

CONTENTS

List of Contributors vii

Preface ix

Applications of Holography

BRIAN J. THOMPSON

I. Introduction	
II. Basic Systems Concepts	4
III. Applications of Holographic Image Formation	12
IV. Nonimage-Forming Applications	42
V. The Hologram as an Optical Element	53
VI. Conclusions	55
References	56

Laser Applications in Metrology and Geodesy

JAMES C. OWENS

I. Introduction	62
II. Alignment	63
III. Interferometry	69
IV. Modulated-Light Methods	96
V. Velocity Measurement	119
VI. Conclusion	128
References	129

The Laser Gyro

FREDERICK ARONOWITZ

I. Introduction	134
II. Principle of Operation	134
III. Error Sources in the Laser Gyro	141

IV. Lock-In Compensation	153
V. Dispersion Properties of the Active Medium	163
VI. Other Topics	178
VII. Laser Gyro Construction	191
VIII. Applications of the Laser Gyro	195
References	199

Machining and Welding Applications

LELLAND A. WEAVER

I. Introduction	201
II. High Power Gas Laser Systems	203
III. High Power Solid-State Laser Systems	212
IV. Material Processing Mechanisms	220
V. Lasers and Industrial Processing	227
VI. Conclusions	235
References	236

Laser Communications

MONTE ROSS

I. Introduction	239
II. Basic Advantages of Laser Communications	240
III. Basic Types of Laser Links	241
IV. Basic Signal and Noise Considerations	246
V. Modulation Techniques	248
VI. Desirable Laser Characteristics	262
VII. Modulators	268
VIII. Detector Receivers	275
IX. Beam Deflectors	282
X. Optical Collectors	283
XI. Laser System Considerations	285
XII. Near-Space Systems	287
XIII. Deep-Space Systems	291
XIV. Final Note	293
References	

Author Index

Subject Index