Recent Developments on Bismuth and Erbium Co-doped Fiber for Future Optical Communication Band

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Water-free optical fibers have expanded the accessible telecommunications window across the entire spectrum from 1200 to 1700 nm. To date, commercial exploitation of this window has been largely limited to that enabled by erbium (Er) -doped fibers that operating over only 1520 to 1620 nm (C- and L-band), - a small portion of the available spectrum. The O- (1260-1360 nm), E- (1360-1440 nm), S+ (1440-1460 nm) and S- (1460-1530 nm) bands are not fully utilized as yet. With our current research activities we hope to expand the telecommunications window based on the Bi/Er co-doped fiber. In this talk the preliminary experiments and discussions on our lab-made Bi/Er co-doped fiber are presented. A Bi/Er co-doped fiber based ultra-broadband light source from 1000nm to 1600nm and the Bi/Er co-doped fiber based amplifier will also be discussed.

Biography of the speaker:-

Dr Jianzhong Zhang is a full professor and the Harbin Engineering University and currently a visiting research fellow at the Photonics and Optical Communications Group of the School of Electrical and Telecommunications at UNSW. He received his Bachelor degree of condensed-state physics from the Lanzhou University in 2000 and obtained his Master and Doctoral degrees in optical engineering from the Harbin Engineering University in 2004 and 2007, respectively. He then joined the school of physics at Harbin engineering University as an A/professor at the end of 2007. He became a full professor of Harbin Engineering University in 2011. During 2006 he visited UNSW as a visiting fellow supervised by Professor Gang-Ding Peng. His research interests are in optical fiber laser, optical fiber sensors and wave characteristics in periodical structure. He has published more than 40 articles in international journal and conferences. He is currently the PI for six research projects including two funded by the national science foundation of China which is ongoing in his parent University. At UNSW during his current visit (Feb 2012-Jan 2013) he is involved in the development of Bi and Er co-doped fiber for optical communications.

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