**All-fiber terahertz time domain spectroscopy system**

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**Abstract:**

Terahertz time domain spectroscopy (THz-TDS) has been proved particularly valuable in the field of semiconductors characterization, molecular spectroscopy, and biomedical applications. THz-TDS system is becoming more flexible, more stable and low-cost. In this work, we present an all-fiber THz-TDS system which mainly consists of a 1560nm fiber femtosecond laser, a highly accurate PZT fiber stretcher, and fiber-coupled InGaAs/InAlAs photoconductive antennas (PCAs). Using polarization maintaining dispersion compensation fiber (PMDCF), the pulse widths of the laser at the ends of PCAs were compressed to less than 100fs with 3dB bandwidth about 50nm after 46-meter polarization maintaining (PM) fiber propagation. Time delay accuracy was enhanced owing to the stretching length calibration of the fiber stretcher. Thus, our system can achieve 80ps scan range, 40dB peak dynamic range (for a scan). This all-fiber THz-TDS system is portable, compact, and suitable for industrial environment and field applications.



Fig. The schematic diagram of the all-fibered THz-TDS system

**Biography:**   
Dr. Chunchao Qi joined China Communication Technology Co., Ltd (CCT) in 2015 and was promoted to vice president in 2018. Prior attending CCT, he was a senior engineer at the Southern University of Science and Technology (SUSTech). He received his Ph.D. from the Huazhong University of Science and Technology. He is a senior member of OSA and was selected for the National Science and Technology Programmes Expert Database of China. His primary research interests lie in the field of terahertz sources, quasi-optical devices and semiconductor carrier lifetime measurement. Recently, Dr. Qi focuses on millimetre/terahertz wave spectrum and imaging. He has published 14 papers indexed by Science Citation Index (SCI) and held 46 patents (licensed).