Optical Sensing with Microstructured Fibers

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Abstract: Optical fiber is a micron-scale element with light trapped in its core. People have attempted to incorporated “microstructures” into fibers for years. A successful example is the photonic crystal fiber (PCF). With the fast progress in micro and even nano-fabrication techniques, we have more freedom to design and fabricate various “Microstructured fibers”. The microstructure induces “optical resonance” or “phase matching”, which are normally sensitive to environmental conditions. On the other hand, optical fiber is a perfect light transmission line with industry standard input/output connections. As a consequence, the combination of fiber and microstructure would give very attractive promising applications in optical sensing and signal processing. In this talk, I am going to introduce our recent work on various fiber-optic sensors, including PCF index/temperature sensors with multi-beam interference, liquid crystal cladding fiber for pressure sensing, transflective nano-wire grid fiber sensor, microfiber coil resonator and micro-fiber probe FP/FBG sensors.

Host: Lan Yang

Friday, September 2, 2011
2:00 p.m.
Bryan Hall, Room 305

Short Bio: Yan-qing Lu received his Ph.D. degree from Nanjing University, China in 1996. He is currently a professor at the College of Engineering and Applied Sciences, Nanjing University. He is the author or co-author of ~80 peer-reviewed papers with over 800 citations. He also holds over 20 patents or pending patents. His research interests include fiber optics, liquid crystal and nonlinear optics. He has five-year experiences in US and China telecomm industries. Now he is an associate editor of Optical Materials Express (OSA) and a senior member of IEEE Photonics Society (Since 2004).