



**Annual Report  
2015**

**March 2016**

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## **Asia Core Student Meeting**

We, SPIE Osaka University Student Chapter have annually held an international student conferences which is planned and organized by students. For the past few years, we have invited many foreign students studying optics and photonics focusing from Asian countries and set up many opportunities to create international networks among the students. Since different countries have different culture and histories, and people living there have very different thoughts, we have realized how fresh and interesting it is to have discussions on the bases of a common keyword “Light”, with students from diversified backgrounds.

For the last year, International Year of Light 2015, we were honored to hold an international student meeting “Asian CORE Student Meeting 2015” during December 8 - 9. We invited around 60 students from China, India, Japan, Malaysia, Taiwan, and Singapore to create valuable students’ networks. With a concept “how we should develop our careers in the future”, we had fulfilling discussions through invited lecturers, panel discussions and group works etc. It is always one of the significant interests for students to get competent jobs by optimizing their own personalities. Moreover, career environments have been getting more international especially in Asia, and Japan is not the exception. In such diversified and international environments, we are sure that it was a very meaning opportunity for students to exchange their opinions regarding careers. We also had two invited lecturers, Prof. Toyohiko Yatagai, Utsunomiya University and President of SPIE; and Prof. Satoshi Kawata, Osaka University. Because of their diverse experience and thoughts, we expect all attendees to have been inspired for their future careers from their talks. Of course, we also had oral and poster presentations for their research introductions.

## 1. Invited Talk by Prof. Toyohiko Yatagai

"Losing your way makes a new map" First invited talk was given by Toyohiko Yatagai, Distinguished Professor of Utsunomiya University and the president of SPIE in 2015. He talked about transitions of his various interests to photonics and optics, including computer generating holograms and hologram analysis methods for industrial applications, during his career with introducing the interactions with other scientists. He pointed that it was important to continue studying new science fields even though it had not been useful or beneficial at that moment. Participants enjoyed discussions regarding the future of the optics and photonics societies with him.



## 2. Invited Talk by Prof. Satoshi Kawata

“How did I develop my science and my life ?” Second invited talk was given by Satoshi Kawata, Distinguished Professor of Osaka University and the president of the Japan Society of Applied Physics in 2015. He talked about a story of his invention of the near field scanning optical microscopy. Subsequently to the introduction of his methodology to think up new ideas from questions of present studies, he pointed the importance of having interests or questions to other researchers in order to create new research fields, which may be well realized for example by having this kind of chapter activities in asian countries. According to his messages, participants had group activities to find out new values from combinations of their research topics.



### **3. Students Oral and Poster Presentations**

Besides the discussion for our career developing, we held a research presentation session for attendees. We could have six oral presentations and 37 poster presentations in total, and research topics of those included various optical fields; bio-imaging, holography, plasmonics and metamaterials. 15 minutes including discussion was given to each oral, and poster presentation session had 80 minutes. All the attendees enjoyed discussing about their researches.

We also prepared some presentation awards with supports of SPIE. Prof. Yatagai gave totally seven awards at the end of this meeting; one award for outstanding oral presentation and six awards for poster presentation including two outstanding presentations. The presentation panel was organized with six professors who have close relations to us, and the procedure for choosing the awards shown on the next page was based on the way of SPIE.

#### **Panel Members:**

Prof. Toyohiko Yatagai Prof. Verma Prabhat Prof. Yasushi Inoue Prof.  
Junichi Takahara Prof. Yuika Saito

Dr. Atsushi Taguchi

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## **Guest lecture of Dr. Jean-luc Doument**

We held a guest lecture of Dr. Jean-luc Doument on November 6th. Dr. Doument has got a PhD in applied physics at Stanford University, he enjoys nothing more than standing in front of a group of grad students or professionals challenging everything they thought they know, provoking or facilitating a discussion, structuring their thoughts, sharpening their skills and importantly arousing enthusiasm. In Japan, there are many demands from students that they want to learn how to do effective presentations about their research, since the society requires presentations to be more comprehensible and compact day by day. Therefore, we have elected Dr. Doument as a guest speaker with an aim to encourage students to conduct their presentation properly.

We got totally around 20 participants and listened to the lecture of Dr. Doument with attractive presentation. Also, after presentation all the attendees were able to join the discussion and had a chance to communicate back and forth about what they think of presentation. We felt confident that we could actually conduct superb presentation in Science from a world-wide point of view. It was also a great experience for us to how to do World-Class level presentation.

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## **Science Festa**

We held our outreach event “Science Festa” in August 2015. We participated in “26<sup>th</sup> science festival for adolescent” which was done under the Yomiuri shimbun at Osaka science museum with a purpose to expose kids to science. We prepared fantastic PET bottle microscopy made of PET bottles and beads. Experiment equipments which we made were something very familiar in our lives. Kids and parents were participated in this event together and they are provided seats and tables to join this event more closely by actually touching equipments. We provided them "PET bottle microscopy" after conducting our presentations about fundamental knowledge of microscopy. The children didn't seem to understand the principle of microscopy exactly, but it was very nice to see that they think hard to figure out why the objects are magnified by just using PET bottle microscopy which is a familiar stuff in our lives. In this event, totally around 50 elementary school kids and their parents participated and had fun with them with experiments equipment we had made. We are definitely sure that we provided children how to enjoy science in their daily lives. It was also a great experience for us to teach them about microscopy which is our mainly related research topic.

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## **6th Super Hikarijuku; Science School for Kids**

We held our annual outreach event “Super Hikarijuku; Science School for Kids” again this year. The school was held in November 2015 and more than 500 kids applied for the 40 seats. We gave lectures about light for 4th grader to 6th grader pupils. Also we had the honor to invite Suita city mayor, Mr. Keiji Gotoh and Toyonaka Educational Center president, Mr. Shoji Tanaka.

We prepared 4 classes for kids to enjoy “light” and here we briefly introduce them.

### 1. Detective game with UV light

There are two kinds of light out there; visible light and invisible light. However, we barely become aware of the existence of invisible light in everyday life. To give the kids a realization of the existence of invisible light, we prepared a lecture about UV light. And then, the kids enjoyed a detective game in which kids read codes written with fluorescent paint by using a black light to find a kidnapped person.

### 2. PIKAPIKA photography; painting with light

By controlling the exposure time of a camera, we can doodle on the photo with light. Kids enjoyed painting with lighting pen, and we gave the photos to them as a gift. You can see the photos taken in this class below.

### 3. Enlarger ray gun with glass ball

A projector was assembled to enlarge images or movies. Simply the projector is composed of a light source and a lens. Kids used LED light and glass ball as the light source and the lens respectively, and constructed a handmade projector. Drawings, which the kids drew on plastic boards, were enlarged and projected all over the wall.

#### 4. Secrets of color

White light can be split up to form a spectrum using a prism. In contrast, we can get white light from a combination of all the rainbow colors. These are the nature of light which forms a counterpart to each other. In this class, the kids enjoyed to make a spectrometer with CD and learned about spectroscopy and additive color.

This event was hosted by our student chapter, photonics advanced research center and faculty of engineering, Osaka university. Also this event is supported by Project for Developing Innovation Systems, MEXT, Japan.

6th Super Hikarijuku website (Japanese):

<https://sites.google.com/site/superlightjuku2015/>

Another article regarding 6th Super Hikarijuku (English):

<http://www.parcjp.org/home/news/weheldthe6thkidsphotonicsschoolsup erhikarijukuon23rdnovember>

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## Financial Information

Beginning balance	<b>465,060 JPY</b> from Focus Conference Grant for 2015 (reduced from <b>469,060 JPY</b> due to the remittance)
Total	<b>465,060 JPY</b>
Expense	<b>435,060 JPY</b> for activities as explained above
Ending balance	$465,060 - 435,060 = \mathbf{30,000\ JPY}$