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Optical fiber interferometer based on abrupt taper Michelson interferometer for measuring refractive index

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Abstract

In this study, a method for measuring refractive index of the media based on abrupt taper Michelson interferometer is proposed. Implementing this method into a path-matching differential interferometer (PMDI) consisted by two kinds of different interferometer which are abrupt taper Michelon and Fabry-Perot interferometers, respectively. The PMDI system is applied for measuring the change of refractive index of the water solution. By analyzing the optical signal of the photo detector by a synthetic heterodyne demodulator, the extracted signal can clearly realize the relation between the phase change and refractive index of the solution.

Biography

Yu-Lung Lo received his Ph.D. degree in Mechanical Engineering, University of Maryland, College Park, USA, in 1995. He has been faculty of the Mechanical Engineering Department, National Cheng Kung University, since 1996, where he is now a full professor and distinguished professor. Dr. Lo received the First-Class Research Award from NSC in 2005/2006, A-Class Research Award by NCKU in 2006, and the Dr. Ta-You Wu Award for Young Researchers from NSC in 2002. He was invited to be an invited speaker, keynote speaker, and plenary speaker in the international conferences. Currently, he is Chairman of Asian Society of Experiment Mechanics (ASEM).

His research interests include experimental mechanics, fiber-optic sensors, optical techniques in precision measurements, and biophotonics. He has authored over 100 journal papers cited around 850 times in ISI/SCI web. Now he is member of Society of Experimental Mechanics (SEM).

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