



## COLLOQUIUM

**23 May 2006  
11:00 – 11:30**

Meeting room building 108  
Optics and Plasma Research Department  
Risø National Laboratory, DK-4000 Roskilde, Denmark

### **Polarization and sensing properties of index guiding and photonic bandgap PCF – modeling, technology and measurements**

**Tomasz Nasilowski**

Department of Applied Physics and Photonics  
Vrije Universiteit Brussel, Belgium

### **Abstract**

We investigated diverse designs of a highly birefringent PCF with attractive features: i) very low temperature susceptibility or ii) broadband polarizing properties. A plane-wave method together with the hybrid edge-nodal finite element method, multipole method and finite difference method were used to numerically calculate phase and group modal birefringence or different fiber sensitivities. Birefringent holey fibers of a new construction are manufactured and characterized as well. Moreover, we numerically analyzed the polarization properties of the birefringent photonic bandgap holey fibers with different geometries. We determined the spectral dependence of the phase modal birefringence and the spectral dependence of the losses for different polarization modes. We have found that they are highly dependent on core shape and number of holes rows.

### **Contact information**

Peter E. Andersen, OPL, Risø; peter.andersen@risoe.dk  
Michael Frosz, COM-DTU; mf@com.dtu.dk