

## Reaching out together in Optics Singapore Student Chapter Report – December 2005

As reported by: Jonathan K. Moh

*“Hey you are into optics too!”*

*“Great, let’s do something about it...”*

A chance meeting between the OSA and SPIE student chapter members led to a joint educational outreach programme in November 2005 at the Nanyang Technological University (NTU) photonics laboratory, Singapore.

Over 70 Junior college (JC) students were invited to the laboratory during their five-day residential NTU-JC Challenge programme at the university. The program was the 5th in a series of annual events aimed at promoting science and technology among A-level students. This year’s theme was on Photonics with applications in Life Sciences and the students were taken through a range of programmes, comprising of seminars, visits to several research institutes, hands on experiments and social/recreational activities. One of the visits was to the photonics laboratory in NTU and the challenge of hosting the inquisitive young minds was taken up by the OSA and SPIE student chapters in Singapore.

Previously in the month of October, OSA and SPIE student member Balpreet Singh Ahluwalia met SPIE student member Vijay through mutual friends on campus. Noting the common thread of diffractive beam shaping in both their postgraduate projects (Balpreet in non-diffracting beams and Vijay in digital holography), they realized the pervasiveness of optics in many applications today. Optics they agreed has been a key enabling technology though the centuries, unfortunately its importance has often been overshadowed by fancier technological advances. Do people actually appreciate the role that optics play today – they wondered?

The first (and in some cases the only) point of contact that students have with optics is probably the familiar ray trace through the focal point of a lens. While elegant in its intuitive explanation of image formation, the model hardly explains the various other aspects of light; polarization, interference, diffraction or colour formation. Simple concepts whose effects are seen in the reflection from the surface of a pond, the splendour of sunset, the miniature rainbow contained in a soap bubble - all taken for granted.

Ideas were born and when the opportunity knocked, we answered. The NTU-JC Challenge program was organized on a university level, but it provided us with a superb chance for an outreach. So both student chapters pooled resources and the mission was to give our visitors a crash course in Optics 101, albeit a fun filled one.

Careers in Optics, the video by SPIE was the first lure we dangled and the students took it hook, line and sinker. This was followed by a talk on “tractor beams” (real life optical tweezers) by Balpreet Ahluwalia, which had the students dreaming of Star Wars in a microscope. We then had the students divided into smaller groups for a hands-on experience using the SPIE sponsored Discovery Educational Kit and several other experiments conducted by the OSA/SPIE Student members. The short demonstrations covered total internal reflection and its application in optical communications, explanations on how interference and diffraction form the basis of holography, samples of photo-luminescent thin films and a “transitions optical lenses” demonstration kit donated by the Transitions optical company.

South East Asia’s first ever OSA-SPIE student chapter joint outreach project was an illuminating success made possible by the dedication and passion of both postgraduate student chapters. The proverbial phrase “birds of the same feather flock together” is perhaps an apt description of our meeting of like minds,

where in this case it was to spread the appreciation for one of the oldest and still very relevant branch of physics.

The organising committee:

Balpreet Singh Ahluwalia, Chong Munkit, Landobasa Yosef Mario, Lin Jiao, Moh Kenjin Jonathan, Vijay Raj Singh and Wong Wing Kee Damon



Our captive audience, we caught them hook, line and sinker.



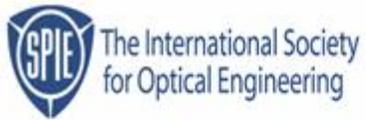
Assoc. Prof Larry Yuan (OSA student chapter advisor) looks on as Balpreet encourages a JC student to experiment with liquid crystals.



The students wonder at the effects of diffraction, the colour spectrum and “magic” polarizers.



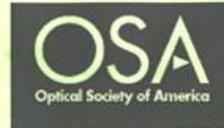
All together now: (from left) Mun Kit, Jonathan, Balpreet, Landobasa, Vijay, Saji, Stevanus, Linjiao, and Damon.



Singapore SPIE & OSA  
Student Chapters Joint  
Educational Event

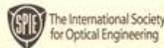


Organizing members from Singapore SPIE & OSA Student Chapter Members  
(from left):- Mun Kit, Jonathan, Balpreet, Lando, Vijay, Saji, Stevanus, Lin Jiao  
and Demon



# SINGAPORE SPIE & OSA STUDENT CHAPTERS JOINT EDUCATIONAL OUTREACH EVENT

FIRST SPIE & OSA STUDENT CHAPTERS JOINT EVENT  
IN SOUTH-EAST ASIAN REGION



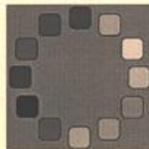
SINGAPORE SPIE & OSA STUDENT CHAPTER JOINT  
EDUCATIONAL OUTREACH EVENT



## BRINGING BOOKS ALIVE!!

SPIE EDUCATIONAL KIT..  
LEARN BASICS

*EXPLORE HOW DOES  
HOLOGRAPHY WORKS?*



COLORIMETRY

WHATS IS DIFFRACTION?



EFFECTS OF LIGHT  
POLARIZATION