

W1 – Photonic Crystal Fibres versus Classical Fibres for Telecommunications

Organizers: Pierre Sansonetti (Draka Comteq), Jonathan Knight (University of Bath), Katsusuke Tajima (NTT)

Abstract

Photonic Crystal Fibres provide a new paradigm for optical fibres, offering new possibilities but having different limitations. This workshop will provide an opportunity to compare the characteristic properties of Photonic Crystal Fibres and Classical Fibres in three key domains of optical fibre telecommunications:

1) Low bend sensitivity fibre for access

Low bend sensitivity is of paramount importance for easy installation and compactness. New designs of classical fibre are competing with photonic crystal fibre structures to enter this growing market.

2) Dispersion Compensating Fibre

Accurate compensation, low loss and low non-linearity are required as well as low PMD.

3) Transmission Fibre

Low loss, low non linearity, mastered chromatic dispersion, low PMD, single mode operation bandwidth are key parameters.

Programme

09:00 – 09:10 **Welcome and introduction by organizers**

Low bend sensitivity fibre for access

09h10 – 09:20 **Hole Assisted Fibre: for Flexible Optical Wiring**

K. Nakajima, NTT, Japan

09h20 – 09:30 **Does Hole-assisted Fiber finally win in FTTH applications?**

M. Onishi, Sumitomo Electric Industries, Japan

09h30 – 09:40 **Design of bend-insensitive single-mode holey fibers for access network applications**

K. Saitoh, Hokkaido University, Japan

09h40 – 09:50 **Low-bending-loss hole-assisted fibers and classical fibers for access networks**

K. Himeno, Fujikura, Japan

09h50 – 10:00 **Bend Loss in Solid Band Gap fibres**

T. Birks, University of Bath, United Kingdom

10h00 – 10:10 **Bend-insensitive fibers for FTTH ... without any holes**

P. Nouchi, Draka Comteq, France

10:10 – 10:30 **Discussion with all Speakers**

10:30 – 11:00 **Coffee break**

Dispersion Compensating Fibre

11:00 – 11:10 System issues for dispersion compensating fibres

J.C. Antona, Alcatel, Research and Innovation, France

11:10 – 11:20 Properties and design limits of conventional dispersion compensating fibres

L. Grüner Nielsen, OFS, Denmark

11:20 – 11:30 Dispersion compensating photonic crystal fibers: Design strategies and challenges

N. Florous, Hokkaido University, Japan

11:30 – 11:40 Chromatic dispersion compensation in double concentric fibers

S. Février, F. Gerome, J.L. Auguste, J.M. Blondy, XLIM, France

11:40 – 11:55 Discussion with all Speakers

Transmission Fibre

11:55 – 12:05 Overview of classical-technology transmission fibers

P. Nouchi, Draka Comteq, France

12:05 – 12:15 Photonic bandgap fibres in optical communication systems: challenges and early demonstrations

B. Zsigri, C. Peucheret, T. P. Hansen, T. T Alkeskjold and P. Jeppesen, COM, Denmark

12:15 – 12:25 Optical loss and signal transmission characteristics in ultra-wide wavelength region over PCF

K. Tsujikawa, NTT, Japan

12:25 – 12:35 The future transmission fibres – Conventional solid fibres and microstructure fibres

K. Mukasa (1,2), F. Poletti (1), M. Petrovich (1), K. Imamura (2), T. Yagi (2), D. J. Richardson (1), (1) University of Southampton, ORC, United Kingdom, (2) Furukawa Electric Company, Japan

12:35 – 12:45 Polarisation effects in photonic crystal fibres: spun holey fibres and mode coupling in bandgap fibres

M. Fuochi, J.R. Hayes, M.P. Petrovich, J.C. Baggett, T.M. Monroe, D. J. Richardson, F. Poletti and N. G.R. Broderick, University of Southampton, ORC, United Kingdom

12:45 – 13:00 Discussion with all Speakers