

1. Record Nr.	UNINA9911020197003321
Autore	Haus Jorg
Titolo	Optical sensors : asics and applications // Jorg Haus
Pubbl/distr/stampa	Weinheim, : Wiley-VCH Verlag GmbH & Co., 2010
ISBN	9786612688539 9781282688537 1282688537 9783527629435 3527629432 9783527629442 3527629440
Descrizione fisica	1 online resource (191 p.)
Classificazione	530 ZQ 3120 ZQ 3910
Disciplina	681.25
Soggetti	Optical detectors Optoelectronic devices
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographic references and index.
Nota di contenuto	Optical Sensors; Contents; Preface; Introduction; References; Part One: The Optical Sensor Construction Kit; 2: Light Sources; 2.1 Important Properties of Light Sources; 2.2 Thermal Light Sources; 2.3 Line Sources; 2.4 Light Emitting Diodes (LEDs); 2.5 Lasers; 3: Photodetectors; 3.1 Photomultipliers; 3.2 Photodiodes; 3.3 Other Detector Types; 3.4 Imaging Detectors; 3.5 Detector Noise; 4: Optical Elements; 4.1 Optical Materials; 4.2 Mirrors, Prisms and Lenses; 4.3 Dispersive Elements: Prisms and Gratings; 4.4 Optical Filters; 4.5 Polarizers; 4.6 Optical Fibers; 4.7 Modulators; References Part Two: Optical Sensors and Their Applications 5: Eyes: The Examples of Nature; 5.1 The Compound Eyes of Insects; 5.2 Nature's Example: The Human Eye; 6: Optical Sensor Concepts; 6.1 Switches; 6.1.1 Light Barriers; 6.1.2 Rain Sensor; 6.2 Spatial Dimensions; 6.2.1 Distance; 6.2.2 Displacement; 6.2.3 Velocity; 6.2.4 Angular Velocity; 6.3 Strain;

6.4 Temperature; 6.5 Species Determination and Concentration; 6.5.1 Spectrometry; 6.5.2 Polarimetry; 6.5.3 Ellipsometry; 6.5.4 Refractometry; 6.5.5 Particle Density and Particle Number; 6.5.6 Fluorescence Detection; 6.6 Surface Topography
6.6.1 Chromatic Confocal Sensors; 6.6.2 Conoscopic Holography; 6.6.3 Multiwavelength Interferometry (MWLI); 6.6.4 White-Light Interferometry; 6.6.5 Near-Field Optical Microscopy; 6.6.6 Contouring: Structured-Light Techniques; 6.6.7 Concepts: Cross-Correlation Analysis and 2D Fourier-Transform Techniques; 6.7 Deformation and Vibration Analysis; 6.7.1 Laser Vibrometers; 6.7.2 Speckle-Pattern Interferometry; 6.7.3 Holographic Interferometry; 6.8 Wavefront Sensing and Adaptive Optics; 6.9 Determination of the Sun Angle; 6.10 Determination of Age; References
Part Three: Optics and Sensors at Work: A Laser-Spectroscopic Experiment
7: The Measurement Problem; 8: The Physical Principles behind the Experiment; 9: Spectroscopic Setups of the Experiment; 9.1 The Single-Step Approach; 9.2 The Two-Step Approach; References; Summary; Glossary; Index

Sommario/riassunto

Providing an overview of the necessary components and the range of applications from light-barriers to high-resolution surface-scanning interferometers, this is a valuable introduction to the technology of optical sensors as well as a reference for experienced practitioners. The first part of the book introduces readers to the basics of sensor principles by describing the most important components that can be found in all optical sensors. Based on this opto-electronic toolbox, the second part then goes on to give numerous examples of optical sensors with respect to their applications.
