

ARC Centres of Excellence Program

ARC Centre of Excellence for Ultrahigh-bandwidth Devices for Optical Systems

Interim Director: Dr C M de Sterke

Collaborating Institutions:

The University of Sydney
The Australian National University
University of Technology, Sydney
Macquarie University
Swinburne University of Technology
Osaka University
University of Central Florida
Lucent Technologies
Institut Fresnel
NSW Department of Information Technology and Management

The photonic chip will be the basic building block of the next generation of ultra-high bandwidth optical telecommunications systems, and will appear as a core component of defence systems and sensor technologies. The Centre's research will address fundamental physics and technology problems, leading to devices that integrate several all-optical photonic processors on a single chip. The research will create new material with unique properties designed to allow the guiding and control of light, microstructures, optical fibres and artificial photonic crystals that will enable a range of high-speed operations on signals encoded in light beams, and develop microphotronics capability to encapsulate the Centre's optical processors onto devices that can be installed in photonic networks.

Australia is now amongst the world leaders in the science of optics and photonics, and has successfully translated this science into devices that have been commercialised on the international market. Australia also has special demands for low-cost, increased bandwidth linking remote and regional communities in critical services such as education and health. This know-how and need comes together in the Centre's vision to be a foundation for a vibrant Australian photonics and communications industry serving national needs and exporting Australian technologies to the world. The Centre is committed to forming the networks and linkages, including critically important strategic links with international partners required to achieve this aim.

In addition to its undergraduate and postgraduate education programs training the next generation of photonics researchers, technologists and innovators, the Centre will sponsor a large community outreach program through secondary schools and the media. The program will convey the excitement, significance and implications of the latest photonic technology, and of the social transformations it will enable.