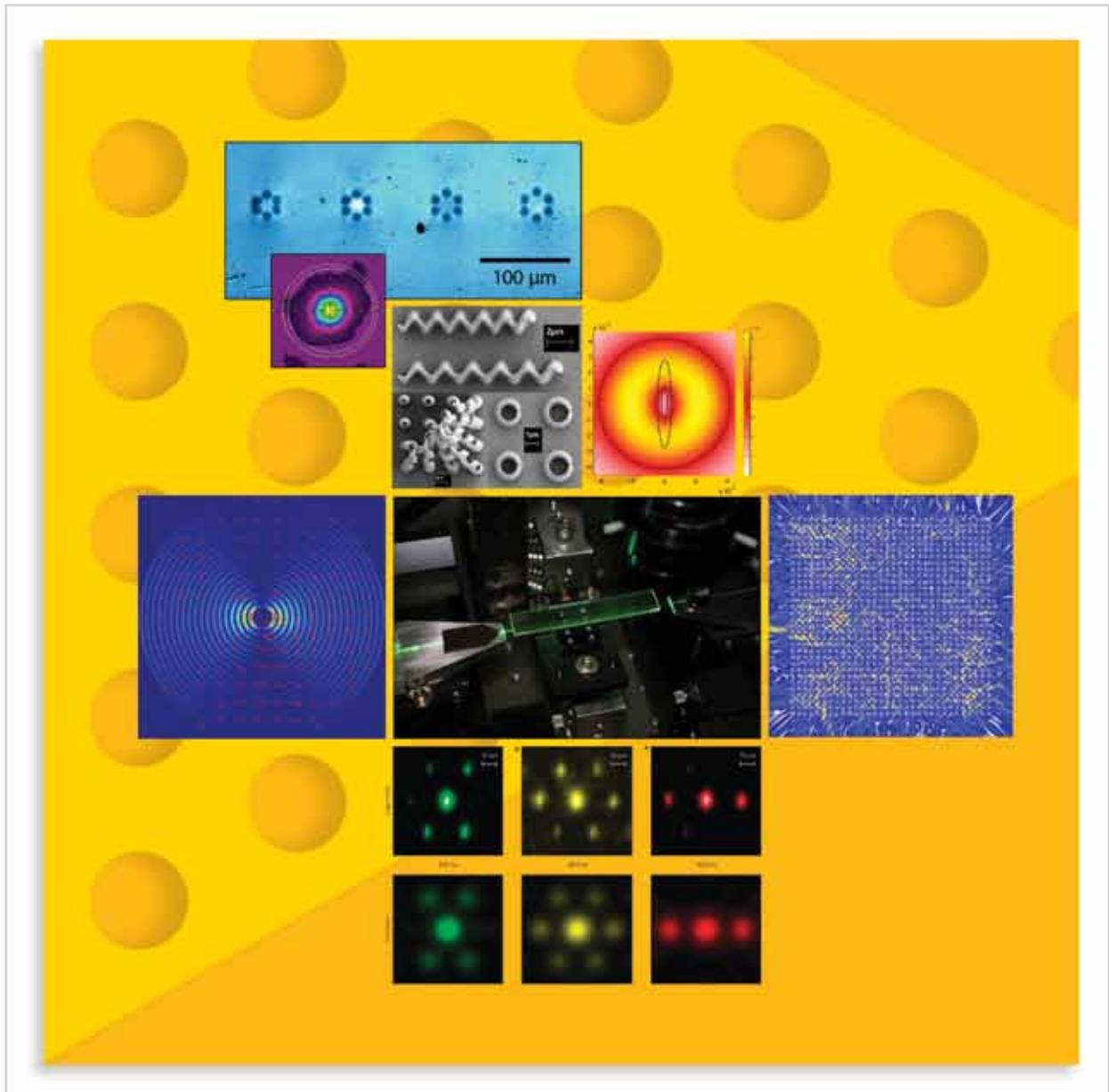


ANNUAL 2009 REPORT



CUDOS

The Centre for Ultrahigh Bandwidth Devices for Optical Systems (CUDOS)

Education and Training: Boris Kuhlmeiy



CUDOS maintains a strong commitment to education and training activities, not only through research training of local and international postgraduate and undergraduate students, but through the organization of yearly tutorial workshops on current topics in photonics; student competitions; support for participation in outreach activities and student chapters; and emphasis on a strong collegiate experience for all students especially at the Annual Workshop.

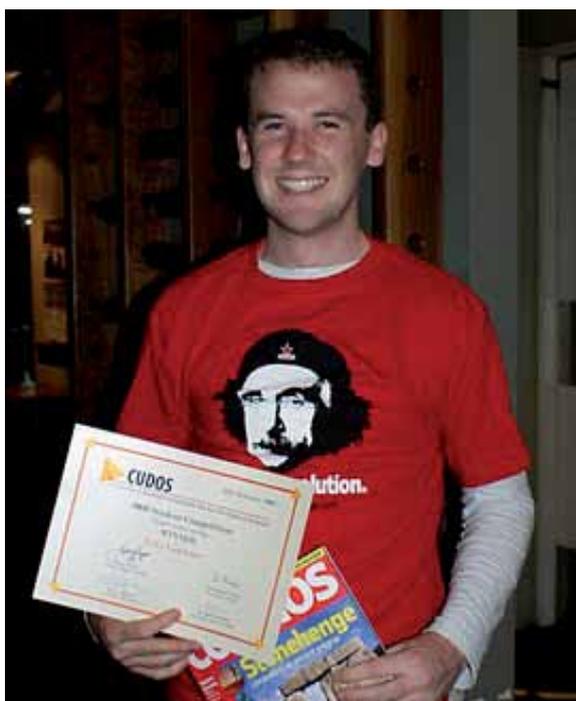
Tutorial workshop – Quantum Photonics

Researchers in the Centre have developed strong links with quantum researchers looking to integrated photonic solutions to

provide scaleable approaches to quantum information processing. In November 2009, we invited the internationally pre-eminent theoretician and teacher, Professor John Sipe of the University of Toronto, to present a two day intensive workshop on the fundamentals of quantum science through to applications of quantum optics including nonlinear processes for generation of single photon sources. This Workshop was attended by students and junior researchers from Sydney, ANU and Macquarie, with representation from other nodes as well.

Undergraduate and postgraduate coursework

A number of CUDOS researchers hold teaching and research positions or do small amounts of voluntary teaching, within their respective universities. This provides a great opportunity to share our expertise, make courses more attractive by including examples of current research, and foster the next generation of photonics researchers and engineers. At Macquarie University Mick Withford gave a full course on Optical Science and Technology, while Judith Dawes 3rd year course on optoelectronics, was course director for the bachelor of optical technology and BTech in optoelectronics, coordinated optoelectronics industry project internships and also organized careers evenings. At the Australian National University, Dragomir Neshev lectured on Nonlinear waveguide materials, and included material produced in the frame of the CUDOS student competition in his lectures. At the University of Sydney, David Moss gave lectures on optical data storage and processing, Christian Karnutsch taught solid state device physics, and Boris Kuhlmeiy and Martijn de Sterke taught a 4th years physics full course on advanced optical physics and photonics. In collaboration with other colleagues from the University of Sydney, Boris Kuhlmeiy and Chris Walsh initiated a Masters and Graduate Diploma programme in Photonics and Optical Sciences. This course will be taught for the first time in 2010 to a very pleasing intake of 10 students, demonstrating the depth of interest in this field for aspiring optical engineers and scientists. AT RMIT University, 4th year and masters by coursework communication engineering students benefited from many examples of CUDOS research thrown in by Arnan Mitchell in his course on optical fibre technology.



Felix Lawrence receiving his award for the Student Essay Competition.



Ting Han receiving his award for best Student Poster.

Student competition

The student competition is always a highlight of the CUDOS year. In 2009 we challenged our students to write a high quality prose discussion of the student's PhD research. The competition was sponsored by COSMOS magazine and won by Felix Lawrence with his elegant essay on optical cloaking, with Luke Stewart second. Outreach awards went to the ANU outreach group (Amrita Prasad) and the Macquarie outreach group (Judith Dawes).

Student prizes

CUDOS students continue to excel on the local and international stage. Dr. Christian Rosberg was awarded The Bragg Gold Medal for Excellence in Physics from the Australian Institute of Physics. This award is sponsored by the Australian Institute of Physics for the best PhD thesis by a student from an Australian University in the preceding year. Congratulations to Christian for this recognition. Alessandro Tuniz won the best student submission to ACOFT 2009 for his work on "Design of an optical hyperlens with metallic nanocylinders". Felix Lawrence presented a superb talk on impedance in photonic crystals take out the AIP NSW branch postgraduate award, while Arthur Davoyan received the Best Oral Presentation Award at the international workshop "Modern Problems in Optics and Photonics", 27 August - 2 September, 2009, Yerevan, Armenia. Elisa Nicoletti was presented with the Innovative Student Award of the Swinburne Centre for Microphotonics.



Alex winning ACOFT award



Students at the 9th CUDOS Workshop, Lake Crackenback, February 2010.