

1. Record Nr.	UNINA9910585938003321
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Titolo	Photonic Technology for Precision Metrology
Pubbl/distr/stampa	Basel, : MDPI - Multidisciplinary Digital Publishing Institute, 2022
Descrizione fisica	1 electronic resource (126 p.)
Soggetti	Technology: general issues History of engineering & technology
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Sommario/riassunto	<p>Photonics has had a decisive influence on recent scientific and technological achievements. It includes aspects of photon generation and photon–matter interaction. Although it finds many applications in the whole optical range of the wavelengths, most solutions operate in the visible and infrared range. Since the invention of the laser, a source of highly coherent optical radiation, optical measurements have become the perfect tool for highly precise and accurate measurements. Such measurements have the additional advantages of requiring no contact and a fast rate suitable for in-process metrology. However, their extreme precision is ultimately limited by, e.g., the noise of both lasers and photodetectors. The Special Issue of the Applied Science is devoted to the cutting-edge uses of optical sources, detectors, and optoelectronics systems in numerous fields of science and technology (e.g., industry, environment, healthcare, telecommunication, security, and space). The aim is to provide detail on state-of-the-art photonic technology for precision metrology and identify future developmental directions. This issue focuses on metrology principles and measurement instrumentation in optical technology to solve challenging engineering problems.</p>