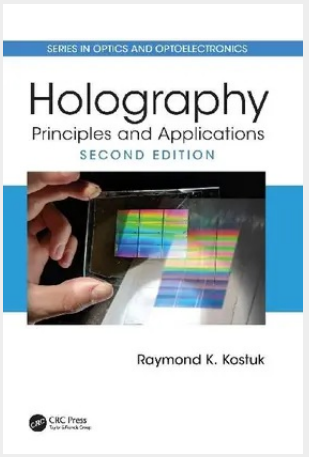
Kostuk

Holography

Principles and Applications



Holography: Principles and Applications provides a comprehensive overview of the theory, practical considerations, and applications of holography. The author has spent his career working on different aspects of this subject and, in this book, conveys the foundation for others to use holography and holographic concepts in a variety of important applications. Special emphasis is placed on the analysis of the imaging and diffraction efficiency properties of holographic optical elements that are finding increasing use in medical imaging, solar conversion systems, and augmented reality eyewear. A comprehensive overview of holographic materials is also given as this area is critical for implementing successful holographic designs. The important areas of digital and computer- generated holography are also presented to give the reader an understanding of these topics. The author has attempted to explain each subject in a manner that he has found effective in teaching holography for over 36 years. This book is suitable for researchers and as a textbook for graduate students in optics, physics, and engineering. As an aid to instructors and students, the book includes exercise problems and a set of laboratory experiments to enhance understanding. Methods for preparing and handling holographic materials are also provided to help individuals develop experimental capability in holography. In addition, over 470 current and foundational references are provided to help the researcher probe further into this interesting and useful subject. New Content in the Second Edition: - Extensive discussion of holographic photopolymers in Chapter 8 - Extended discussion of holographic optical elements in Chapter 9 with in depth analysis of waveguide coupling HOEs for augmented reality and solar concentrator applications - A new Appendix F that covers replication and hologram parameter optimization - Revised and extended exercise problems and laboratory experiments with solutions available from the publisher to qualified users

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