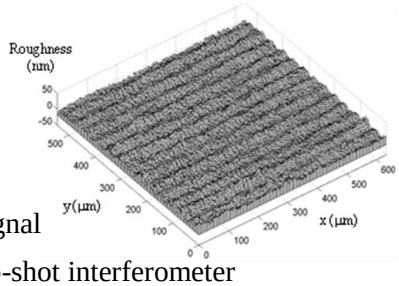
Takamasa Suzuki, Ph.D.

Professor
Graduate School of Science and Technology
/Course: Electrical and Electronic Engineering
Faculty of Engineering
/Program: Electronics, Information
and Communication Engineering

Professional Expertise

His professional expertise includes optical metrology and related technologies, such as laser interferometry, low-coherence interferometry, laser range finder, phase analysis, wavelength scanning light source, and optical image processing. His group developed robust interferometers that eliminate mechanical disturbance by use of a feedback technique, many kinds of wavelength scanning interferometer, and wavelength multiplexed interferometer whose measurement ranges are much improved compared with the conventional interferometers.



Research Fields of Interest

Interferometer

Modulation technique for laser diode and other light sources

Numerical and electrical signal processing of interference signal

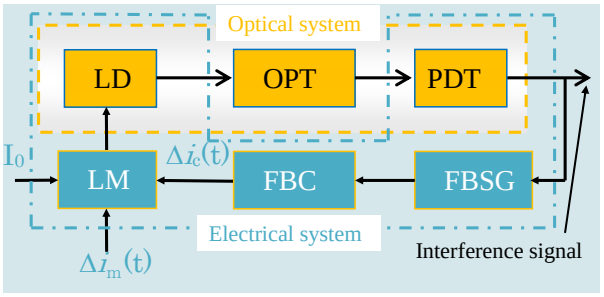
Development of robust, wide range, high precision, and snap-shot interferometer

Light source

Photo-thermal modulated light source

Wavelength scanning light source

Low coherence light source



Optical image processing

Small rotation angle measurement

Biomedical Optics

Small rotation angle measurement

Education

1994: Ph. D., Interdisciplinary Graduate School of Science and Engineering, Tokyo Institute of Technology, Japan
1984: M.S. in Engineering, Graduate School of Engineering, Tohoku University, Japan
1978: B.S. in Engineering, Faculty of Engineering, Niigata University, Japan

Professional Societies and Activities

1. Senior Member, The Optical Society of America (OSA)
2. Fellow, The Society of Photo-Optical Instrumentation Engineers (SPIE)
3. Member, The Japan Society of Applied Physics (JSAP)
4. Member, The Optical Society of Japan (OSJ)
5. Member, The Institute of Electronics, Information and Communication Engineers of Japan

Major Publications

Interferometer

[1] “Vibration distribution measurement using downsampling phase-shifting interferometer,” Opt. Eng. 59 (3), 034112_1-7 (2020).

[2] “Signal correction by detection of scanning position in a white-light interferometer for exact surface profile measurement,” Appl. Opt., 58 (13), 3548-3554 (2019).

[3] “Dual scanning white-light interferometer for exact thickness measurement of glass plate with large thickness,” Meas. Sci. and Tech., 31 (4), 045009 (2019).

[4] “3-D surface profile measurement using spectral interferometry based on continuous wavelet transform,” Opt. Commun., 396, 216–220 (2017).

[5] “Simultaneous measurement of thickness and refractive index using phase shifted Coherent Gradient Sensor,” Optics & Laser Technology,” 86, 85-92 (2016).

[6] “Profile measurement of thin films by backpropagation of multiple-wavelength optical fields with two sinusoidal phase-modulating interferometers,” Opt. Commun., 356, 578–581 (2015).

[7] “Wide-field heterodyne interferometric vibrometry for two-dimensional surface Vibration measurement,” Opt. Commun., 356, 343-349 (2015).

[8] “Multifrequency swept common-path en-face OCT for wide-field measurement of interior surface vibrations in thick biological tissues,” Opt. Express, 23, 21078-21089 (2015).

[9] “Phase-shifting interferometer with pulse modulation based on a downsampling technique,” Opt. Eng., 54, 085107_1-4 (2015).

[10] “Three-dimensional step–height measurement using sinusoidal wavelength scanning interferometer with four-step phase-shift method,” Opt. Eng., 53, 084110 (2014).

Light source

[11] “Acousto-optically tuned external-cavity laser diode for optical coherence tomography with continuous wavelet transform,” Opt. Eng., 58 (10), 104108_1-6 (2019).

[12] “Rapid wavelength scanning based on acousto-optically tuned external-cavity,” Opt. Commun., 284, 4615–4618 (2011).

[13] “Static wavelength scanning using tunable external-cavity laser diode,” Opt. Eng. 49 (2), pp. 020502_1-3 (2010).

[14] “A tunable external cavity laser diode possessing a stable wavelength,” Opt. Rev. 14 (1), 23-28 (2007).

Optical image processing

[15] “Two-dimensional small rotation-angle measurement using an imaging method,” Opt. Eng. 45 (4), 043604_1-7 (2006).

[16] “Small rotation angle measurement using an imaging method,” Opt. Eng. 40 (3), 426-432 (2001).

Biomedical Optics

[17] “Near-Infrared Photoimmunotherapy Using a Small Protein Mimetic for HER2-Overexpressing Breast Cancer,” Int. J. Mol. Sci., 20, 5835_1-14 (2019).

[18] “Imaging of metastatic cancer cells in sentinel lymph nodes using affibody probes and possibility of a theranostic approach,” Int. J. Mol. Sci., 20, 427, 1-24 (2019).