Contents

vii  Preface

PART ONE

3  Rigorous coupled-wave analysis and applications of grating diffraction
E. N. Glytsis, T. K. Gaylord, D. L. Brundrett, Georgia Institute of Technology

32  Mathematical modeling for diffractive optics
D. C. Dobson, Texas A&M Univ.; J. A. Cox, Honeywell Technology Ctr.

54  Advantages of genetic algorithm optimization methods in diffractive optic design
E. G. Johnson, A. D. Kathman, D. H. Hochmuth, A. L. Cook, D. R. Brown,
B. Delaney, Teledyne Brown Engineering

PART TWO

77  Imaging by diffraction: grating design and hardware results

98  Review of micro-optics technologies at Hughes Danbury Optical Systems, Inc.
P. R. Akkapeddi, E. J. Gratrix, J. E. Logue, M. P. Power, Hughes Danbury Optical
Systems, Inc.

117  Diffractive optics fabricated by electron-beam direct write methods
S. H. Lee, Univ. of California/San Diego

138  Proximity-compensated kinoforms directly written by e-beam lithography
M. Larsson, M. Ekberg, F. Nikolajeff, S. Härd, Chalmers Univ. of Technology
(Sweden); P. M. Maker, R. E. Muller, Jet Propulsion Lab.

PART THREE

165  Replication of diffractive optics
F. P. Shvartsman, E.I. du Pont de Nemours & Co., Inc.

187  Scattering from diffractive optics
D. W. Ricks, Naval Air Warfare Ctr.

212  Thermal properties of diffractive optical elements and design of hybrid
athermalized lenses
G. P. Behrmann, Army Research Lab.; J. P. Bowen, Rochester Photonics Corp.;
J. M. Mait, Army Research Lab.
234 Subwavelength structured surfaces and their applications  
D. H. Raguin, Rochester Photonics Corp.; S. Norton, G. M. Morris,  
Univ. of Rochester

PART FOUR

265 Practical applications of diffractive optics in free-space photonic switching  
networks  

290 Diffractive optics and computer-generated holograms for optical  
interconnects  
S. H. Lee, Univ. of California/San Diego

302 Merging micro-optics with micromechanics: micro-opto-electro-mechanical  
(MOEM) devices  
M. E. Motamedi, Rockwell International Science Ctr.

329 Micro-optics technology development for advanced sensors  
G. Gal, Lockheed Missiles & Space Co., Inc.

360 Planar optics: a system technology for integrated optoelectronics  
J. Jahns, B. Acklin, AT&T Bell Labs.