

応用物理学会北海道支部
会員各位 殿

平成15年10月17日

講演会のお知らせ

下記により講演会を開催致しますので、多数ご参加下さいますようご案内申し上げます。

記

演題 Tri-refrignce, Superprisms, and Pulses-on-the-fly in Photonic Crystal Waveguides

講師 Professor Jeremy J. Baumberg

(Department of Physics & Astronomy, University of Southampton,
and Mesophotonics Ltd., Chilworth Science Park, Southampton, S016 7NP, UK)

日時 平成15年10月28日(火) 17:00~18:00

場所 北海道大学大学院工学研究科 量子物理工学専攻会議室 A3-62

後援 応用物理学会北海道支部(共催団体:日本物理学会北海道支部)

講演の要旨

Photonic Crystal Waveguides promise novel optical functionality in a wide variety of ways due to the considerable modification in optical propagation and interactions induced in these sub-micron periodic structures. Using planar silicon-compatible processing we have produced a wide variety of nanostructured devices over the past few years [1-8] that exhibit high quality photonic bandgap and photonic crystal features. In particular we have gained an understanding of such devices of ultrawide bandwidth ranges allowing us to provide systematic comparison with a variety of our modelling techniques. Recently we have explored how light propagates through photonic crystals by directly tracking the temporal delay of each wavepacket component [1]. In this talk we will discuss a number of the features of photonic crystal waveguides that we are investigating.

- [1] "Separation of Photonic Crystal Waveguides Modes using Femtosecond Time-of-Flight", M. C. Netti, C. Finlayson, J. J. Baumberg et al. Appl. Phys. Lett. 81, 3927 (2002).
- [2] "Optical Trirefrignce in Photonic Crystal Waveguides", M.C. Netti, A. Harris, J.J. Baumberg et al., Phys. Rev. Lett. 86, 1526 (2001).
- [3] "Complete and absolute photonic bandgaps in highly symmetric photonic quasicrystals embedded in low refractive index materials", M.E. Zoorob et al., Mat.Sci.Eng.B 74, 168 (2000).
- [4] "Experimental investigation of photonic crystal waveguide devices and line-defect waveguide bends", M.D.B. Charlton et al., Mat.Sci.Eng.B 74, 17 (2000).
- [5] "Complete photonic bandgaps in 12-fold symmetric quasicrystals", M.E. Zoorob, M.B.D. Charlton, G.J. Parker, J.J. Baumberg and M.C. Netti, Nature 404, 740 (2000).
- [6] "Visible Photonic Bandgap Engineering in Silicon Nitride Waveguides", M.C. Netti, M.B.D. Charlton, G.J. Parker, J.J. Baumberg, Appl. Phys. Lett. 76, 991 (2000).
- [7] "Guided mode analysis, and fabrication of a 2-dimensional visible photonic band structure confined within a planar semiconductor waveguide", M.D.B. Charlton et al., Mat.Sci.Eng.B 49, 155 (1997).
- [8] "Ultra-Broadband Transmission Measurements on Waveguides of Silicon-Rich Silicon Dioxide", RT Neal, CE Finlayson, MC Netti, MDCCharlton, GJ Parker, JJ Baumberg, Appl. Phys. Lett. (2003).

世話人 松田 理

北海道大学大学院工学研究科量子物理工学専攻

電話: 011-706-7190 omatsuda@eng.hokudai.ac.jp