Contribution ID: **552** Type: **Oral**

The design and development of a foot plantar pressure measuring device based on the mechanically induced long period fiber grating

Monday 21 May 2018 14:00 (15 minutes)

The aim of this study is to design and develop an alternative in-shoe foot plantar pressure measurement based on an optical fiber sensor. The foot plantar pressure distributions from human feet is considered to be important and essential information required by clinicians to plan a proper management on some foot problems of diabetic patients. Advantages of using the optical fiber include the immunity to electromagnetic interference, structural flexibility, light weight and low-cost assembly. The main component of the sensor is the long period fiber grating (LPFG) which is composed of a strand of single mode fiber (SMF, 9/125 μm) with a cut-off wavelength at 800 nm and plastic grooved plates with grating periods less than 1 mm. The gratings with different periods are placed at different regions in a foot platform whereby a patient's fore-foot, mid-foot and hind-foot are supported. The LPFG mechanically induced by the plantar pressure applied from each region can be observed from the resonance wavelength shift as a part of the transmission spectrum from the sensor. The data reveal both magnitude and position where the pressure is applied. Experimental results show that this system has a stable and reliable performance for measuring the foot plantar pressure distribution.

Author: Mr RATTANANUPONG, Punthep

Co-author: Mr CHITAREE, Ratchapak (Assistant Professor Doctor (Asst. Prof. Dr.))

Presenter: Mr RATTANANUPONG, Punthep

Session Classification: A3: Optics and Photonics

Track Classification: Optics, Non-linear optics, Laser Physics, Ultrafast Phenomena