

Air Force Institute of Technology SPIE Student Chapter Annual Report for 2011

AFIT SPIE Student Chapter
AFIT/ENG
2950 Hobson Way
Wright-Patterson AFB, OH 45433

Introduction

In this annual chapter report, we highlight the many firsts that our chapter made over the past year. This has been our most active and productive year to date and we have plans to sustain this level of chapter involvement into the future.

Members

Leadership

Our current chapter officials were elected on 17 February 2011 and are listed below:

- Michael Steinbock, michael.steinbock@afit.edu, President (ID: 03377282)
- Chad Su'e, chad.su'e@afit.edu, Vice President (ID:)
- Mu Kim, mu.kim@afit.edu, Treasurer (ID: 03402354)
- Jeramy Motes, jeramy.motes@afit.edu, Secretary (ID:)

Our current committee chairs were elected on 17 February 2011. They are listed below along with the members for each committee:

- Publicity committee
 - Chairman: Jessica Schafer
 - Member: Mark Spencer
- Membership committee
 - Chairman: Simon Ferrel
 - Member: Mark Spencer
 - Member: Jessica Schafer
- Programs Committee
 - Chairman: Chad Su'e
 - Member: Mark Spencer
 - Member: Derrick Langley

As we draw to the end of this year's term, we are in the process of organizing final recruitment for new members prior to holding chapter elections for the next year.

Current members

Currently, our chapter has 16 student members and two alumni members. All members and their membership expiration dates are listed in the Table 1 below. The AFIT SPIE student chapter maintains two chapter advisers, one military faculty member for continuity and one civilian faculty member for longevity. Our military advisor, new to this past year, is Maj Milo Hyde, PhD, USAF and our current civilian faculty member chapter advisor is Michael Marciniak, PhD. Both of our current chapter advisers are regular members of SPIE and have written consent from their respective department heads, as required by the chapter constitution. The AFIT SPIE student chapter also elicits the participation of AFIT faculty members who are current members of SPIE or show desire in becoming members of SPIE. For

example, a few faculty members have made it a point to attend chapter meetings in the past. Their continued involvement has the potential to increase chapter support and longevity.

Table 1: Current members of the AFIT SPIE Student Chapter.

Student Members:	Membership Expiration
Paul Dolce	25 Feb 2012
Simon Ferrel	19 Nov 2012
Mu Kim	2 Mar 2012
Derrick Langley	31 May 2012
Robert Lloyd	1 Feb 2012
Shane McConnell	11 Mar 2012
Jeremy Motes	26 Mar 2012
Brian Neff	12 Jul 2012
Michael Seal	21 Sep 2012
Spencer Sellers	2 Mar 2012
Mark Spencer	5 May 2012
Michael Steinbock	6 Oct 2012
Bryan Steward	9 Mar 2012
Jason Tellez	1 Jun 2012
Jason Vap	22 Sep 2012
Daniel Wheeler	5 June 2012
Alumni members:	Graduation Date
Christopher Lenyk	May 2009
Michael Marciniak	Not available

Chapter Activities

Invited Dr. David Wick as a Distinguished Lecturer

One of the first orders of business from this past year was organizing a distinguished lecturer to come speak to the chapter. Chapter members nominated lecturers of interest from SPIE's Distinguished Lecturer list, and we selected Dr. David Wick from Sandia National Labs for his talk on active optics, as shown in Fig. 1. Additionally, we worked with AFIT's Physics department to include Dr. Wick's talk as part of their weekly departmental seminar. This allowed for a wide audience to hear not only a very interesting talk, but it also gave our chapter great visibility for recruitment purposes with approximately 50 participants. While visiting, interested chapter members had multiple opportunities to personally meet with Dr. Wick and discuss common research and career interests. Overall, this was a great first for our chapter, providing an intriguing presentation, potential collaboration with Sandia National Labs, and school-wide chapter visibility.



a.)



b.)

Figure 1. Distinguished Lecturer Dr. David Wick's visit to AFIT. In a.) he is giving his talk on active optics, and b.) he is posing after his talk with 2Lt Schaffer, President Steinbock, and Mr. Spencer (left to right).

Community Outreach

Our chapter has conducted many outreach events over this past year, and we consider this our greatest area of growth as an overall chapter. Last year, Mr. Mark Spencer led us in the development of the “Laser Propagation Demonstrator” or “Demonstrator” for short. This interactive hands-on demonstration serves as our chapter’s legacy outreach initiative, and we make it a point to bring the Demonstrator to education outreach events. For example, our chapter brought the Demonstrator to the 2011 Optics Outreach Olympics at SPIE’s Optics + Photonics, and in our first year of competition, we received a third place Bronze Medal. Furthermore, our chapter was the only team from the United States to place out of 16 chapters overall. We plan to participate in the 2012 Optics Outreach Olympics and to incorporate ideas gained from the 2011 Optics Outreach Olympics into our outreach program. Figure 2 below shows our booth at the 2011 Optics Outreach Olympics.



Figure 2. The Laser Propagation Demonstrator at the 2011 Optics Outreach Olympics. Mr. Spencer, Treasurer Kim, and President Steinbock (left to right) are enjoying a night full of optics and photonics fun leading to our Bronze Medal victory!

In addition to the 2011 Optics Outreach Olympics, we organized and displayed the Demonstrator and our Bronze Medal in our chapter booth at Optics + Photonics. This was a multi-day effort and we made it a point to have a chapter member at the booth whenever possible. The support received from SPIE members was very rewarding, and we plan to have another chapter booth at Optics + Photonics in 2012. Figure 3 includes a picture of our booth setup at Optics + Photonics.



Figure 3. Our chapter booth setup at the Optics + Photonics. Secretary Motes stands in front of the Demonstrator.

Following Optics and Photonics, our chapter organized a number of visits to local schools around AFIT. These were primarily one to two hour visits where we would talk to the students about basic optics principles using the Demonstrator to keep interest, and then relate those concepts to some of the ongoing research at AFIT. There was a lot of interest amongst the students we talked to and we hope that we sparked their interest in STEM, specifically in optics and photonics. Below are the events we participated in over the past year:

- Astronomy Evening at the Dayton Boonshoft Museum
 - Over 15 interactive booths including the Demonstrator
 - Supported by our chapter vice-president Chad Sue and Mark Spencer
 - Participation from approximately 100 students ages 3 to 16
 - See Fig. 4a for image
- Rosa Parks School for the Underprivileged
 - Supported by our chapter president Michael Steinbock, vice-president Chad Su'e, secretary Jeramy Motes, and Capt Derrick Langley
 - Approximately 25 middle-school students
 - See Fig. 2b for image
- Dayton Regional Stem School
 - Supported by our chapter president Michael Steinbock, vice-president Chad Su'e, and Mr. Mark Spencer
 - Demonstrator was used for both classroom and Science Olympiad meetings to promote optics and photonics education
 - Approximately 25 10th grade students attended the classroom demo and 50 students grades 7-12 attended the kick off meeting demo



a.)



b.)

Figure 4: Using the Demonstrator with students from a.) Astronomy Night at the Dayton Boonshoft Museum and b.) Rosa Parks School for the Underprivileged. In a.) Mr. Spencer is demonstrating basic principles of imaging and in b.) Secretary Motes, President Steinbock, Capt Langley, and Vice President Su'e (Left to right) are showing the Demonstrator in full form.

In addition to these short events, Mr. Mark Spencer organized a number of chapter members in coaching Science Olympiad (<http://soinc.org/>) for the local Dayton Regional STEM School. Science Olympiad is a national science competition with numerous challenges and topics in which students learn material in those subject areas and, in some cases, design and build items for competition. We settled on coaching teams in Optics, Remote Sensing, Mousetrap Vehicle, and Towers. We liked the idea of sharing our optical knowledge, while also participating in some of the building events. Coaching these teams was a learning experience for all involved. We met once a week for 45 minute sessions per topic with the student groups between September and March, and we quickly found that these longer-term outreach events have a very different nature in dealing with the kids than the short outreach events. Personally, this has been a great learning experience in dealing with kids and working to motivate them through sometimes difficult material, as shown in Fig. 5. The final outcome of the competition will be decided in March, and we look forward to seeing the results!



Figure 5. Science Olympiad Coaching at the Dayton Regional STEM School. Mr. Spencer is mentoring some of his students participating in the mousetrap vehicle event.

Travel Grants and Scholarships

As the chapter president, Mr. Michael Steinbock applied for and received a 2011 SPIE Student Chapter Travel Grant to attend the 2011 Student Chapter Leadership Workshop at Optics + Photonics. This experience was fantastic in networking with other student chapter leaders around the world, gathering new ideas for running our chapter, and meeting some of the SPIE Executive members at social events. Michael was joined by several other chapter members at Optics and Photonics, all of whom greatly enjoyed and benefitted from SPIE's focus on student development throughout the conference. In particular, Mr. Mark Spencer served as an alumni participant for the 2011 Student Leadership Workshop and we are proud of his efforts.

Mr. Mark Spencer was also successful in applying for and receiving a \$2,000 SPIE scholarship for his contributions to the field of optics and photonics. The AFIT SPIE Student Chapter greatly appreciates the honor endowed with the receipt of Mark's SPIE scholarship and will continue to support and encourage future civilian students in the chapter to apply for graduate scholarships from SPIE.

AFIT First Friday

Leading up to our chapter's annual elections, our chapter was looking for new ways to advertise to the AFIT student body. First Friday is a monthly AFIT-wide event, where every first Friday of each month, various AFIT groups sponsor a social gathering. This typically includes food and drinks for students and faculty to come and relax at the end of the week. After expressing interest to the AFIT Student Association, we took an offer to sponsor the January First Friday. For us this included providing food and serving food and drinks. We all had a great time socializing and gaining a wide exposure for the chapter. This has been a goal for chapter recruitment for the past couple years, and we are glad we that we finally made it happen.

Best Light-Based Master's Thesis

Again looking to raise chapter visibility, we created an award for the best Master's thesis in optics and photonics. Students are nominated by their advisors throughout AFIT, and our chapter's PhD student members are responsible for selecting the best of the submissions. In addition to further advertising our chapter, this rewards hard work and dedication within the field of optics. The winner will receive a commemorative plaque, \$50 check, and a sponsored year of continued chapter membership. We hope that this increased chapter visibility and incentives will be a source of motivation amongst the optics students.

Future Activities

Moving to the next year, our chapter has several ideas to increase our chapter involvement and relevance to members. These are highlighted in the bullets below:

- Setup collaboration with the nearby University of Dayton (UD) SPIE student chapter. Initially, we envision this to be a socially based gathering to build relations as opposed to a science-only approach. We feel this is important to maximize member involvement from both chapters. This can lead to collaborative research, sharing of research facilities, increased networking, and open communication between AFIT and UD.
- Continued community outreach to local schools and groups. We have received positive feedback from our recent events, and there is great interest in continued visits. We continue to refine our presentations to find ways to best interest the kids of whatever age-group and backgrounds we see.

- Along with the community outreach, our chapter has submitted an SPIE Education Outreach Grant to further develop our Laser Propagation Demonstrator used in teaching various optical concepts. We have several ideas for improving the system to make it as interactive as possible. We hope to bring this upgraded system to the upcoming SPIE Optics + Photonics conference to compete in the 2012 Optics Outreach Olympics.

Financial Information

Attached here are our financial records through the end of this election period. While this is not a full year of financial information, it aligns better with our chapter membership cycle as students graduate and join. Note that we expect to spend up to \$150 in the next month for the best Master's thesis award.

Air Force Institute of Technology Student SPIE Chapter			
Statement of Cash Flows			
CY 2011			
Cash Flows - Operating Activities			
2010 Balance		\$520.88	
Outreach Events		(\$70.00)	
Recruiting Events		(\$378.82)	
Food & Supplies for Chapter Meetings		(\$267.20)	
<i>Net Cash Flow from Operating Activities</i>			(\$195.14)
Cash Flows - Chapter Grants			
Grant from SPIE		\$900.00	
<i>Net Cash Flow from Chapter Grants</i>			\$900.00
Net increase in cash and cash equivalents			\$704.86
Cash and cash equivalents, beginning of year			\$0.00
Cash and cash equivalents, end of year			\$704.86
Air Force Institute of Technology Student SPIE Chapter			
Balance Sheet			
CY 2011			
Assets		Liabilities	
Cash	\$704.86	Notes Payable	\$0.00
Posters	\$153.32	Equity	
Tools & Equipment	\$507.34	Chapter Equity	\$1,365.52
Total	\$1,365.52	Total	\$1,365.52

Summary

In closing, we feel like this has been an extremely successful and productive year. We have several goals for the year to come, which will continue to grow chapter involvement, relevance, and outreach. From all of us here at the AFIT SPIE Student Chapter, thank you.

Michael Steinbock
President
SPIE AFIT Student Chapter
Air Force Institute of Technology
17 February 2012

