

V. Concluding Remarks

We have described the importance of the phase-sensitive detection method in the electron holographic microscope. The fringe scanning phase-detection technique is applied to a phase-amplified holographic fringe pattern recorded with magnetic field distribution. In the present experiment the measurement accuracy is from about 1/50 to 1/70 fringe, depending on filtering. This corresponds to a magnetic flux sensitivity of from 6×10^{-17} to 8×10^{-17} Wb. Using higher diffraction orders, a noise reduction technique, and a more stable interferometer, we expect to obtain much higher accuracy of the present situation. According to theoretical considerations 1/1000-fringe accuracy for the fringe scanning algorithm is expected in the ideal case.

This paper is based on one presented at the OSA Topical Meeting on Holography, 31 Mar.–2 Apr. 1986.

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Physics of New Laser Sources. Edited by N. ABRAHAM, F. ARECCHI, A. MOORADIAN, and A. SONA. Plenum Press, New York, 1986. 460 pp. \$75.00.

This book is a collection of articles based on the lectures and seminars presented at the NATO Advanced Study group of the Europhysics School of Quantum Electronics which was held at Centro I Cappuccini, San Miniato, Tuscany, 11–21 July 1984. The subject matter of the articles provides updated information for young researchers and advanced graduate students who are already engaged in the area of lasers or for those wishing to enter this area. The topics covered are also likely to be of interest to both scientists from industrial laboratories as well those in the academic community.

Abraham, Arecchi, Mooradian, and Sona assembled at the meeting some of the world's pioneers in the laser field to lecture on the developments of new laser sources currently available up to 1984. The topics reviewed in this book are excimer, alexandrite, dye, pulse compression, semiconductor, and C^3 lasers, free electron lasers, synchrotron radiation, and Er lasers to name a few. Articles on phase conjugation and stimulated Raman scattering are also present. Two important laser sources not covered in the text in any great depth are other tunable solid-state lasers based on Cr^+ , V^+ , and Ti^+ ions and the supercontinuum laser.

This book can help serve as a reference for the end laser user community who needs to be informed about the state of the art of the future laser generation and how to explore uses of these new laser sources in future applications.

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Laser Processing and Diagnostics: Proceedings of an International Conference. Edited by D. BAUERLE. Springer-Verlag, New York, 1984. 551 pp. \$34.00.

Laser Processing and Diagnostics is the proceedings of an international conference held in Linz, Austria, 15–19 July 1984. This interdisciplinary conference was devoted to fundamental aspects and applications of laser processing. The invited and contributed papers contained in the proceedings volume are compiled into five separate complementary chapters on topics ranging from basic studies of photophysical and photochemical processes at surfaces to photo-assisted semiconductor processing and laser diagnostics of gas phase and surface processes. The primary emphasis of the book is in the area of laser processing of electronic materials. The papers are generally well written, and the editor has organized them into a coherent and logical format. Also, an extensive subject index has been compiled; this is a valuable addition that is often lacking in conference proceedings.

The first chapter is devoted to fundamental aspects of the interaction between laser radiation and solid surfaces and applications of transient heating methods for processing of electronic materials. The chapter contains fifteen papers which address issues relating to laser-induced phase transformations in Si, Ge, Te, GaAs, CdTe, InSb, Si-on-insulator structures and metals. Since such a wide variety of materials is treated, details concerning laser–solid interactions in any single system are necessarily limited. Nevertheless, the chapter provides a good introduction to laser annealing and transient processing and offers an informative survey of work in this field.

The emphasis of the second chapter is on the photophysics and photochemistry of gas–surface interactions. Although this is a rela-

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