

# SPIE



# Student Chapter

## Singapore

Annual Report (2014-2015)  
SPIE Student Chapter Singapore

Presented by

Achyut Adhikari

President, SPIE student Chapter Singapore (2014-2015)

September 2, 2015

## Members and recruitment policy

As a student society our objective is to recruit more members for the interaction of the researchers and technical people in this field. Membership fee is refunded to 50% (SGD 13.00) for both new and renewed members as per our policy for expansion of our chapter. In comparison to the previous years we have increased our student's members up to 26 though alumni members are decreased. Decline in the membership is more in alumni and some of them have graduated. We expect to have more members in the coming year to have big family. Currently we have 26 student members and 8 alumni members.

Rakhitha Chandrasekara	Muneesh Maheshwari
Shuo Chen	Ratheesh Kumar Meleppat
Vishwesh Dikshit	Bo Meng
Hamid Farrokhi	Shilpa Pant
A. Ganapathi	Raghunandhan Ravikumar
Manushree Gangwar	Sathiya Sekar
Sepideh Golmakaniyoon	Anant Shinde
SIYU GUO	Dushan Wadduwage
Indira Khadka	Zhang Wei
Hongru Li	Wei Tao Yang
Yang Yu	Ming Zhao

## Alumni Members

Anthony Gallagher	Ching Seong Tan
Vasudev Nambakam	Kin Seng Lai
Anthony Gallagher	Sow Boon Teh
Agus Hatta	Chao Zuo

## Chapter officers 2014-15

President	Achyut Adhikari	<a href="mailto:adhi0005@e.ntu.edu.sg">adhi0005@e.ntu.edu.sg</a>	82620204
Vice President	Deepan Balakrishnan	<a href="mailto:deepan@u.nus.edu">deepan@u.nus.edu</a>	84207502
Treasurer	Nishtha Panwar	<a href="mailto:nish0010@e.ntu.edu.sg">nish0010@e.ntu.edu.sg</a>	83192030
Secretary	Shideh Ahmadi	<a href="mailto:shideh001@e.ntu.edu.sg">shideh001@e.ntu.edu.sg</a>	85244085
Advisor	Prof. A. Asundi	<a href="mailto:anand.asundi@pmail.ntu.edu.sg">anand.asundi@pmail.ntu.edu.sg</a>	67905936

## Conferences, Workshops and Seminars

Conferences workshops and seminars are great opportunities for research student and technical people to interact and learn about the ongoing activities. It play utmost role in research area. On the occasion of International Year of students we have conducted a series of talks involving various research from different field on conjunction with Optics and Photonics Society of Singapore (OPSS), The Photonics Institute (TPI) and Centre for Laser and Engineering(COLE) in NTU, Singapore.

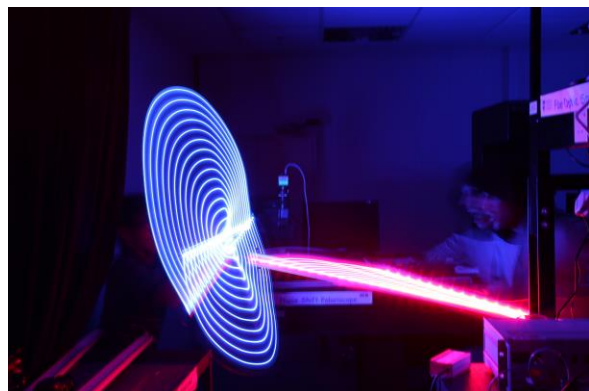
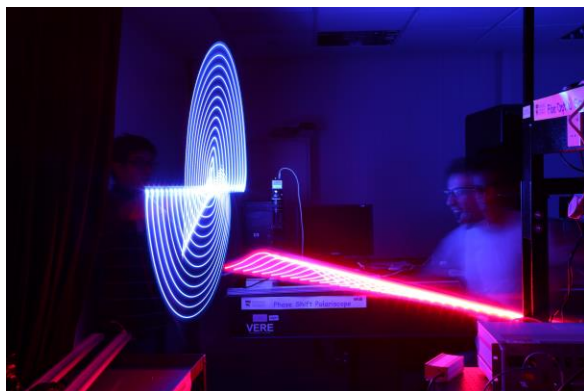
On the workshop advancement in application of optical fiber and sensors were discussed and demonstrated. Diamonds and its optical properties were elaborated in detail from company person. Different imaging systems were discussed like thermal imaging, 3 D imaging and compact holoscopes were discussed. Spectrometer and its application in biological matters were highlighted a lot. Interesting topic LED in urban farming was able to catch attention of various researchers in the seminar indeed. The workshop demonstrated various optical equipment that were patented in NTU and the projects that are on pipeline from Lab to product. Light painting was interesting stuff to watch during seminar. Some of the photos during seminar are as follows.

We invited distinguished optical companies to give a talk on that day, for example IIA technologies, Coherent, Mtech imaging and Greenology Pte Ltd. The Program was inaugurated by Prof Asundi highlighting the optics and its application in vast field of technology.

We also printed the batch t-shirt on the auspicious occasion of International year of Light and distributed to high school children to aware the application of light and its realm behind.



Some glimpse of the International Year of Light event





## SPIE lecture series event

Similarly we had SPIE lectures series event by Dr. Ralph B James on topic Compound semiconductor x and gamma ray radiation detectors and their application to nuclear medical imaging. Some snapshots during the event are presented below

### SEMINAR

Centre for Optical and Laser Engineering (COLE)  
The Photonics Institute  
School of Mechanical & Aerospace Engineering,  
Nanyang Technological University  
In conjunction with  
OPSS (Optics and Photonics Society of Singapore)  
SPIE (Student Singapore Chapter)

**Title:** Compound Semiconductor X- and Gamma-Ray Radiation Detectors  
and Their Application to Nuclear Medical Imaging

**Speaker:** Ralph B James

**Affiliation:** Brookhaven National Laboratory, Upton, NY 11973

**Date:** July 7, 2015

**Time:** 10:30 am

**Place:** Fusion@MAE Seminar Room (N3.1-B3c-06)

#### ABSTRACT OF TALK

Compound semiconductors are important for detecting and imaging X- and gamma-ray radiation. Cadmium Zinc Telluride (CZT) is the most extensively studied material today due to its band-gap, high atomic number, availability of large crystals, and good charge-carrier transport properties. A two-pronged approach to advance the technology is pursued, (1) Identify and fix defects in the crystals, and (2) Use the best material for fabricating detectors and incorporating them into instruments for spectroscopy and imaging. This seminar will report on the physical properties of CZT detectors at the micro-scale level, and correlations of the crystal's defects with device performance. A set of dedicated tools was developed for this R&D, including automated infrared transmission microscopy, X-ray micro-scale mapping using a synchrotron light source, X-ray transmission / refraction tomography, current deep level transient spectroscopy, and photoluminescence setups. Recent findings to improve the detector technology and deploy the detectors in field-portable instruments for nuclear medical imaging will be presented. The talk will also describe incorporation of CZT detectors into a new compact endocavity gamma camera (ProxiScan™) for early-phase detection of prostate cancer. Imaging data with prostate phantoms and from pre-clinical and clinical testing will be provided.

#### BIOGRAPHY

Dr. Ralph James served as the Associate Laboratory Director for the Energy, Environment and National Security with DOE's Brookhaven National Laboratory. He is currently a tenured Senior Scientist and Group Leader at BNL, where he conducts basic and applied research devoted to semiconductor materials, radiation detectors, and imaging systems. Dr. James has authored more than 550 scientific publications, served as editor of 25 books, and holds 21 patents. The output of Dr. James' research is finding numerous applications in the fields of gamma-ray spectrometers, nuclear medicine, solar energy, astrophysics, and security. He is a Fellow of the IEEE, SPIE, AAAS, OSA, MRS and APS, and he has received numerous prestigious international honors for his work on detectors and imaging, including Discover Magazine Innovator of the Year, 6 R&D100 awards, IEEE Outstanding Radiation Instrumentation Award, IEEE Harold Wheeler Award, Room-Temperature Semiconductor Scientist Award, Long Island Person of the Year in Science, 50 World's Best Technologies Award, Battelle Innovation Award, Frost & Sullivan Invention of the Year, Long Technology Hall of Fame Inductee, among others. Dr. James was also the President of SPIE, and served as Chairman of the Council of Scientific Society Presidents representing over 70 scientific societies and 1.4 million scientists and engineers across the globe.

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## Welcome group dinner

As per our tradition of our chapter we get together and have dinner in beginning of every financial year. This time we celebrated in the month of 2015. This activity will help us to know each other and the ongoing event and plans to be conducted on coming days.



## Our meetings and get together

Annual general meeting was conducted in December 2014. In the AGM we elected our new members and also discussed plan for the coming days. Prof Asundi chaired the meeting. Later on we had a meeting with officers for celebrating IYL 2015. I chaired up the meeting and ee planned to conduct IYL event on 13<sup>th</sup> april on conjunction with iCOPEN 2015 prior to the conference date for huge collection of students. Snacks and drinks were allowed to all the participants during the program. The program was able to collect lot of researchers and students working in the optics field.

## Balance sheet for the session 2014-2015.

S.No	Details	Withdrawal(S\$)	Deposit(S\$)	Balance(S\$)
1	Primary balance			1921.08
3	SPIE annual balance		1383	2702.79
4	IYL meeting	66		2636.79
5	IYL event	1300		1336.79
6	Membership refund	52		1284.79
7	Interest paid	4.03		1280.76
	<b>Available Balance</b>			<b>1280.76</b>

Hence available balance for the remaining year is **1280.76 SGD**.



## **Future activities**

We are looking forward to participate in iCEM 2016 Singapore going to be held on November. We will try to encourage members to give their best effort to the society. We are planning to launch free quality lighting kit to poly technic students to aware the application of optics. So far we have planned, we invited poly students previously at the IYL event and had helped them to learn realm of optics. Currently we are communicating with IEEE photonics student chapter and OSA student chapter in our university to do a joint seminar. It will help us to promote our society to a bigger level.

## **Acknowledgement**

On behalf of all our chapter members, I would like to express special thanks to our chapter advisor Prof Asundi, former president Mr. Muneesh Maheshwari, our chapter officers and following organisations for their support in the past year :

SPIE

Optics and Photonics Society of Singapore (OPSS)

Centre for Optical and Laser Engineering (COLE), Nanyang Technological University

The Photonics institute (TPI), Nanyang Technological University