



Applied Physics & OSA  
*Optics Seminar*

# **Terahertz spectroscopy – from free-space to waveguide spectroscopy**

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**Abstract:**

In this presentation I will review methods for spectroscopy in the terahertz (THz) frequency range, with special emphasis on the practical implementation of the technique known as THz Time-Domain Spectroscopy (THz-TDS). THz-TDS has revived the classical field of far-infrared spectroscopy, and sparked a wealth of new activities that promise commercial potential for spectroscopic applications in the THz range. This will be illustrated with examples of spectroscopy of liquids, both in a classical spectroscopic setup and also inside their bottles. Broadband quantitative spectroscopy of material inside waveguides will be discussed. Finally a new class of polymer-based optical fibers designed for low-loss, dispersion-tailored propagation in the THz frequency range will be discussed from a spectroscopic perspective.

**Brief Biography:**

Peter Uhd Jepsen has been in the field of THz Science and Technology since 1992. He received the Ph.D. degree in Natural Sciences from the University of Aarhus, Denmark, in 1996. From 1996 until 2004 he was postdoctoral fellow and later Assistant and Associate Professor at the University of Freiburg, Germany, where he obtained the Habilitation (German Doctoral Degree) in 2003. From 2005 to 2008 Peter Uhd Jepsen moved to back to Denmark as Associate Professor and leader of the newly started THz activities at the COM Institute at the Technical University of Denmark.

From 2008 he was appointed Professor and Group Leader of the THz research area at the Department of Photonics Engineering. The current scientific focus areas of his group include new methods for sensitive THz spectroscopy, functional components for the THz frequency range, advanced imaging systems and sensor systems, and ultrafast spectroscopy with THz radiation.

***Thursday, March 12th, 2009.***

***4:00pm-5:00pm.***

***Watson 104***

*Refreshments will be available in the Watson Lobby at 3:45pm*