



Annual Report
2016

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Global Student Conference 2016

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, we organized an international student conference “Global Student Conference”, collaborating with Photonics Center Osaka University. The conference was held on 28th - 29th, November at Photonics Center in Osaka University, Japan. We invited more than 50 students from China, India, Taiwan, Filipino, South Korea, Ukraine, and Japan. The main purpose of this meeting was to have a deep discussion under a concept: “How does optical science make our future life meaningful?”. To consider future life which can take advantage of optical science is always a big interest for students. Nowadays, optical science has been new and emerging technology since 21st century all over the world. In such an environment, it was surely meaningful to exchange opinions regarding optical science among students of various countries. We had fulfilling discussions through oral presentations, poster presentations, group works, and etc. Also, we were honored to had three invited lectures; Prof. Nicholas Isaac Smith from Osaka University, Prof. Hiroshi Yoshikawa from Nihon University, and Prof. Takashige Omatsu from Chiba University. We expect all attendees to have been inspired from them.

1. Invited Talk by Prof. Nicholas Isaac Smith

“What has the light done for us?” The first talk was given by Nicholas Smith, a professor at immunology frontier research center (iFrec), Osaka University. He first introduced his early career as a researcher in Australia and then, talked about his experience with us regarding to career in Japan. He also shared his recent research results in the field of label-free imaging for biological applications. The talk about early malaria detection gave us deep insights of future developments in spectroscopic analysis for medical use, which also lead to fruitful discussions among participants later on.

2. Invited Talk by Prof. Hiroshi Yoshikawa

“Computer generated Hologram for 3D display”. The second talk was given by Hiroshi Yoshikawa, a chief professor at Department of Computer engineering, Nihon University. He is also a fellow member of Optical Society of America (OSA). The idea of 3D hologram becomes increasingly important in applications of future imaging technique. It was a great opportunity to come in contact with cutting edge technology. He explained the mechanism of Hologram using several examples such as Star Wars, which participants enjoyed a lot and could easily understand.



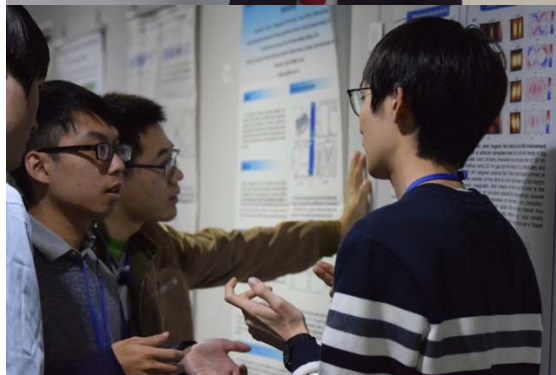
3. Invited Talk by Prof. Takashige Omatsu

"Can twisting lights pioneer new generation materials science?" Third invited talk was given by Takashige Omatsu, Professor of Chiba University and the senior member of OSA in 2016. He firstly introduced where he came, what he is now working on, and mainly talked about twisting light with his interests in the field of photonics and optics, including diverse methods for material applications. He pointed out that it has very bright vision in optics & photonics world, pioneering new generation in the science fields. Participants enjoyed discussions regarding the future of materials science, combined with optical science.



4. Students Oral and Poster Presentations

Besides the discussion for our career developing, we held a research presentation session for attendees. We could have four oral presentations and 26 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 their researches.



7th Super Hikarijuku; Science School for Kids

We held our annual outreach event “Super Hikarijuku; Science School for Kids” in October 2016. We prepared 4 classes containing fantastic experiments which were made with something very familiar in our lives. More than 300 kids applied for the 30 seats to join this event and enjoyed "light." Also, we had the honor to invite Suita city mayor, Mr. Keiji Gotoh.

Here we briefly introduce 4 classes which we prepared.

1. Pinhole camera made of milk carton

In order to convince kids of the fact that “Light travels in straight line”, kids made a handmade pinhole camera from a milk carton. After making the pinhole camera and feeling the nature of light, they answered some quizzes (like “Which direction does the arrow point?”) through the pinhole camera and saw the imitation of the 1000 years ago pinhole camera made of carton boxes which we constructed in advance.

2. 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.

3. Spectroscopes made of snack box

We gave an explanation of nature of light and the principle of a spectroscope briefly. After a lecture about these basic optics, kids made spectroscopes with CDs and boxes of snacks. In addition, by using their spectroscope, kids tried to distinguish various kinds of light, for example, LED light and fluorescence light.

4. Exhibition of the toys related with light and 3D printer

There are some toys which are worked by using nature of light. Playing with the toys, kids studied where we used light in our daily lives. Then Kids tried a game to understand the nature of light by using all toys. And also, kids saw our 3D printer for real and studied the principle of it. 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.

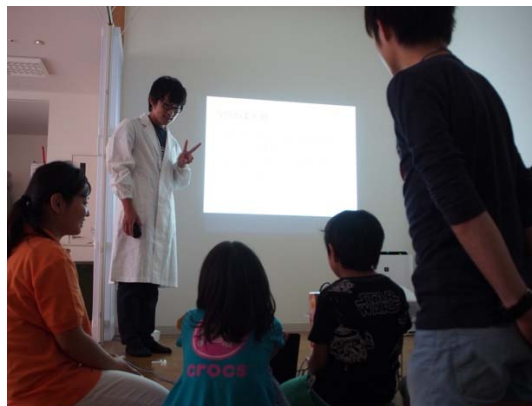
7th Super Hikarijuku website (Japanese):
<https://sites.google.com/site/superlightjuku/>

Another article regarding 7th Super Hikarijuku (English):
<http://www.parcjp.org/home/news/weheld7thkidsphotonicsschoolsuperhikarijukuon30thoctober>



Kippo Science

We held science classes for the lower classes of primary schools, requested from Hankyu Densha, which is the major private railways in Japan. We had 2 classes in Osaka and Hyogo in May 2016 and each class had more than 10 kids. We prepared pin hole camera made of a milk carton. After conducting our presentations about fundamental knowledge of the straightness of light and a mechanism of camera, kids made a pin hole camera by themselves. And then, they enjoyed to see pictures, patterns, and drawings painted by them displayed on a screen through the pin hole camera. 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 the nature of light which is our mainly related research topic.



Financial information

Beginning Balance			¥30,000
Funds raised	SPIE funding received (Activity Grant)	¥62,696	¥1,502,696
	Other funding sources (Osaka Univ. Photonics Center Budget)	¥500,000	
	Other funding sources (Core to Core Program)	¥940,000	
Funds expended	Global Student Conference 2016 (Dinner & Lunch)	¥280,000	¥1,515,980
	Global Student Conference 2016 (Transportation)	¥743,480	
	Global Student Conference 2016 (Proceedings & Souvenirs)	¥392,500	
	Hikarijuku (Cost of materials)	¥100,000	
Ending Balance			¥16,716