)
It is certain for the students participated in the high school program that the program greatly changed their future lives. In addition to touching on various concepts regarding science and technology, they could be aware of the problems and tasks that exist in science but still cannot be solved. And that will obviously be used in the future development of each student’s country.
Activity Report

January 24 (Tues.) An experiment class with Nobel Laureate in Chemistry, Professor Hideki Shirakawa

The students of Team B in Group 8 participated in an experiment class with Professor Hideki Shirakawa at the Tokyo City University Yokohama Campus. Dr. Shirakawa received the Nobel Prize in Chemistry in 2000 for the invention of electroconductive plastic.

The experiment class was titled, “Let’s fabricate a conducting polymer EL device.” The experiment is a success if the students are able to first combine electroconductive plastic, use it to build an organic EL device, and have electricity run through and light up the completed organic EL device.

After receiving a lecture by Dr. Shirakawa, the students started on their experiments. Japanese undergraduates joined each experiment table as Teaching Assistants (TAs). The university students explained the experiment methods carefully to the high school students and led the experiment.

During the experiment, Dr. Shirakawa was busy going around each table to provide direct guidance to the high school students or answer questions. The organic EL device lit up in the end, marking a successful experiment. The high school students seemed satisfied as well, and the three-hour experiment class ended successfully.

January 26 (Thur.) Visit Tokyo Gakugei University Senior High School; a special class with Nobel Laureate Professor Makoto Kobayashi

The 120 students (including supervisors) of Group 8 visited Tokyo Gakugei University Senior High School (Setagaya Ward, Tokyo) on January 26. In the morning, the visiting students attended the classes with Japanese students at the high school, such as math, chemistry, physics, English, and ancient Chinese. There was some worry that it would be difficult to understand these classes, as all except for the English class proceeded in Japanese. However, students were seen solving equations with the Japanese high schoolers, and as students were close in age, they were taking part in international exchange through the class before we knew it.

In the afternoon, a special class was held by Professor Makoto Kobayashi, Nobel Laureate in Physics in 2008 (Distinguish Emeritus Professor Emeritus, High Energy Accelerator Research Organization). First- and second-year Japanese students also participated in the class, which was held in the lecture hall, alongside the visiting students. Prof. Kobayashi discussed the topic of “matter and antimatter” based on the theory of elementary particles, which is his area of specialty. While...
the topic initially seemed too difficult for high school, the students seemed to have grasped the material well, asking many relevant questions during the question and answer session.

**January 27 (Fri.) Visit University of Tsukuba**

On the final day of the program, the 60 students of Group 8, Team A (five Central Asian countries) visited Tsukuba University (Tsukuba City, Ibaraki Prefecture). Upon arriving, they were introduced to the history of Tsukuba University, its curriculum, and international program. The students listened intently, taking notes as they learned that around 40% of the international students at Tsukuba University were attending on a scholarship. This was followed by a campus tour that covered the vast campus on foot.

The group visited the Tsukuba University Library on campus. As Tsukuba University was integrated with the University of Library and Information Science in 2002, it has high-quality holdings and reference systems. In addition to students and faculty, members of the public may use the library after going through designated procedures, and students experienced the open and welcoming atmosphere of the library. They then moved on to the Research Center for Computational Science to view the large-scale computer lab.

**Participant Impressions**

**Mr. Shin Seungbin (South Korea)**

When I asked him what space was like, Chief Executive Director Mamoru Mohri at the National Museum of Emerging Science and Innovation gave an inspiring response: “Earth was like a perfect masterpiece made from tiny particles that were pieced together.” It made me begin to consider becoming a scientist in the future. I wish to explore other potential areas of interest in science and what the world needs. In the future I hope I can again meet my international friends from the same group, perhaps on a stage of a bigger scale.

**Ms. Chinfat Purevsuren (Mongolia)**

We were truly happy to be able to visit the land of the rising sun. It was a short stay, but every day brought something exciting, and the program had many ways of hooking us and turning our sights to the future, through topics like how gravity is different in space, what is going on the ocean bottom, and how robotics research is advancing. I was also able to understand that the industrial Japanese people worked hard to make the world a better place.

**Mr. Morgunov Anton (Kazakhstan)**

During our stay in Japan, we became completely enthralled with the world of science. In particular, being able to attend classes taught by Nobel laureates was an unforgettable experience of a lifetime. Through learning about the technology that investigates the beautiful world of the unexplored sea bottom, learning about electroconductive polymer that is used in all gadgets, and meeting with someone who had experienced zero gravity in space, a place full of unknowns, we were able to fully immerse ourselves in the mysterious world of science.

**Mr. Jabbarov Najmiddin (Kyrgyzstan)**

During this weeklong program, I had the best time in my life. I traveled away from my family for the first time in my life and was able to meet with wonderful people, including world-famous researchers and Japanese high school students. I wanted this time to last forever, but according to the laws of the universe, there is an end to everything, and our program had to end at some point. We continue to move toward the future, however. I will never forget what I experienced in Japan.

**Mr. Azizdhon Umardzhonzoda (Tajikistan)**

Since arriving in Japan, I gained an understanding of the thoughtful welcome, meticulousness, and warmth of the Japanese people. I think I was able to feel like I was still in my home country, despite visiting here for the first time, because of this nature of the Japanese people. We learned about science and Japanese culture and history in fun and engaging ways, and I think this has greatly broadened my world. I would like to share my experiences with my friends after returning home.

**Ms. Ovelyayeva Aynagozel (Turkmenistan)**

By participating in the SAKURA High School Program, I was able to learn many things about science and technology. The experiment class with Professor Shirakawa was a valuable experience, but being able to interact with the Japanese high school students was just as exciting for me. Tokyo is one of the largest and most beautiful cities in the world, and I gained many memories and experiences there. I hope I will be able to invite you all to my beloved Turkmenistan one day.

**Mr. Jabbarov Najmiddin (Uzbekistan)**

We saw and heard about many different technologies created by the Japanese people, and it was very inspiring to view actually the invented items. While there have been countless inventions made on earth, there are so many more things that have not been discovered yet, and that is where our mission lies. When considering that our efforts will directly lead to protecting the global environment, we as the young generation must put in our all toward the future. This is what came to mind after participating in the SAKURA Science High School Program.
Based on the plan in March 2015 that Prime Minister Narendra Modi of India and Japanese Prime Minister Abe agreed to invite Indian youth to Japan, this program was carried out.

## Schedule

<table>
<thead>
<tr>
<th>Date</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>November 6 (Sun.)</td>
<td>Arrive in Japan, Orientation</td>
</tr>
</tbody>
</table>
| November 7 (Mon.)  | Team A: Visit Shibaura Institute of Technology Toyosu Campus, experiment class with Dr. Hideki Shirakawa  
Team B: Visit Umihotaru PA, Visit Kimitsu Works of Nippon Steel & Sumitomo Metal |
| November 8 (Tues.) | Team A: Visit National Institute of Advanced Industrial Science and Technology (AIST) and National Institute for Materials Science (NIMS)  
Team B: Visit High Energy Accelerator Research Organization (KEK)  
PM (Team A and B): Visit Meikei high school in Tsukuba city |
| November 9 (Wed.)  | Team A: Visit Tokyo Metropolitan University  
Team B: Visit Shibaura Institute of Technology Toyosu Campus, experiment class with Dr. Hideki Shirakawa |
| November 10 (Thur.)| AM: Visit National Museum of Emerging Science and Innovation  
PM: Team A: JFE Steel Corporation, Team B: Visit University of Tokyo |
| November 11 (Fri.) | Visit SONY ExploreScience  
Closing Ceremony and farewell party |
| November 12 (Sat.) | Leave Japan                                                              |

## Photos at the Program

- **November 7**  
  At Umihotaru PA

- **November 8**  
  At National Institute of Advanced Industrial Science and Technology

- **November 7**  
  At Kimitsu Works of Nippon Steel & Sumitomo Metal

- **November 8**  
  Exchange program with Meikei High School students
In September 2016, the international conference for the field of science and technology (STS Forum in Sri Lanka) was held in Colombo, Sri Lanka. During the conference, the implementation of the special program for Sri Lankan high school students was agreed to develop the future collaborative relationship between Japan and Sri Lanka, and the program was carried out in December 2016.

### Schedule

<table>
<thead>
<tr>
<th>December 11 (Sun.)</th>
<th>Arrive in Japan, Orientation</th>
</tr>
</thead>
</table>
| December 12 (Mon.) | Visit National Astronomical Observatory of Japan (NAOJ)  
Visit Ghibli Museum, Mitaka |
| December 13 (Tues.) | Travel from Tokyo to Hamamatsu  
Visit Hamamatsu Technical High School  
Hamamatsu Photonics Corporation  
Travel from Hamamatsu to Tokyo |
| December 14 (Wed.) | Visit JAMSTEC Yokosuka HQ  
Visit Kamakura |
| December 15 (Thur.) | Visit Earthquake Research Institute at the University of Tokyo  
Visit National Museum of Nature and Science, Tokyo  
Visit Akihabara |
| December 16 (Fri.) | Visit National Museum of Emerging Science and Innovation  
Closing Ceremony and farewell party |
| December 17 (Sat.) | Leave Japan |

### Photos at the Program

- **December 12**  
  Observing the biggest refracting telescope in Japan at National Astronomical Observatory of Japan

- **December 13**  
  Attending a class at Hamamatsu Technical High School

- **December 15**  
  Visiting Earthquake Research Institute at the University of Tokyo

- **December 16**  
  Closing Ceremony and Farewell Party

(SV: Supervisor)
### Participant Survey Results

<table>
<thead>
<tr>
<th>Survey Subject</th>
<th>SAKURA Science High School Program 2016 participants, including supervisors</th>
<th>Number of invitees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Survey Method</td>
<td>Replies to questionnaires at the end of the program</td>
<td>1,062</td>
</tr>
</tbody>
</table>

#### Q1: What were your impressions of Japan before your visit?

<table>
<thead>
<tr>
<th>Rating</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very good</td>
<td>54%</td>
</tr>
<tr>
<td>Good</td>
<td>43%</td>
</tr>
<tr>
<td>Not very good</td>
<td>3%</td>
</tr>
<tr>
<td>Poor</td>
<td>0%</td>
</tr>
<tr>
<td>No response</td>
<td>0%</td>
</tr>
</tbody>
</table>

#### Q2: Were you satisfied with the program?

<table>
<thead>
<tr>
<th>Rating</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very satisfied</td>
<td>64%</td>
</tr>
<tr>
<td>Fairly satisfied</td>
<td>33%</td>
</tr>
<tr>
<td>Average</td>
<td>2%</td>
</tr>
<tr>
<td>Dissatisfied</td>
<td>0%</td>
</tr>
<tr>
<td>No response</td>
<td>1%</td>
</tr>
</tbody>
</table>

#### Q3: Would you like to return to Japan?

<table>
<thead>
<tr>
<th>Rating</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly agree</td>
<td>77%</td>
</tr>
<tr>
<td>Agree</td>
<td>22%</td>
</tr>
<tr>
<td>Disagree</td>
<td>0%</td>
</tr>
<tr>
<td>No response</td>
<td>1%</td>
</tr>
</tbody>
</table>

#### Q2: Comments on program satisfaction

**Comments from those who responded 1 (Very satisfied), or 2 (Fairly satisfied)**

- I heard about this program from a friend who participated last year, and ever since I always wanted to join it. I am very satisfied with the program, and I am so happy that I was able to participate. (Philippines, 16)
- I was struck by the technological development in Japan. Seeing the beauty of Japanese nature made me feel happy. (Myanmar, 15)
- We were able to experience a lot of cutting-edge research in science and technology and meet prominent scientists. Everything we experienced and everyone we met on this trip will become a lifelong treasure. (China, 15)
- The program allowed us to learn deeply about Japan from many different angles. Our individual understanding of Japanese culture was turned upside down, and we were able to experience its attractiveness. (China, 18)
- I am happy that I was able to visit Japan. I hope to apply for a scholarship in the future to study in Japan. (Mongolia, 17)

**Comments from those who responded 3 (Average), or 4 (Dissatisfied)**

- I wanted to interact longer with the Japanese high school students. (China, 17)
- All of the events were wonderful, but it would be better if we could visit places where we could learn more about the uniqueness of Japanese culture and lifestyle. (Thailand, 16)
- It would be a better program if we could spend more time at each site. (Thailand, 17)

#### Q4: (For respondents who selected 1 or 2 for Q3): In what attribute would you like to return to Japan?

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>As a student</td>
<td>35%</td>
</tr>
<tr>
<td>As a researcher</td>
<td>29%</td>
</tr>
<tr>
<td>Other</td>
<td>27%</td>
</tr>
<tr>
<td>As a company employee</td>
<td>8%</td>
</tr>
<tr>
<td>No response</td>
<td>1%</td>
</tr>
</tbody>
</table>

#### Q5: Would you like to continue receiving information about science & technology and international programs in Japan?

<table>
<thead>
<tr>
<th>Preference</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>95%</td>
</tr>
<tr>
<td>No</td>
<td>5%</td>
</tr>
<tr>
<td>Other</td>
<td>0%</td>
</tr>
</tbody>
</table>

#### Q6: Would you recommend this program to friends in your home country?

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly recommend</td>
<td>86%</td>
</tr>
<tr>
<td>Somewhat recommend</td>
<td>8%</td>
</tr>
<tr>
<td>Would not recommend</td>
<td>0%</td>
</tr>
<tr>
<td>No response</td>
<td>0%</td>
</tr>
</tbody>
</table>
Q4: Comments on returning to Japan

1. As a student
   - Japan is an amazing place for those who study science. I am on the mathematical biology track, so I would like to gather information about studying in Japan in the future. Japan plays a central role in science and technology and is a wonderful country to live in. (India, 15)
   - I would like to learn about more innovations in this fascinating country. I would like to gain more knowledge about Japan and help develop my own country to a level that could catch up with Japan. (Thailand, 17)
   - My time in Japan became an unforgettable experience. I hope to contribute to the exchanges between Japan and my country. (China, 16)
   - I come from a poor family so I would not be able to come to Japan again on my own, but it may be possible if I use scholarship systems to visit as an exchange student. (Bhutan, 19)

2. As a researcher
   - My dream is to invent something that would be useful to the world. The Japanese educational environment is ideal for fulfilling this dream. I hope to study in Japan and become a scientist in the future. (India, 16)
   - There are many possibilities for research, and the future of science and technology looks bright. (Maldives, 18)
   - The development of science in Japan is wonderful, and as someone who is aiming to become a scientist, I think Japan is an ideal place to conduct research. I also think Japanese universities have the best facilities. (Fiji, 17)

3. As a company employee; Other
   - I want to work in Japan because I like punctuality and honesty of Japanese people. (India, 16)
   - I would like to become a programmer in a fun work environment like a gaming company. (Indonesia, 17)

Q6: Would you recommend this program to friends in your country?

Comments from those who responded 1 (Strongly recommend), or 2 (Somewhat recommend)
   - This trip broadened my perspectives on both the technology and science of Japan. I was able to find out what it was like to research and work in Japan. (India, 15)
   - I think there is much potential for Vietnamese high school students, but as our country is not fully developed, we often do not have access to appropriate levels of education. For students interested in science and technology, this program would provide an amazing opportunity to broaden perspectives and increase knowledge. (Vietnam, 18)
   - This was an extremely interesting program that nurtured our ambition and helped us gain valuable life experience, so I would recommend it to friends. (Bhutan, 18)
   - I think it is important for everyone to learn about new technology. (Nepal, 17)
   - I have many friends who are more accomplished than I am and have higher potential. They are waiting for my report. I can’t wait to tell them about my experiences in Japan. (China, 17)
   - By participating in this program, you would be able to understand how our ocean and the creatures living in it could be protected. (Marshall Islands, 16)
   - By gaining a broad perspective on the world, it would be possible to break psychological barriers and not only think about our own country, but the rest of the world as well. (Fiji, 17)

Comments from those who responded 3 (Would not recommend)
   - I was unable to fully grasp the uniqueness and advantages of science and technology in Japan. The schedule was too packed, so for Chinese students who have a habit of taking naps, it was difficult to process everything. (China, 16)

Q7: What improvements should we make to this program in the future?

   - More varied meals and eating time (India, 17)
   - Japan is known for its robotics technology, so it would be amazing if there was a program specifically focusing on robotics. (Sri Lanka, 20)
   - It was very difficult to interact with the Japanese high school and university students. It would be better to have the opportunity to speak with Japanese students with higher English skill levels. (China, 16)
   - The program should be more focused with fewer places to visit, to dig deeper in each subject. (China, 16)
   - I would like to have more information on international study abroad programs. (Kyrgyzstan, 15)
Acknowledgments

The SAKURA Science High School Program 2016 was made possible by the help and guidance of many supporters.

We would like to express our appreciation to Dr. Jin Akiyama, Dr. Hiroshi Amano, Dr. Satoshi Omura, Dr. Takaaki Kajita, Dr. Makoto Kobayashi, Dr. Hideki Shirakawa, Dr. Ryoji Noyori, Dr. Toshihide Maskawa, Dr. Mamoru Mohri, and Mr. Yoshiharu Yamada for their lectures and experiments.

In addition, we would like to thank the Shibaura Institute of Technology, Tokyo City University, and the National Museum of Emerging Science and Innovation (Miraikan) for their assistance with the overall program, as well as Ochanomizu University, Kitasato University, Keio University, University of Tsukuba, University of Electro-Communications, University of Tokyo, Tokyo University of Marine Science and Technology, Tokyo Institute of Technology, Tokyo University of Agriculture and Technology, Tokyo University of Science, Nagoya University, Waseda University, Japan Agency for Marine-Earth Science and Technology, Shibuya Junior & Senior high School, Tamagawa Academy Upper Secondary Division High School, Tokai University Takanawadai Senior High School, Tokyo Gakugei University Senior High School, Tokyo Metropolitan Koishikawa Secondary Education School, Chiba Prefectural Kashiwa High School, and Nagoya University Affiliated Upper Secondary School for their supports in receiving the visiting students.

We were also fortunate to receive the supports of the Japan International Cooperation Agency and Tokyo Sports Culture Center, which provided their facilities for the program, and the Japan International Cooperation Center, which welcomed the visiting students.

We would not have been able to successfully complete the SAKURA Science High School Program 2016 without the extraordinary supports of these instructors, organizations, and institutions. We express our sincere gratitude for their generosity.

Japan-Asia Youth Exchange Program in Science Promotion Office
Japan Science and Technology Agency (JST)
August 2017

About the photos on the cover page
(From the top to bottom)

①Visit Japan Agency for Marine-Earth Science and Technology (JAMSTEC)
  Group 4: Students from Bhutan, Maldives, and Thailand (July 4, 2016)

②Dr. Jin Akiyama’s Mathematic Class at Tokyo University of Science
  Group 2: Students from Bangladesh, the Philippines, India, Indonesia (April 19, 2017)

③Dr. Hideki Shirakawa’s Experiment Class at Tokyo City University Yokohama Campus
  Group 8: Students from Uzbekistan (January 24, 2017)

④Dr. Toshihide Maskawa’s Special Lecture at Tamagawa Academy (April 12, 2017)