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Editors

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Introduction

These are the proceedings of the conference on Optical Metrology and Inspection for Industrial Applications IV that was held as part of SPIE/COS Photonics Asia (in Beijing, China, 12–14 October 2016). This conference focuses on methods, analysis, and applications of optical metrology and inspection that have been applied to various industries with a particular emphasis on the manufacturing industry. The field of optical metrology and inspection has rapidly grown to wide acceptance for many industrial applications. For example, the requirements from the absolute measurement of ultra-smooth flatness, industry realized high-speed and downsized measurement systems, and advances in machine/robot vision have provided smart algorithm systems, new lighting systems, and better ways of data transfer.

Non-contact methods based on optical interference and imaging principles have been seen wide use in the optical/mechanical engineering, semi-conductor/LED and electronics industry, and also made advances in traditional manufacturing areas such as automotive and aerospace manufacturing. These methods are also being used for surface shape and defect inspection, and precision measurements. Recent computing power has made analysis methods such as phase-shifting a viable tool for fast on-line inspection for process control and metrology applications. This conference is intended to address the latest advances and future developments in the areas of optical metrology methods, applications and inspections as they are applied in various industries.

In these proceedings, papers submitted to the conference are presented in the following eight sessions: Optical Metrology Methods I to VI and Optical Metrology Applications I and II, and one Poster Session.

In addition to optical interference principles and techniques, imaging methods and phase-shifting analysis techniques have also become more and more popular in practical applications due to rapid advanced computational processing methods, camera systems and device technologies including various optoelectrical elements and devices. In the next conference scheduled in 2018, more papers are expected to be presented in those areas as well.

Sen Han
Toru Yoshizawa
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