

Seminar on
TWENTY YEARS OF PHOTONIC CRYSTAL FIBRES
Philip RUSSELL

Max Planck Institute for the Science of Light
Guenther-Scharowsky-StraÙe 1, 91058 Erlangen, Germany
www.pcfibre.org

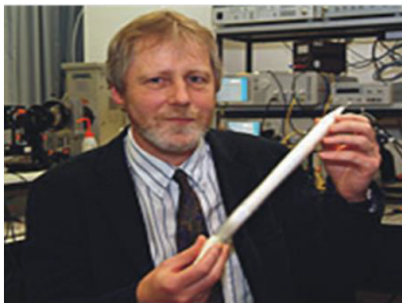
September 08, 2013

Xlim Research Institute, 123 av. Albert Thomas, Limoges, France

Free Registration. To attend please register by emailing tibaire.munsch@unilim.fr

Registration is open until 05 September 23rd

ABSTRACT. Conceived in 1991 and first demonstrated in 1995, photonic crystal fibres (PCFs) permit remarkable control of the propagation of light, including introducing a new theme – low-loss single mode guidance in a microscopic hollow channel. This last represents one of the most exciting opportunities in recent years, for it allows one for the first time effectively to eliminate beam diffraction in empty space or in materials with low refractive indices such as gases, vapours and liquids. As a result a new generation of versatile and efficient gas-based systems, such as pulse compression devices, light sources tunable from the vacuum UV to the near IR and nonlinear devices based on alkali metal vapours, is emerging. PCFs with solid glass cores continue to inspire applications beyond the well-established fields of soliton dynamics and supercontinuum generation. For example, when the fibre is twisted continuously (by thermal post-processing) along its axis, orbital angular momentum states are created in the cladding that couple to the core light at certain resonant wavelengths, creating deep dips in the transmitted spectrum. Another new field is that of opto-acoustic devices, where the light itself drives mechanical resonances in the core structure. These resonances act back on the light, leading to the generation of frequency combs and Raman-like self-pulsations. In the lecture I will briefly review the history of PCF and report on selected recent results from the work of my group.



Prof Philip Russell is a Director at the Max-Planck Institute for the Science of Light (MPL), a position he has held since January 2009 when MPL was founded. He was professor in the Department of Physics at the University of Bath from 1996 to 2005. He obtained his D.Phil. (1979) degree at the University of Oxford, spending three years as a Research Fellow at Oriel College, Oxford. In 1982 and 1983 he was a Humboldt Fellow at the Technical University Hamburg-Harburg (Germany), and from 1984 to 1986 he worked at the University of Nice (France) and the IBM TJ Watson Research Center in Yorktown Heights,

New York. From 1986 to 1996 he was based mainly at the University of Southampton. His research interests currently focus on scientific applications of photonic crystal fibres and related structures. He is a Fellow of the Royal Society and the Optical Society of America (OSA) and has won several international awards for his research including the 2015 IEEE Photonics Award, the 2014 Berthold Leibinger Zukunftspreis, the 2013 EPS Prize for Research into the Science of Light, the 2005 Körber Prize for European Science, the 2005 Thomas Young Prize of the Institute for Physics (UK) and the 2000 OSA Joseph Fraunhofer Award/Robert M. Burley Prize. He is currently OSA's 2014 President-Elect and will become its President in 2015, the UNESCO International Year of Light.