

Rose-Hulman Institute of Technology  
SPIE Student Chapter  
Annual Report 2016-2017



**Authored by** Lisa Shimomoto, President,  
Madison Jaeger, Vice President  
James Beil, Secretary  
Audrey Brand, Treasurer

**Table of contents**

I. Membership..... 2

II. Official Meetings..... 3

III. Completed Activities..... 4

IV. Future Activities..... 5

V. Financial Activity..... 7

## I. Membership

Position	Member Name	Contact	Member Number
President	Lisa Shimomoto	shimoml@rose-hulman.edu	3723028
Vice President	Madison Jaeger	jaegerml@rose-hulman.edu	4039849
Treasurer	Audrey Brand	brandac@rose-hulman.edu	3723037
Secretary	James Beil	beilja@rose-hulman.edu	3651890
	Michael Butler		
	Graham Cassel		
	Amelia Covert		
	Sheston Culpepper		
	Taylor Evans		
	Nicole Gayotin		
	Travis Koontz		
	John Koopal		
	Luke Kuza		
	MacKenzie Lewis		
	Jacob Murray		
	Samuel Ridgley		
	Chase Salyers		
	Avtej Sethi		
	Justin Smerigan		
	Rebecca Su		
	Rebecca Swertfeger		
	Anders Voss		
	Sydney Silson		
	Xifei Xiao		
Advisor			
	Dr. Sergio Granieri		

## **II. Official Meetings**

Rose-Hulman operates on a ten week quarter system, with three terms during the school year and one summer term. During the three school terms, the chapter met every other week for a total of three to five meetings per quarter, with each meeting lasting an hour. This schedule provided the flexibility for each member to participate in meetings without taking time away from their studies. Members were held accountable to attend at least two meetings per quarter.

This year, the club was more project oriented than the previous years for the following reasons. First, the club was in need of demos which could be built easily and quickly by the younger age group during outreach. Second, a more complex project was chosen and carried out in order to apply optics knowledge and engineering methods to build an interesting display. The projects completed are listed in the Completed Activities section. These projects will be displayed during the STEM Fair that is held each year and at outreach events.

Meeting times were used for completing projects and answering questions regarding academics, internships, and jobs. Snacks were provided at several meetings to facilitate a friendly, casual atmosphere between members.

The ultimate goal of this chapter is to spread awareness of optics to others while providing a support platform for students who are already optics majors or planning to join the field.

### **New Member Recruits**

Members are recruited via the Activities fair - which is organized by Rose-Hulman as an opportunity for clubs to advertise to new students - and avocation within the Physics and Optical Engineering Department. Completed projects are also displayed during the Activities Fair.

### III. Completed Activities

#### Rose Expo

The Rose EXPO is held to provide an opportunity for students involved in professional clubs and organizations to personally connect with hiring personnel prior to the fall Career Fair. This opportunity also allowed companies to see the involvement of students outside of academics, along with the student's application of academic knowledge to a professional club setting. Several officers represented the SPIE chapter at this event to inform many company representatives of Optical Engineering at Rose-Hulman.

#### Community Outreach - Blue Key STEM Fair (April 2017)

SPIE members represented SPIE and optics at the annual Blue Key STEM fair. The STEM fair is organized by Rose-Hulman's Blue Key honor society as a venue for informing elementary to high school students of possible topics in engineering and science. Many of SPIE's projects are displayed here in order to spread awareness of optics as a career both on campus and to those who are in the process of deciding their future.

#### LED Throwies

This project was the first project completed as a club. LED Throwies simply consist of a battery, LED, and magnet taped together; the result is a magnetic, lit LED. The purpose of this project was to teach basic electric circuit and optical theory to the underclassmen, as knowledge in both are crucial for optics.



Members participating in constructing LED Throwies.



Finished LED Throwies.

#### Smartphone Hologram

The second completed project is the Smartphone Hologram, which is made out of overhead sheets cut and pasted into a trapezoidal prism. When placed on a smartphone with the appropriate video running, a 3D projection of the 2D image is visible in the

center of the prism. The purpose of this project was to spark interest in SPIE and optics for new members at the beginning of the school year.

### **Waterfall Waveguide**

Currently, the chapter is working on creating a “waterfall waveguide”, or a waterfall display which passes light along the water streams. This project provides the opportunity for members to build a display using optical engineering and electrical engineering knowledge while exercising teamwork skills. We are currently done with our testing phase and moving onto ordering the parts and setting up work days.



Collaboration between members to build the waveguide.



Preliminary testing of components.

## **IV. Future Activities**

With two more months remaining in this school year, the SPIE chapter is planning multiple activities, including finishing the waterfall waveguide and inviting a speaker. Unfortunately, the chapter struggled to find a speaker who was willing to give a talk at Rose-Hulman earlier in the year. We are now in touch with and coordinating a possible speaker for the end of April.

The chapter has also been in touch with the local Terre Haute South High School for an outreach event. We plan to work with high school students who are currently in technology classes by bringing in past SPIE projects and teaching the science behind how each piece works. Demonstrations of the project - along with hands on activities such as building simple project (e.g. LED Throwies) - will be performed to reinforce the theory involved with optics. The chapter will also inform the students about experiences in the STEM field and answer any questions they have.

Furthermore, we are looking forward to participating in the Blue Key event at the end of April with our displays - including the waterfall waveguide and demos from the previous years - in order to spread awareness of optics to students. This year, the chapter will provide simple hands on projects such as LED throwies and holograms for the students.

Finally, the chapter will participate in the International Day of Light on May 16th. This event will be a joint effort with the OSA chapter at Rose Hulman. Currently, activities such as operating a pin hole camera out on the campus quad and a photography contest where the winner will be chosen based on unique photography of an effect of light.

## V. Financial Report

Chapter money was used primarily on meetings (projects and snacks). The remaining money in the budget will be used for outreach and projects for the remainder of the year.

<b>Date</b>	<b>Description</b>	<b>Debit (\$)</b>	<b>Credit (\$)</b>	<b>Remaining Balance (\$)</b>
9/1/2017	Carried over from last year		1116.00	1116.00
12/18/2017	SPIE funding		1100.00	2216.00
1/11/2018	Parts for LED Throwies	36.87		2179.13
	Light guide prototyping parts	42.00		2137.13
	Pizza for meeting	39.81		2097.32
2/8/2018	Pizza for meeting	56.25		2041.07
Pending	Light guide supplies	350.00		1691.07