



**Report of Activities of SPIE The Penn State Univ. Chapter  
 (September 2013 through August 2014)**

Ding Ma, Chapter President

**Name of Chapter**

SPIE The Pennsylvania State University Chapter  
<http://spie.ee.psu.edu/>

Chapter Leadership

<b>Name</b>	<b>Position</b>	<b>Email Address</b>
Ding Ma	President	dim5211@psu.edu
Corey Janisch	Vice-President	ctj119@psu.edu
Feng Guo	Secretary	fug118@psu.edu
Chenji Zhang	Treasurer	cxz167@psu.edu
Rijul Dhanker	Webmaster	rx257@psu.edu
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Bingqian Lu	Membership Coordinator	byl5088@psu.edu
Jared Price	Publicity Coordinator	jsp239@psu.edu
Dr. Zhiwen Liu	Chapter Faculty Advisor	zliu@enr.psu.edu

**Member Count:** 25 members (as of 8/30/2014)

**Abbreviated SPIE-PSU Expense/Income Report**

<b>Description</b>	<b>Date</b>	<b>Amount</b>
Current chapter balance	September 2014	\$1600
O+P 2014 Trip Total expenses	August 2014	\$(3400)
From SPIE Officer Travel Grant	August 2014	\$1100
Subsidy from University	August 2014	\$2100
10 <sup>th</sup> anniversary grant	December 2013	\$200

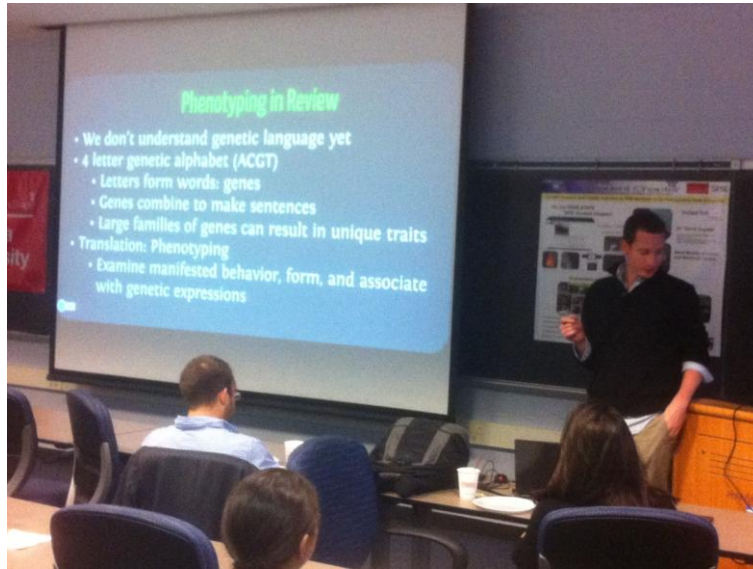
Expenses of printing poster for exhibitions or advertising, treat for regular SPIE member and preparatory meetings, and team building activities are not listed above.

## Chapter activities from September 1<sup>st</sup> 2013 – August 31<sup>st</sup> 2014

The events are listed here in chronological order. Regular meetings and Officer only meetings are not listed.

### Oct. 17<sup>th</sup>, 2013: Invited Talk: Laser Ablation Tomography (LAT)

Mr. Benjamin Hall, the President of Lasers for Innovative Solution, LLC, introduced LAT technique, which is developed by Penn State. The talk attracted more than 30 students in various field. After the lecture, Mr. Hall and our members discussed about related techniques, potential applications and how to operate a start-up company.



### Nov. 6<sup>th</sup>, 2013: Bowling Night

To enrich members' life outside labs and classrooms, we held a bowling party accompanied by pizza meal. Members are grouped to four teams to play a bowling championship. This is only one of our abundant team building activities we will launch in following years.

### Feb. 22<sup>nd</sup>, 2014: Penn State Student Chapter 10<sup>th</sup> anniversary

To celebrate our student chapter's 10<sup>th</sup> birthday, we played the snow tubing in Tussey Mountain, PA, under the generous grant gift from SPIE!



### **Mar. 21<sup>st</sup>, 2014: STEM Education & Outreach Events**

This year we deliberately prepared several new optical demos facing middle school children. Our outreach aims to employ an approach that provides young students opportunities to reproduce optical phenomenon in the lab. The specifically designed demos were drawing well.



### **Apr. 2<sup>nd</sup>, 2014: Visiting lecture - Dr. Janos Vörös from ETH Zurich**

Dr. Janos Vörös, Professor of Bioelectronics in ETH Zurich, gave an instructive lecture on nanotechnology based tools for biosensing and neuroscience at the invitation of SPIE PSU-Chapter. This comprehensive talk introduced the emerging field exploiting neuroinformation with nano-approach. Dr. Vörös also shared his experience on how to finish PHD productively with student members. Nearly 15 members attended this event, and the promotion attract another tens student working in this field.

### **Apr. 25<sup>rd</sup>, 2014: SPIE 2014 officer election**

This year we added four more positions to manage annually outreach in local community, build network between growing chapter volume, and promote SPIE PSU-chapter. New officers represent their philosophies about how to operate a successful student organization afterward. Former president also briefed attendees on previous year's summary.



### **July 23<sup>rd</sup>, 2014: Brimrose industrial tour**

After several rounds of contacts, we visited Brimrose Corporation of America this summer. The purpose of industrial tour is enhancing company visibility to our members. Brimrose showed us their recently developed spectral analysis products, and then our members talked with the engineers in aspect of research and career. We hope our members can learn about industry expectations and corporate cultures from this industry tour and other upcoming events.



### **Aug. 23<sup>rd</sup>~28<sup>th</sup>, 2014: SPIE Optics + Photonics, San Diego, CA**

Six student members Shuo Zhao, Nikhil Mehta, Corey Janisch, Liu Liu, Chenji Zhang, Yizhu Chen, and Chapter advisor Dr. Zhiwen Liu, have attended the SPIE O+P Conference at San Diego, CA, with the generous aids from SPIE and the University. They share their research results with other researchers, network with their peers, and come up with new ideas that will continue developing the field.



The following is a list of proceeding papers and poster developed by students, post-doctorate scholars, and faculty members affiliated with SPIE PSU chapter.

[Proceeding paper number] authors, title

- [9165-09] John B. Asbury, 'Influence of acceptor structure and aggregation on mechanisms of charge generation at organic interface'
- [9165-30] Robert J. Stewart, et.al, 'Band-edge photophysics of emerging organic-inorganic photovoltaic materials'
- [9172-16] Akhlesh Lakhtakia, 'Shift happens'
- [9172-30] Akhlesh Lakhtakia, 'Mimemes for SUBTLE applications'
- [9174-16] Joan M. Redwing, et.al, 'Van der Waals epitaxy of Bi<sub>2</sub>Se<sub>3</sub> via hybrid physical-chemical vapor deposition for topological insulator applications' (Invited Paper)
- [9180-09] Todd A. Palmer, et.al, 'Using numerical modeling to improve the laser processing of photovoltaic devices' (Invited Paper)
- [9181-07] John B. Asbury, et.al, 'Ultrafast infrared spectroscopy of charge generation and transport in organic photovoltaic materials' (Invited Paper)
- [9182-12] Iam-Choon Khoo, et.al, 'Liquid crystal hyperbolic metamaterial for wide-angle negative-positive refraction and reflection' (Invited Paper)
- [9182-29] Shuo Zhao, et.al, 'Ultrafast all-optical switching with transparent liquid crystals'
- [9182-31] Iam-Choon Khoo, et.al, 'Liquid crystal claddings for passive temperature stabilization of silicon photonics'
- [9183-38] Noel C. Giebink, 'Orbital angular momentum in organic microlasers' (Invited Paper)
- [9184-17] Thomas N. Jackson, et.al, 'Impedance spectroscopy and large perturbation transient photovoltage: measurement methods for recombination dynamics in organic photovoltaic'
- [9191-03] Liu Liu, et.al, 'Excitation of multiple surface-plasmon-polariton waves guided by the interface of a photonic crystal and a two-dimensional gold grating'
- [9191-15] Noel C. Giebink, 'Luminescent manipulation of sunlight: leveraging low étendue emission with nonimaging optics for photovoltaics and biofuels' (Invited Paper)
- [9191-16] Muhammad Faryad, et.al, 'Optimization of a spectrum splitter using differential evolution algorithm for solar cell applications'
- [9198-09] Venkatraman Gopalan, 'Probing metastable ferroelectric states exhibiting large property enhancements' (Invited Paper)
- [9198-10] Seong H. Kim, 'Vibrational sum-frequency-generation (SFG) spectroscopy study of crystalline carbohydrate polymers: cellulose and starch' (Invited Paper)
- [9198-12] Chenji Zhang, et.al, 'G-Fresnel spectrometer design and application'

- [9198-13] Nikhil Mehta, et.al, 'Holographic collinear frequency resolved optical gating for spatiotemporal characterization of ultrafast optical pulse'
- [9198-20] Corey Janisch, et.al, 'Second harmonic generation in tungsten disulfide monolayers'
- [9198-44] Yizhu Chen, et.al, 'Computational imaging based on the Hanbury Brown and Twiss effect'
- [9200-56] Shizhuo Yin, et.al, 'Widely tunable spectrum LED grown on nanostructured substrate'
- [9200-29] Shizhuo Yin, et.al, 'Mid-IR supercontinuum generation and applications: a review'
- [9200-32] Yun-Ching Chang, et.al, 'Field induced dynamic optical waveguide switches'
- [9200-55] Shizhuo Yin, et.al, 'Ponderomotive force induced nonlinear interaction between terahertz wave and air plasmas'
- [9208-05] Raegan L. Johnson-Wilke, et.al, 'Toward large-area sub-arcsecond x-ray telescopes'
- [9208-06] Raegan L. Johnson-Wilke, et.al, 'Technology requirements for a square-meter arcsecond-resolution telescope for x-rays: the SMART-X mission'
- [9208-07] Raegan L. Johnson-Wilke, et.al, 'Development status of adjustable grazing incidence x-ray optics using thin film PZT actuators'
- [9208-09] Raegan L. Johnson-Wilke, et.al, 'Adjustable optics systems based on PZT thin films with integrated ZnO electronics'

### **Future Directions:**

The SPIE student chapter is working hard to create a beneficial experience for its student members. Emphasis in the next year would be strengthening our connection with industry to develop communications skills by networking with company representatives and gain knowledge that helps us make better decisions about careers.