University of Virginia SPIE Student Chapter Annual Report 2016

Current Officers:

Advisor: Dr. Song Hu
President: Rajveer Nehra
Vice President: Ye Wang
Secretary: Benjamin Godek
Treasurer: Sanjay Khatri

All of our events are jointly organized by OSA and SPIE student chapter at UVA. We have about 20 student members in total.

Student Members (SPIE):

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<tr>
<th>Prefix (Person)</th>
<th>First Name (Person)</th>
<th>Last Name (Person)</th>
<th>Primary Country (Person)</th>
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<td>Mr.</td>
<td>Emeka</td>
<td>Ikpeazu</td>
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<td>Mr.</td>
<td>Zack</td>
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<td>Andrew</td>
<td>Polemi</td>
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<td>Mr.</td>
<td>Leslie</td>
<td>Garza</td>
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Activities in 2016:

**STEM Day: Organized by OSA and SPIE joint chapter at UVA**

On Oct. 26, 2016, the OSA and SPIE joint chapter at UVa sponsored the first annual community outreach event called Science, Technology, Engineering, and
Mathematics (STEM) Day. We invited 6th grade students and teachers from Burley Middle School of Charlottesville, VA to participate in interactive demonstrations prepared by 11 different STEM-based organizations at the University of Virginia (UVa). The 6th graders engaged in the various experiments ranging from DNA extraction from strawberries to cooling balloons with liquid nitrogen for 2 hour intervals in shifts of 100 students from 10AM-2PM. Here is a list of the participating UVa organizations:

1) Optical Society of America and SPIE Student Chapter at UVA

2) Graduate Physics Student Association

3) Women in Math and Science

4) Dark Skies Bright Kids

5) Society of Women Engineers

6) Chemistry LEAD

7) Science Delivered

8) UVa School of Medicine

9) Graduate Biosciences Society

10) UVa Materials Science

11) IEEE Photonics

Our group made it a point to include some demonstrations that had a direct impact into their daily lives. We included a light bulb demonstration, where the
6th graders would manually crank a rotary handle with the energy produced used to light various bulb. We had the 6th graders test incandescent and LED bulbs. The students noticed the difficulty in lighting up the incandescent bulb and soon realized they had to rotate the handle faster in order to generate any light. On the other hand, the LED bulb was much brighter and light up with minimal effort in comparison, thus demonstrating the energy efficiency of LED bulbs in comparison to incandescent bulbs. The 6th graders were draw in bunches toward our levitating superconducting ceramic and Van de Graaff generator, where the students anxiously awaited their hair-raising experience with the static charge from the generator. Students constructed unique and innovative towers using spaghetti and marshmallows, viewed their own cheek cells on a microscope, and created slime with various colors. They also held actual human brains and discovered unique materials sensitive to sound vibrations!

OSA and SPIE Chapter ensured that all volunteers from each organization were properly fed and nourished throughout the day. We had volunteers setting up as early as 7:30, so we provided them with coffee, fruit, and muffins. For the afternoon, OSA and SPIE chapter teamed up with a local business to provide us with discounted sandwiches for all the volunteers. Our new members are committed to supporting the Charlottesville community by keeping our business local and promoting interest in optics, photonics and lasers. We were praised by the teachers and the local STEM coach for the creating such an engaging and atmosphere for the 6th graders to explore each group’s experiments. All of the organizations were invited by the Albemarle County School District to set up a similar demonstrations event during the Spring 2017 semester at Walton Middle School of Charlottesville, VA. As we continue to expand our science outreach program our goal is to include more students and attract additional STEM organizations to participate in future outreach events. We would like to thank OSA and SPIE for funding the event and look forward to hosting STEM Day 2017.
Kid*Vention by Virginia Discovery Museum:

It is organized by Virginia Discovery Museum where about 2000 kids participated along with their families. Kids explored a wide variety of scientific fields through hands-on demonstrations, experiments and games. Exhibitors were grad and undergrad students in areas like biology, chemistry, earth science, engineering, physics, and zoology. OSA and SPIE chapter at UVA participated and showcased some optics and physics related demos.
**Travelling Speaker:**

We have hosted a speaker (Dr. David Giltner), who described his as well as several other former STEM PhDs transitioning from graduate school to industry. He provided the audience with advice and tips when pursuing a particular career path.

**Industry tour:**

We visited Wasatch Photonics INC, a Durham, NC based company in Spring 2016. Some of us got together and drove. We learned about Raman spectroscopy, 3D printing and OCT scans.
**Future Events:**

0.1 STEM Day 2017
0.2 Kid*Vention 2017
0.3 Industry Tour
0.4 Travelling Speaker, yet to decide whom to Invite

0.5 Labs visits at University of Maryland, College Park
   In fall semester, we are going to drive to UMD and visit their
   AMO labs; they had a visit to UVA labs

0.5 Collaboration with Science Delivered, Charlottesville
   Science Delivered visits the schools and shows some exciting
   science demos for the kids, we are looking forward to collaboration
   with them and help them out organizing their events.

OSA and SPIE jointly fund all of our events. The previous officers shared all the
previous annual reports and provided the information about the budget. We
have been using the funds available to us from the past and still have some left
which should be sufficient for future events. All the current officers are 3rd year
grad students and we are very inclined to recruit new officers biomedical
Engineering and medical physics departments.

- Kidvention-Coffee/Snacks from Grit Coffee $11
- Kidvention- (Food for volunteers) $43
- Dinner with OSA speaker David Giltner (covered his meal) $20
- Dinner with UMD Grad students $150
- STEM Day 2016 $800
- Industry Visit $100