Handbook of OPTICAL METROLOGY

Principles and Applications

Edited by Toru Yoshizawa



CRC Press

Handbook Of Optical Metrology Principles And Applications

Terence K. S. Wong

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apply optical metrology to a vast array of current engineering and scientific problems Dimensional Metrology Han Haitjema, Richard Leach, 2025-07-22 This book provides in depth coverage of metrology principles for students practicing engineers technologists and researchers Dimensional Metrology presents and explains mathematical principles and treatments and practical applications of metrology with numerous chapter exercises that link theory to the solution of practical problems Computer based classes of dimensional metrology are covered such as CMM technology areal surface measurement and X ray computed tomography Readers are shown how to perform and evaluate dimensional measurements and interpret the results Measuring instruments and methods are explained so that readers can determine which one to use for specific applications This book aims to give both technicians and academic researchers in the field a thorough understanding of both the mathematical principles and uses and their applications It can well act as the basis for a course series at the bachelor s and master s level for students in mechanical engineering **Semiconductor Strain Metrology** Terence K. S. Wong, 2012 This book surveys the major and newly developed techniques for semiconductor strain metrology Semiconductor strain metrology has emerged in recent years as a topic of great interest to researchers involved in thin film and nanoscale device characterizati A Practical Guide to Surface Metrology Michael Quinten, 2020-01-01 This book offers a genuinely practical introduction to the most commonly encountered optical and non optical systems used for the metrology and characterization of surfaces including guidance on best practice calibration advantages and disadvantages and interpretation of results It enables the user to select the best approach in a given context Most methods in surface metrology are based upon the interaction of light or electromagnetic radiation UV NIR IR and different optical effects are utilized to get a certain optical response from the surface some of them record only the intensity reflected or scattered by the surface others use interference of EM waves to obtain a characteristic response from the surface The book covers techniques ranging from microscopy including confocal SNOM and digital holographic microscopy through interferometry including white light multi wavelength grazing incidence and shearing to spectral reflectometry and ellipsometry. The non optical methods comprise tactile methods stylus tip AFM as well as capacitive and inductive methods capacitive sensors eddy current sensors The book provides Overview of the working principles Description of advantages and disadvantages Currently achievable numbers for resolutions repeatability and reproducibility Examples of real world applications A final chapter discusses examples where the combination of different surface metrology techniques in a multi sensor system can reasonably contribute to a better understanding of surface properties as well as a faster characterization of surfaces in industrial applications. The book is aimed at scientists and engineers who use such methods for the measurement and characterization of surfaces across a wide range of fields and industries including electronics energy automotive and medical engineering Proceedings of the XIII International Scientific Conference on Architecture and Construction 2020 Angela Mottaeva, 2020-12-23 The book contains the latest studies on digitalization of transport and logistics improving vehicle fuel

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