P44: Optoelectronics Research Centre / University of Southampton - ORC (United Kingdom)

Description of expertise & activities

The Optoelectronics Research Centre (ORC) at the University of Southampton is an interdisciplinary research centre with a 35 year track record of pioneering contributions in the field of optical fibre technology and its applications in optical communications systems. The Optical Communications group is responsible for all the telecommunications systems applications demonstrated in the ORC. The group currently numbers 10 members (4 staff and 6 PhD students). Its activities are supported by strong laboratory facilities, capable of undertaking complete device characterisation and system demonstrations. These facilities include (but are not limited to) a number of high bit-rate short pulse sources, an array of 40 densely spaced DFB lasers, two Bit-Error-Rate test sets currently capable of operating at bit rates as high as 80Gbit/s, a wide selection of transmission and speciality fibres. The group has developed major activities in areas such as all-optical signal regeneration, optical processing using nonlinear and grating components, Optical Code Division Multiple Access (OCDMA) techniques, packet switch networks, slow-light generation, and complete pulse characterisation. Each of these activities is underpinned by the in-house material, fibre/waveguide development, and device programs undertaken by the Optical Fibre Devices and Systems Division. The group is therefore closely linked to other groups in the ORC, such as the Fibre Bragg Gratings group and the Microstructured Fibre Devices and Applications group. ORC has been involved in such European projects as ACTS-MIDAS, ACTS-PHOTOS, ACTS-TOBASCO, ACTS-ESTHER, RACE-ARTEMIS, IST-LOBSTER and IST-e-Photon/ONe and e-Photon/ONe+, IST-ePIXnet and IST-TRIUMPH.

Tasks within BONE

See individual WP descriptions.

Key personnel

David J Richardson was born in Southampton, England in 1964 and obtained his B.Sc. and PhD in fundamental physics from Sussex University U.K. in 1985 and 1989 respectively. He joined the ORC at Southampton University as a Research Fellow in May 1989. He was awarded a Royal Society University Fellowship in 1991. Professor Richardson is now Deputy Director for Optical Communications at ORC and is responsible for much of the ORC's fibre related activities. His current research interests include amongst others: holey fibres, high-power fibre lasers, short pulse lasers, optical fibre communications, OCDMA, all-optical processing and switching, nonlinear optics, and the physics and applications of microstructured nonlinear/linear media. Prof Richardson has published more than 550 conference and journal papers in his 18 years at ORC, and produced over 20 patents. He is one of the cofounders, and a part-time employee, of Southampton Photonics Incorporated, the recently formed ORC spin-off company.

Periklis Petropoulos graduated from the University of Patras, in 1995, received the M.Sc. degree from the University of Manchester Institute of Science and Technology, Manchester, U.K., in 1996, and the Ph.D. degree from the ORC, University of Southampton, in 2000. Since then he has been with the ORC, where he is currently employed as a Reader. His research interests include all-optical processing and switching in optical fibers; pulse manipulation for optical communications using fiber Bragg gratings, including applications in optical correlation systems for the implementation of optical code division multiple access and optical packet switched systems; silica and compound glass holey fibers and their nonlinear applications; and fiber lasers. His research has produced more than 160 papers in journals and conferences in the field of optical physics and optical communications.