Executive Summary:

Since the establishment of SPIE-IISc student chapter in August 2010, we have been focusing on regularly organizing technical events, talks and outreach programs in and around the campus. We aim in providing the researchers working in the field of optics, the opportunity and ambience to interact, learn, explore and share one’s knowledge and experiences to the photonics society. We are happy to share that we successfully arranged technical talks, outreach programs and SPIE Visiting Lecturer Programs as part of our flagship event IISc Summer school in Optics And Photonics 2019 with exceptionally good participation from different parts of India as well as active contribution from the members of the chapter. As per the feedback from participants from previous year, we also organized technical talks on topics like biophotonics, diffractive optics and career development. The challenge faced by SPIE Chapter was that we did not have Chapter Activity grant this year to conduct programs. The funding for programs were raised by SPIE members from sponsorships and support from Applied Photonics Initiative and the institute.

Contact Information:

For general questions about our chapter, please contact our chapter advisor, Prof. T. Srinivas
Applied Photonics Lab, Electrical Communication Engineering Dept,
Indian Institute of Science, Bangalore 560012
email: tsrinu@iisc.ac.in
2018 - 2019 Officer Listing:

Archana Kaushalram  
President  
PhD Student  
archana@iisc.ac.in

Sruti Menon  
Vice President  
PhD Student  
sruti@iisc.ac.in

Shafeek Samad  
Secretary  
PhD Student  
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Krishna Murali  
Treasurer  
PhD Student  
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2019 – 2020 Officer Listing:

Lalkrishna A S  
President  
PhD Student  
lalkrishna@iisc.ac.in

Faheem Ahmad  
Vice President  
PhD Student  
faheemahmad@iisc.ac.in

Archana Kaushalram  
Secretary  
PhD Student  
archana@iisc.ac.in

Sruti Menon  
Treasurer  
PhD Student  
sruti@iisc.ac.in

Student and Community Membership

At the time of this report, there are 24 members affiliated to the chapter. We expect more students to join in the coming year. Membership drives will also be conducted for the new students who will join the institute in 2020.

<table>
<thead>
<tr>
<th>Name</th>
<th>Email</th>
<th>Expected Grad Month/Year</th>
<th>SPIE Membership Expiration Date</th>
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<tr>
<td>Lal Krishna A. S.</td>
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<td>Faheem Ahmad</td>
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<td>Santosh Aparanji</td>
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<td>Rabindra Biswas</td>
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<td>07/01/2020</td>
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<td>Vishal Choudhury</td>
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<td>Sushma Gali</td>
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<td>Shafeek Samad</td>
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Activities Report

**Technical Talk**

**Date/Time/Location:** 24\(^{th}\) January 2019, IISc  
**Speaker:** Prof. Chitra Shukla  
**Topic:** Quantum Communication Protocols  
**Bio:** Dr. Chitra Shukla is a theoretical physicist and actively involved in the research area of quantum information. Her research work is focused on several aspects of quantum communication and quantum cryptography. So far, she has published 16 research papers in reputed International journals. She obtained her Ph.D. degree in Physics (July 2011-March 2015) under Prof. Anirban Pathak at Jaypee Institute of Information Technology (JIIT), University, Noida, INDIA. Subsequently, she has been awarded the prestigious International ‘JSPS Fellowship’ by Japan Society for the Promotion of Science and worked as a “JSPS Postdoctoral Research Fellow” (April 2015-March 2017) with Prof. Masanao Ozawa at Graduate School of Information Science, Nagoya University, JAPAN. Further, she has been selected for another International Fellowship in China. At present, she is pursuing her second postdoc (September 2017-till date) with Prof. Gui-Lu Long at the Department of Physics, Tsinghua University, Beijing, China. She has also refereed for several journals of international repute, e.g., International Journal of Theoretical Physics, International Journal of Quantum Information, Quantum Information Processing, and Indian Journal of Science and Technology, etc.  
**Participants:** 57  
**Cost:** The cost was covered by ECE department  

Our advisor Prof. T Srinivas with Prof. R Srikanth and Prof. Chitra after the talk.
Outreach Activity: IISc Open Day
Date/Time/Location: 23rd March 2019, 9am-5pm, IISc
Participants: > 38,000
(Ref: https://www.thehindu.com/news/cities/bangalore/open-day-at-iisc/article26622554.ece)
Cost: The cost was covered by IISc, Applied Photonics Initiative (API) and ECE Department.

This is an institute level program where the institute is open to the outside world to showcase the research activities and to educate regarding various science and technological aspects to the general public. We used this platform to educate the people about some of the optics-based research work which is currently going on in IISc and conducted optics based live demonstrations and few optics-based games for the school kids. We are happy to say that we received huge participation and interest from the crowd in this event.
International Day of Light
Date/Time/Location: 16th May, 2019 in ECE Department, Indian Institute of Science
Participants: 155
Cost: The cost was covered by Applied Photonics Initiative and ECE Department

In this event, we organized two special talks where we saw participation from students and faculties from the institute and from within the city. The details of the talks are as follows:

Talk 1: Photonics Technology for Defence Applications
Speaker: Dr. Jagannath Nayak, Director, Center for High Energy Systems Sciences, DRDO
Bio: Jagannath Nayak received the M.Sc. (Engg.) and Ph.D. degrees in electrical communication engineering from the Indian Institute of Science (IISc), Bengaluru, India. He started his career at the Defense R&D Organization (DRDO), in 1992, where he served at DRDO Laboratory RCI, Hyderabad. He has led the development of fiber optic gyroscopes (FOG) as the Project Director and has served as the Associate Dean of the Electro-Optical Instrumentation Research Academy (ELOIRA), Hyderabad, from 2009 to 2016. He took over as the Director of the Centre for High Energy System and Sciences (CHESS) in 2016. He has published over 70 research papers in national and international journals and conferences. He is an Associate Fellow of the Royal Institute of Navigation (AFRIN); a Fellow of the Indian National Academy of Engineering (FNAE), OSI, and IETE; a Life Member of ISSS, India, and the Aeronautical Society of India (ASI), India. He is a recipient of numerous awards and honors, including the Agni Excellence Award for Self-Reliance, the Nina Saxena Excellence in Technology Award, and the Aeronautical Society of India Swarna Jayanti Award.

Talk 2: Quantum Information Technology
Speaker: Prof. R Srikanth, Associate Professor, Poornaprajna Institute of Scientific Research
Bio: After obtaining his PhD from IISc, Bangalore, Dr. R. Srikanth worked as a postdoctoral scholar at the (then) Center for Theoretical Studies, IISc and then at Light & Matter Physics (LAMP) group, RRI, Bangalore. He joined PPISR as a Faculty Fellow in 2006, becoming an Assistant Professor in 2010. He has guided three PhD students (separately) in the fields of quantum cryptography, quantum noise and quantum foundations; and has (co-)authored over 70 research papers.

Photos of the speakers giving their talk: Dr. Jagannath Nayak and Prof. R. Srikanth

Networking during tea break           Photography Competition winners
Apart from these talks, we also conducted a photography competition with the theme “light” and received numerous beautiful and innovative photographs from participants. The best three photographs were selected by a panel of judges and the winners were awarded a cash prize as a token of appreciation.

**SPIE Visiting Lecturer Program as part of IISc Summer School in Optics and Photonics 2019**

**Date/Time/Location:** June 21, 2019, Golden Jubilee Hall, ECE department, IISc  
**Participants:** 250+ (in auditorium) and 1500 through online streaming inside campus  
**Cost:** The cost was covered by Applied Photonics Initiative and SPIE

Summer School in Optics and Photonics (SOAP) is an event meant for graduates, researchers and faculties working or interested in optics and photonics. As part of the program, we organized talks, tutorials, industry hands on session, lab visits, poster sessions and networking sessions. At the end of the event, we awarded cash prizes to best poster winners and also issued participation certificates for the participants. We are pleased to inform that we put forward a successful event in attracting over 80 registered participants from various parts of India along with more than 150 in-house participants. We brought together 15 speakers from India and abroad.

SPIE Visiting Lecturer program was conducted as part of the event. It was the main highlight of this year’s program. The career development talk was given by SPIE Visiting Lecturer Dr. David Guiltner, TurningScience. The sessions were also live telecasted throughout the institute. For the SPIE lecture alone, we had to telecast in another auditorium since the main auditorium was houseful. More than 250 students watched it in two auditoriums and the estimated number of online viewers is approximately 1500. For more information on the detailed topics and information of the program, please visit the website ([http://www.iisc-soap.co.in/index.php](http://www.iisc-soap.co.in/index.php)).
Group Photo SOAP 2019

Career Development session by Dr. David Giltner, SPIE Visiting Lecturer and interactive session with participants

Interactive session with Synopsis industry expert.

Lab Visit to NNFC Cleanroom facility in CeNSE Department

Poster session during SOAP 2019
**Outreach Activity:**

**Date/Time/Location:** 26th November 2019, 10am-1pm, Government Higher Primary School, Vaderahalli, Bengaluru  
**Participants:** 130  
**Cost:** Rs. 11000/- (Rupees Eleven Thousand only) (covered by SPIE IISc chapter and Applied Photonics Initiative)

As part of our outreach activity, student members visited Government Higher Primary School, Vaderahalli, Bengaluru where they presented and demonstrated optics-based experiment in two classrooms of 65 students each. A quiz was also conducted at the end of the session and we received active participation and keen interest in the topics from the students. The student members were also overwhelmed by the active, curious, courteous and kind gestures from the kids in the school. The activity was a fulfilling trip for the volunteers, and we believe it was a day well spent for both volunteers as well as the students. With the response received, we plan to undertake more of such activities in the future.

![Presentation on basic optics in the regional language](image1.jpg)

A well spent day of fun and interactive session with the students.  
(Archana K, Shafeek, Sathisha, Radhika and Yadunath among the crowd)
Chapter Meetings:

Some of the execom meetings that were held are listed below:
10th January 2019: New chapter officers were assigned and discussions on the talk scheduled on 24th January were undertaken
1st March 2019: Planned activities for the Open day in IISc and discussed the execution
10th April 2019: Meeting was held to discuss the SOAP 2019 events and International day of light activities and follow-up meetings were held regularly to discuss the status and execution of the event
10th November 2019: Discussed the next outreach activity
29th November 2019: Election of the chapter officers for the year 2020
### Treasurer's Report

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### Conclusions and Recommendations

This year, we were able to attract more active volunteers and we look forward to expanding our chapter to other departments as well. In the coming year, we have planned to have more outreach programs, technical talks and membership drive to expand the strength of the chapter. Based on the feedback from the participants, we will be scheduling more lab visits and technical talks and lectures focused on (not restricted to) nonlinear photonics, bio-photonics and optical communication. Regarding the finances, since we had no activity grant last year, we received a one-off financial support from Applied Photonics Initiative to conduct the events. The previous year’s balance was accumulated with the rest of the funding to conduct the outreach program. We request the allocation of Chapter Activity Grant for the year 2020.