

D. L. Mills, University of California, Irvine, CA

Nonlinear Optics

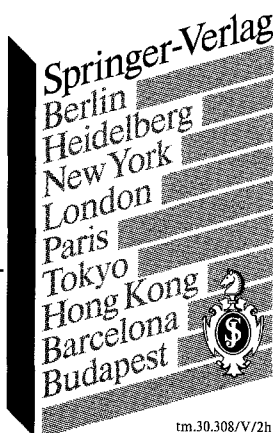
Basic Concepts

1991. VIII, 184 pp. 32 figs.
Hardcover DM 59,- ISBN 3-540-54192-6

The text presents the key-concepts in nonlinear optics at a level that will also be accessible to the non-specialist who wishes to acquire a foundation in the field. The principal equations of nonlinear physics are also encountered (Sine Gordon equation, nonlinear Schrödinger equation), and their soliton solutions examined and related to nonlinear optics. The final chapter addresses the chaotic response of nonlinear systems. The book will appeal to graduate students in physics, physical chemistry and electronic engineering.

The major topics include principles of the linear and nonlinear dielectric response of matter, second-harmonic generation, four-wave mixing, and the inelastic scattering of light from matter, with attention also given to stimulated scattering. The highly nonlinear response of nearly resonant two-level systems is discussed, also in relation to saturation and self-induced transparency. Guided waves in optical fibers are explored, including the propagation of soliton pulses. The nonlinear optical response of periodic structures is examined as well.

This book is addressed to a broad audience interested in a thorough discussion of basic concepts. It facilitates access to the research literature, and will prepare the reader to tackle more advanced texts.



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Verification of a Generalized Planck Law for Luminescence Radiation from Silicon Solar Cells 109

K. Umemura

Measurement of Energy Spread and Angular Intensity of a Cesium Liquid Metal Ion Source 115

M. Rimini-Döring, A. Hangleiter, S. Winkler, N. Klötzer

Non-Equilibrium Generation-Recombination Noise in InGaAs/InP Photodiodes 120

N. D. Theodore, T. L. Alford, C. B. Carter, J. W. Mayer, N. W. Cheung

TEM Analysis of the Influence of Dose on Damage Behavior in MeV Au²⁺-Implanted Silicon 124

P. Kocevar, F. Flores

On the Possibility of Wake-Field Effects in the Conductivity of Doped Semiconductors 132

F. Lau

Modeling of Polysilicon Diffusion Sources During Rapid Optical Annealing 139

R. M. de la Cruz, R. Pareja, A. Segura, P. Moser, A. Chevy

Positrons and Electron-Irradiation Induced Defects in the Layered Semiconductor InSe 147

Surfaces and Multilayers

S. Preuß, H. Stafast

CO₂ Laser CVD of Copper Lines with Twofold Periodic Structures 152

H. M. Phillips, D. L. Callahan, R. Sauerbrey, G. Szabo, Z. Bor

Direct Laser Ablation of Sub-100 nm Line Structures into Polyimide 158

P. Schwab, A. Kochemasov, R. Kullmer, D. Bäuerle

The Influence of Photodissociated N₂O in Pulsed-Laser Deposition of Y-Ba-Cu-O Films 166

Z. Kántor, Z. Tóth, T. Szörényi

Laser Induced Forward Transfer: The Effect of Support-Film Interface and Film-to-Substrate Distance on Transfer 170

A. Y. G. Fuh

Modification of Local Magnetic Properties of Steel Surfaces by a Q-Switched Nd:YAG Laser Beam 176

H. Cruz, J. G. Muga

Coherent Electron Tunneling in Triple Coupled Quantum Wells 178

M. Amiotti, E. Bellandi, A. Borghesi, A. Piaggi, G. Guizzetti, F. Nava, G. Queirolo

Influence of Annealing Temperature on Structural, Electrical and Optical Properties of WS₂ 181

P. Chakrabarti, J. Pal

Optically Controlled Characteristics of a New Heterojunction Field Effect Transistor 186

Huang Yong-Zhen, Wang Chi-Ming

Resonant Tunneling, Eigenvalue and Energy Band Calculation for Potential an Periodic Potential Structures 191

V. I. Emel'yanov, A. A. Soumbatov

Diffusion-Deformational Instability and Subboundary Formation in the Recrystallization of Semiconductor-on-Insulator Films 196

Xiumiao Zhang

Inversion Layer Resistance in Silicon Inversion Layer Solar Cells 200

M. S. R. Khan, A. Reza

Optical and Electrical Properties of Optimized Thin Gold Films as Top Layer of MIS Solar Cells 204