

Polarization Holography and Applications

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Polarization holography is a newly researched field, that has gained traction with the development of tensor theory. It primarily focuses on the interaction between polarization waves and photosensitive materials. The extraordinary capabilities in modulating the amplitude, phase, and polarization of light have resulted in several new applications, such as holographic storage technology, multichannel polarization multiplexing, vector beams, and optical functional devices. In this paper, fundamental research on polarization holography with linear polarized light, a component of the theory of polarization holography, has been reviewed. Primarily, the effect of various polarization changes on the linear and nonlinear polarization characteristics of reconstructed light wave under continuous exposure and during holographic recording and reconstruction have been focused upon. The polarization modulation realized using these polarization characteristics exhibits unusual functionalities, rendering polarization holography as an attractive research topic in many fields of applications. This paper aims to provide readers with new insights and broaden the applications of polarization holography in more scientific and technological research fields.

Short biography:



Xiaodi Tan, graduated from the Optical Department of Shandong University in 1984, he obtained Master's Degree from the Optical Engineering Department of the Beijing Institute of Technology in 1990. His Doctoral thesis was completed at The University of Tokyo, Institute of Industrial Science in 2001. He was a Senior Engineer of the Technology Division in OPTWARE Corporation, researching and developing the next generation of optical data storage systems. And he was a Senior Technology Analyst, Distinguished Engineer and Optical Technology Manager of Core Device Development Group in Sony Corporation. During 2012 to 2017, he was a professor at the School of Optoelectronics in Beijing Institute of Technology. He is currently a professor at the College of Photonic & Electric Engineering in Fujian Normal University. His research interests are in information optics & photonics: holographic storage, optical information display, optical devices, etc.