Cochin University SPIE Student chapter celebrated its 11th year of active research related activities during this year. Since its inception in October 2005, the chapter was enthusiastic in various academic activities. At present, the chapter has 27 members. The chapter members are currently working in the areas of nanophosphors and quantum wells, transparent thin film transistors, hydrothermal growth of nanoparticles, spintronics, photovoltaic energy storage materials and devices, transparent conducting oxides, ferroelectric random access memories, holography, luminescent materials and conducting polymers. All the members are actively participating in the programs organized by the chapter and Department of Physics. This year the following activities were carried out by the SPIE CUSAT student chapter.
## Activities

### Academic Training

The SPIE-CUSAT Student Chapter in association with Department of Physics, Cochin University of Science and Technology conducted Academic Training for Graduate/Post graduate Students of various institutions in Kerala. Eleven students have completed their academic projects in the areas of Optoelectronic Devices, Non-linear Optics, Nanoparticles and Thin films this year. This year the students were trained in the following areas.

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Name</th>
<th>Course</th>
<th>Name of the Institute</th>
<th>Project Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Aleena Norbert</td>
<td>M.Phil</td>
<td>St. Theresas’ College, Ernakulam</td>
<td>Synthesis and characterisation of perovskite quantum dots for photoluminescence applications</td>
</tr>
<tr>
<td>2</td>
<td>Wilfred</td>
<td>M.Sc</td>
<td>Guruvayoorappan College, Thrissur</td>
<td>Growth and characterization of carbon nanotubes using Chemical vapour deposition</td>
</tr>
<tr>
<td>3</td>
<td>Greeshma George</td>
<td>M.Sc</td>
<td>Maharaja’s College, Ernakulam</td>
<td>Growth and characterization of ZnS thin films by spray pyrolysis method for solar cell application</td>
</tr>
<tr>
<td>4</td>
<td>Nayana George</td>
<td>M.Sc</td>
<td>Maharaja’s College, Ernakulam</td>
<td>Growth and characterization of ZnS thin films by spray pyrolysis method for solar cell application</td>
</tr>
</tbody>
</table>
Talk by Dr. Ravindranathan Thampi  
November 9, 2016

Dr. Thampi delivering his talk on current trends in renewable energy technologies, at Department of Physics

Workshop on Statistical Analysis in Cosmology (WSAC)  
12-14, January 2017

A workshop has been organized by the Department of Physics, CUSAT in association with SPIE CUSAT student chapter and Inter University Centre for Astronomy and Astrophysics (IUCAA ), Pune on statistical analysis in cosmology. Young faculties, Research Scholars and PG students from all over India participated in this three day workshop. The lectures covered statistical techniques in CMBR, early universe, large scale structure formation, dark energy problems etc.
Department of Physics, Centre for advanced materials and SPIE CUSAT student chapter jointly organized the national workshop on innovations in research awareness (ψ-Fest). The workshop was a platform that enabled young researchers, especially the masters students to share their ideas, which inculcated a quest for knowledge through the spirit of enquiry and research. The 5 day workshop included talks by resource persons from various institutes. A poster presentation by the masters students were also organized and awarded cash prize for best poster.
M. Sc. Students presenting their poster based on their project work
**Inter collegiate quiz competition**  
**23 March 2017**

An inter collegiate quiz competition was conducted at Department of Physics CUSAT sponsored by SPIE CUSAT student chapter. 40 students from various colleges participated in the competition and 5 teams were selected for the final round. Winners were awarded with cash prize and memento.
Our Student Chapter organized student outreach programs to attract talented students to the fascinating world of Science and Technology. The workshop envisages to provide an opportunity to students to interact with the faculty members, and witness some of the advanced experiments being carried-out in the research laboratories of the department of Physics and also to gain hands on experience on various core experiments in Physics, telescope making etc.
**Weekly seminar Series**

As a part of this years’ chapter activity, a series of weekly seminars were organized by SPIE CUSAT chapter. Research scholars from Department of Physics participated in this event. Seminars were taken on different experimental and theoretical areas in Physics.

**Research Scholars taking seminars on various research topics**

**SPIE Annual meeting**

SPIE member Ms. Anjana R participated in the SPIE annual meeting held at San Diego, USA on 5th August 2017. She is the winner of SPIE officer travel grant for the year 2017. She also participated in the optics and photonics 2017 conference held at San Diego during 6th to 10th of August 2017. Ms. Anjana R presented poster entitled “Biocompatible Er, Yb co-doped fluoroapatite upconversion nanoparticles for imaging applications” and “Synthesis and characterization of Au-MWCNT/PEDOT: PSS composite film for optoelectronic applications” in optics and photonics 2017.
Pictures from the leadership workshop

New Office Bearers (2016-2017)

Staff Advisor       : Dr. M. K. Jayaraj(email: mki@cusat.ac.in)
Regular Member      : Dr. S. Jayalekshmi(email: jawalekshmi@cusat.ac.in)

Student Members
President : Kurias K Markose
Vice-President: Anjana R
Secretary : Manu Shaji
Treasurer : Anju K S

- Aneesh Pacheri Madathil
- Manu Shaji
- Anooja Jayaraj
- Anjana R
- Hasna .K
- Krishna Prasad Pazhampillisseril
- Anjala Jayaraj
- Rajeev R Prabhu
- Merin K Wilson
- Abhilash A
- Saritha Alookaran
- Satheesh B
- Shijeesh Methattel Raman
- Sreeja Rajeswari
- Subha Perumpallikkathil
- Vanaja Kuzhikattil Achuthan
- Vikas Lawrence Sylaja
- Pillai Aswathy Mohan
- Mary Vijila C V
- Jinisha B
A word of gratitude

We express our gratitude to the International Society for Optical engineering for financial assistance, conference grant, officer’s travel grant, Visiting Lecturer Program and knowledge imparted

Future Programs

- Weekly seminar will be conducted to help scholars and M.Sc. students to discuss about recent research areas and share their ideas.
- SPIE discussion Forum-Monthly informal discussion on various current research topics by the students
- Physics- Scope and Awareness will be conducted in April 2018.
- Special training program for competitive exams like NET, GATE will be provided
- Various student outreach programs
- ψ-Fest and poster presentation will be organized March 2018.
- Lab visits
- Intercollegiate quiz competition
- Women in science: essay competition and special lectures to commemorate the 150th Birth anniversary of Marie Curie

Financial statement (All figures in rupees)

Initial balance : -5,373/-
SPIE Grant 2016 : 58,554/-
Net Balance : 53,181/-
Expense for Scope and awareness for school children : 9,000/-
Expense for conducting ‘innovations in research awareness’ ψ-Fest 2017 : 15,000/-
Expense for Inter collegiate quiz competition  : 9,500/-
Expense national workshop on Statistical Analysis in Cosmology (WSAC)  : 13,000/-
Expense for conducting weekly seminar Series                       : 8,000/-

Total expense                                                              : 54,500/-
Excess Expenditure  : 1,319/-

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Major Publications of Members in the year of 2016-17

1. Surface modification of TiO2 nanorod arrays by Ag nanoparticles and its enhanced room temperature ethanol sensing properties, P. P. Subha, M. K. Jayaraj, Materials Research Express, 2017
2. Room temperature ferromagnetism in Zn 1-x Ni x O nanostructures synthesized by chemical precipitation method, L Chacko, K M Shafeeq, R Anjana, M K Jayaraj, P M Aneesh, Materials Research Express, 2017

10. Structural and electrical properties of pulsed laser deposited BaPbO$_3$ conductive thin films and its effect on the ferroelectric properties of PbZr$_{0.52}$Ti$_{0.48}$O$_3$/BaPbO$_3$ heterostructures, B Satish, A R James, M K Jayaraj, Ferroelectrics, 2017