

International School of Photonics SPIE Student Chapter
Cochin University of Science & Technology
Cochin 682 022, INDIA

Bi-Annual Report: December, 2005

A brief report from the Chapter:

The year 2005 has been remarkable for the chapter especially since it being the year pf beginning. The chapter has been successful in organizing several events both academic and social to generate enthusiasm among its members as well as the public. The chapter is very thankful to the SPIE governing body as well as the office staff and especially to the outgoing president Prof. Kujawinska. The chapter looks forward to the next year to organize more events apart from refining and fine tuning the regular activities. The chapter president Mr. Jijo P. Ulahannan represented the chapter at the 50th Annual Meeting of the SPIE at San Diego and presented the chapter activities there.

Office Bearers for 2005:

Prof. Dr. V. P. N. Nampoori – Staff Advisor
Mr. Jijo P. Ulahannan – President
Mr. Rajesh M. – Vice – President
Mr. Thomas K. J. – Secretary
Ms. Sheeba M. – Treasurer

Various Committees and Members under the Chapter

1. Programme Committee

Mr. Rajesh M. (Chair)
Mr. Lyjo K Joseph
Mr. Harish Natarajan S. K.
Mr. Praveen Ashok Cherian
Mr. Sourabh Raj
Mr. Adil Masood
Ms. Deepa Kamath
Ms. Gopika Ramanandan
Ms. Renjini Regunandan
Mr. Varun Gupta
Mr. Sanjay Priyadarshi

2. Publicity Committee

Mr. P. P. Saratchandran (Chair)
Mr. Agile Mathew
Mr. Deepak V.

Mr. Aneesh Krishnan
Mr. Nitish Kumar

3. Membership Committee

Ms. Sheeba M. (Chair)
Ms. Jibi John
Mr. Deepak V
Mr. Nitish Kumar
Mr. Ahmed Thasleem
Ms. Priya Rose T.

4. Placement Cell

Mr. Jijo P. U. (Coordinator)
Mr. Vinu V Namboodiri
Mr. Manoj V Mathew
Mr. M. P. Surjith
Mr. Aneesh Krishnan

Financial Status:

The chapter has begun the year with a modest total of Rs. 1000 and subsequently received the annual working grant from the SPIE. The chapter was fortunate enough to receive some donations and has been able to generate a very modest sum by selling the VCDs of the documentary 'Einstein's Universe' produced by the chapter production unit. The chapter hopes to raise more money in the coming year through educational videos and consultancy. Two noted contributions from the chapter were the sponsoring of the International Workshop on Optical Fibers held in Kolkata, India from December 8-10, 2005 and a scholarship given to a student to pursue his higher studies. Given below is the annual financial statement for the calendar year 2005.

Financial Statement (From 1st February, 2005 to 23rd December, 2005)

Chapter bank account: A/c No. SB 23517 at the Federal Bank Ltd, Edappally, Cochin 682 024, INDIA

| | Income (Indian Rupees) |
|---|-----------------------------------|
| Balance Brought Forward: | 0.00 |
| Donation from Dr. V. P. N. Nampoori | 1000.00 |
| Donation from M. Tech Students | 450.00 |
| Donation from M Phil Students | 100.00 |
| Donation from M. Sc Students | 1800.00 |
| Donation from Mr. Jijo P. U | 2500.00 |
| Annual Grant Received from SPIE: | 47042.00 |
| Amount received through the sale of 'Einstein's Universe' VCDs: | 725.00 |
| Registration fee received from Spectra 2005 Participants: | 1200.00 |
| Amount received from M/s Ajith Books Stall for exhibition during Spectra 2005 : | 5000.00 |
| Sponsorship received from the Physics Kerala group for Spectra 2005 | |

(\$ 50.00 x Rs. 45.15): 2258.00

Donation from the **Photonics 2004**
Organizing Committee: 75000.00

Sponsorship for the 'Einstein Film Festival' & the
'World Year of Physics' valedictory function:

1. Prompt Engineering, Cochin: 3000.00
2. D C Books, Cochin: 2960.00
3. Sabu, Cochin: 600.00

Total (as on December 23, 2005): Rupees. 1, 43,635.00
(Rupees One Lakh Forty Three Thousand Six Hundred and Thirty Five only)

**Expenditure
(Indian Rupees)**

Research Seminars: 2070.00

Expenditure for Invited Lecture Programs: 8710.00

Chapter GBM arrangements: 1660.00

Optics to School Program: 9561.00

Scholarship to M. Sc. Students: 3000.00

Establishment charges for the
Student Chapter Library Section: 3875.00

Organization of '**Spectra 2005**': 21580.00

Cost for making chapter mementos: 990.00

Cost of screening the '**Einstein's Universe**': 500.00

Sponsorship Cost of the International
Workshop on Fiber Optics and
Applications (IWOP – 2005) at Kolkata, India: 60000.00

Registration support for chapter members
Attending IWOP – 2005: 15000.00

Expenditure for Einstein's Film Festival and
'World Year of Physics': 4140.00

Balance Carry Forward (at hand & with the Bank): 12549.00

Total (as on December 23, 2005) Rs. 1, 43,635.00
(Rupees One Lakh Thirty One Thousand and Eighty Six only)

Overview of the Accounts

| | |
|--|---|
| 1. Total Income: | Rs. 1, 43,635.00 |
| 2. Total Expenditure: | Rs. 1, 31,086.00 |
| 3. Net Balance (as on December 23, 2005): | Rs. ---12549.00 |
| | <i>(Rupees Twelve Thousand Five Hundred and Forty Nine only)</i> |

| | |
|---|-------------------|
| 1. Total Income (@1 USD = 45.15 INR): | \$ 3181.28 |
| 2. Total Expenditure (@1 USD = 45.15 INR): | \$ 2903.34 |
| 3. Net Balance (@1 USD = 45.15 INR): | \$ 0277.94 |

The financial statement contains the totals of expenditure under various sub-heads. Details of expenditures are available with the chapter treasurer along with the necessary bills and vouchers and are subjected to an internal audit. Donations received by the chapter are voluntary and were on purpose.

Regular Activities

1. Research Seminars:

Envisaged to bring various people working in different fields within the department, this seminar series has given a good platform for students to give discuss various aspects of research before an open forum. Following seminars were given so far under this activity.

1. Wednesday, May 18, 2005: "Experimental Methods in Laser Produced Plasma" by Mr. Manoj V Mathew (Chapter Member and M. Tech Student).
2. Thursday, June 2, 2005: 'Fiber Bragg Grating and Applications' by Ms. Sheeba M, PhD Student, ISP.
3. Thursday, June 30, 2005: 'Z - Scan Measurements of Optical Nonlinearities' by Ms. Litty Mathew Irimpan, PhD Student, ISP.
4. Thursday, July 7, 2005: 'Parallel Computing and Applications' by Mr. Jijo P U, PhD Student, ISP.
5. Friday, July 15, 2005: 'Propagation issues of high intensity laser pulses through plasmas' by Mr. Dann V J, PhD Student, ISP.
6. Thursday, July 21, 2005: 'Fiber optic sensors based upon Fabry-Perot interferometers' by Mr. K J Thomas, PhD Student, ISP.
7. Thursday, August 11, 2005: 'Experimental techniques for determination of thermo-optic and NLO Parameters' by Ms. Santhi A, PhD Student, ISP.
8. Thursday, August 18, 2005: 'Enhancement of ASE and Random Lasing in Scattering Amplifying Media' by Sr. Ritty J Nedumpara, PhD Student, ISP.
9. Thursday, September 1, 2005: 'Nonlinear Microscopy using Femtosecond Lasers' by Mr. Manoj V Mathew, PhD Student, ICFO, Barcelona, Spain.
10. Wednesday, September 28, 2005: 'Construction of a Frequency Tripler and its Application to Photosynthesis' by Ms. Shalini Sitaraman, University of Ohio, USA.
11. Thursday, October 6, 2005: 'Fabrication of polymer optical fibers and dyed polymer fiber amplifiers' by Mr. Rajesh M, PhD student, ISP.

2. Special Lectures:

The chapter arranges a special talk to be given frequently by a Professor or other experienced hands in the fields of research and teaching. The following lectures were given under this activity:

1. Wednesday, June 15, 2005: "Remembering Kunchunni Raja: The Indian Theory of Meaning", by Dr. Murali Madhavan, Sanskrit Department, Sree Sankara University, Kalady.
2. Thursday, June 23, 2005: 'Theory of Wavelets' by Prof. V P N Nampoori, ISP.
3. Saturday, July 2, 2005: "Physiology of Vision" by Dr. R Biju, Renjini Eye Hospital, Cochin & Consultant Ophthalmologist, Amrita Institute of Medical Sciences, Cochin, INDIA.

4. Monday, November 7, 2005: 'Raman Effect and its applications' by Prof. V Unnikrishnan Nair, Dean-faculty of science, CUSAT.

3. Visiting Lecturer Programme:

Aimed to bring the expertise of Professors and Scientists visiting the university, the chapter organizes interactive session for the chapter members and the expert. Talks in this series were given as follows:

1. Thursday, May 26, 2005: "Two – Photon Absorption and Polariton Propagation in ZnO Nanowire", by Dr. R. Prasanth, Debye Institute, Universiteit Utrecht, the Netherlands.
2. Thursday, June 9, 2005: "Photonic Building Blocks for Quantum Information", by Dr. Vinod Menon, Assistant Professor, Queen's College of CUNY, New York.
3. Tuesday, June 14, 2005: "Temporal Speckle Interferometry", by Dr. Charles Joenathan, Professor and Chair, Department of Physics and Optical Engineering, Rose-Hulman Institute of Technology, Indiana, USA.
4. Monday, July 25, 2005: "Globalization: Opportunities for Indian Professionals in the USA" by Prof. R Unnikrishnan, Dean of Engineering and Computer Science, California State University, Fullerton, CA, USA.
5. Thursday, July 28, 2005: "Membrane Energetics" by Dr. Pramod Pratap, University of North Carolina, USA.
6. Wednesday, October 5, 2005: 'What is Physics?' by Prof. K. H. Bhatt, Mississippi University, USA.
7. Thursday, December 22, 2005: 'Dreams for Unified Fields' by Dr. V. P. Nair, City University of New York (CUNY), New York.
8. Thursday, December 22, 2005: 'Trends in Modern Optical Imaging' by Dr. Virendra N. Mahajan, The Aerospace Corporation, El Segundo, Los Angeles.

4. 'Rendezvous with the Industry':

In the modern world research and education in science and technology cannot survive without active collaboration with related industries. The chapter has envisaged an interactive lecture series named 'Rendezvous with the Industry', to be given away by Scientists and Entrepreneurs in related fields of interest. Under this programme, leading scientists from industrial R&D will be invited to present their ideas and to discuss with the students about various benchmarks and demands of industrial research.

1. Thursday, October 27, 2005: 'Emerging scenario of Patents' Protecion, Valuation and Commercialization' by Dr. V. Raghuram, Regional Manager, National Research Development Corporation, Bangalore, India.

Community and Student Service Programs

Open Lab Programme for Visiting Students from Schools and Colleges:

Chapter members are always enthusiastic to demonstrate various experiments and facilities at the department to the students of schools and colleges visiting the University from time to time. Students from various institutions in the state are welcome to visit the labs throughout the year. On the 9th of May, 2005, half day was reserved for the young school children spending their summer vacation in the University doing many projects in the various fields of science.

Optics & Photonics to Schools and Colleges:

This will be the prime activity of the chapter under the social outreach programme which will give thrust in spreading awareness about the relevance of optics and photonics careers among school and undergraduate college students throughout the state of Kerala. To make this a wonderful reality, the chapter has constituted a production unit to design various experiments and demonstrations to be presented to the schools and colleges the chapter team visits.

The first ever outreach by the chapter was to SRV Government Higher Secondary School, Ernakulam on July 27, 2005. The program was well received and was the most successful program of the year. The program gave the right kind of experience for the students and the volunteers to learn more about the wonderful world of optics and photonics.

Project Consultancy and Guidance

The chapter has an active cell comprising its graduate students to provide consultancy and guidance to graduate and undergraduate students in science and technology to design and develop good projects in the fields of optics, photonics and optoelectronics. The programme is helpful to the students from various science and engineering colleges within the state of Kerala.

Placement Cell:

To the assist the chapter members to find good industrial and academic placements after their graduation, the chapter has constituted a placement cell under the stewardship of the chapter president. The cell through its dedicated webpage brings out the career profile of aspiring graduates to attract the necessary attention from industries and higher education institutions.

Student Chapter Library Section:

The chapter has opened a section in the School library to contribute and accommodate SPIE journals, magazines and periodicals. This enables the students to have easy access to information related to the activities of SPIE as well as the latest happenings in the world of optics and photonics.

Production Unit:

The chapter has started a production unit in association with the OSA student chapter to make educational videos, posters and other useful display items to complement the chapter outreach programs. The unit has made its first production, a documentary, named 'Einstein's Universe'. This completely indigenous production has been well accepted by the student audience and has earned a modest sum through the distribution of the VCDs. The unit has also made wonderful posters to demonstrate and explain basic scientific phenomena to school students. The unit hopes to make videos and presentations on selected topics in physics and optics in the coming year.

SPIE Visiting Lecturer Programme:

Dr. Virendra N. Mahajan has delivered a series of lectures on 'Exploring Optical Aberrations' on December 20 and 21. Young students attended the classes and were quite appreciative of the fortune they had to attend the scholarly lectures on everything about imaging and aberration theory. The classes were quite useful in understanding the application level and the opportunities in the field of optical design, imaging and adaptive optics. Prof. Mahajan also delivered a public lecture 'Trends in Modern Optical Imaging' on December 22, as part of the 'World Year of Physics' valedictory function. Prof. Mahajan spent his fruitful days in Cochin from 19th of December to the 24th interacting with various students and encouraging them to take a wonderful career in optics and photonics.

Sponsoring the International Workshop on Emerging Areas of Fiber Optics and Future Applications (IWOP – 2005) at Kolkata, India:

The chapter has co-sponsored the workshop held from December 8-10 at the Central Glass & Ceramic Research Institute (CGCRI), Kolkata, India. The sponsorship amount of Rs. 75,000/- has also covered the participation fee of three students from the chapter who attended the conference. The workshop covered all the cutting edge areas in Fiber Optics and was highly useful for

the participants as well as for the International School of Photonics, which is one of the best research labs in the country in the area of fiber optics, especially in polymer optical fiber technology.

'Year of Physics and One Hundred Years of Photons' Celebrations

Various programmes were planned and executed in this year to commemorate the great year in Physics and the birth of the Quantum theory of light.

Raman Day Celebrations:

November 7, Sir C. V. Raman's birthday, was celebrated as the '**Spectra 2005**', the annual gathering of the students to remember one of the legendary figures in the field of Indian physics and optics. The event was noted for its competitions such as the Physics Quiz and Colloquium held for college and university students from South India and were conducted on November 6 and 7. Attractive prizes including cash awards, merit certificates and books were presented to the winners. The event also had the **Raman Memorial Lecture** along with several video and poster presentations.

Einstein Film Festival and Year of Physics Ending Celebrations:

A total of eight films including an in house documentary 'Einstein's Universe' made by the chapter production unit were screened from December 21-23 as part of the 'Year of Physics' ending celebrations. Noted film directors, writers and critics attended the festival to give appreciation.

The celebrations were jointly organized by the chapter, the ISP – OSA student chapter, the Academy of Physics Teachers (APT) Kerala and the International School of Photonics. Prof. V. P. Nair from the City University of New York delivered a lecture on the 'Dreams of a Unified Field Theory' and Prof. Virendra N. Mahajan of *The Aerospace Corporation* spoke about the 'Trends in Modern Optical Imaging'. Dr. Mahajan was on a visit to the chapter to deliver the short course as part of the SPIE sponsored visiting lecturer program for the year 2005.