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Nota di contenuto	<p>1. Introduction -- Applications of Optical Components -- Key Environmental Considerations -- Extreme Service Environments -- Environmental Testing -- Key Material Properties -- Dimensional Instability -- Tolerancing Optical and Mechanical Components -- Cost Aspects of Tightened Tolerances on Optics -- Manufacturing Optical and Mechanical Components.</p> <p>2. The Optic-to-Mount Interface -- Mechanical Constraints -- Consequences of Mounting Forces -- Sealing Considerations.</p> <p>3. Mounting Individual Lenses -- Preload Requirements -- Weight and Center of Gravity Calculations -- Spring Mountings for Lenses and Filters -- Burnished Cell Mountings -- Snap and "Interference Fit" Rings -- Retaining Ring Constraints -- Constraining the Lens with Multiple Spring Clips -- Geometry of the Lens-to-Mount Interface -- Elastomeric Mountings -- Flexure Mountings for Lenses -- Mounting Plastic Lenses.</p> <p>4. Multiple-Component Lens Assemblies -- Spacer Design and Manufacture -- Drop-In Assembly -- Lathe Assembly -- Elastomeric Mountings -- Poker-Chip Assembly -- Assemblies Designed for High-Shock Environments -- Photographic Objective Lenses -- Modular Construction and Assembly -- Catoptric and Catadioptric Assemblies -- Assemblies with Plastic Housings and Lenses -- Internal Mechanisms -- Sealing and Purging Lens Assemblies.</p> <p>5. Mounting Optical Windows, Filters, Shells, and Domes -- Simple</p>

Window Mountings -- Mounting "Special" Windows -- Conformal Windows -- Windows Subject to Pressure Differential -- Filter Mountings -- Mounting Shells and Domes.

6. Prism Design -- Principal functions -- Geometric Considerations -- Aberration Contributions of Prisms -- Typical Prism Configurations.

7. Techniques for Mounting Prisms -- Kinematic Mountings -- Semikinematic Mountings -- The Use of Pads on Cantilevered and Straddling Springs -- Mechanically Clamped Nonkinematic Mountings -- Bonded Prism Mountings -- Flexure Mountings for Prisms.

8. Mirror Design -- General Considerations -- Image Orientation -- First- and Second-Surface Mirrors -- Ghost Image Formation with Second-Surface Mirrors -- Approximation of Mirror Aperture -- Weight Reduction Techniques -- Thin Facesheet Configurations -- Metallic Mirrors -- Metallic Foam Core Mirrors -- Pellicles.

9. Techniques for Mounting Smaller Nonmetallic Mirrors -- Mechanically Clamped Mirror Mountings -- Bonded Mirror Mountings -- Compound Mirror Mountings -- Flexure Mountings for Smaller Mirrors -- Central and Zonal Mountings -- Gravitational Effects on Smaller Mirrors.

10. Techniques for Mounting Metallic Mirrors -- Single Point Diamond Turning of Metallic Mirrors -- Integral Mounting Provisions -- Flexure Mountings for Metallic Mirrors -- Plating of Metal Mirrors -- Interfacing Metallic Mirrors for Assembly and Alignment.

11. Techniques for Mounting Larger Nonmetallic Mirrors -- Mounts for Axis Horizontal Applications -- Mounts for Axis Vertical Applications -- Mounts for Axis Variable Applications -- Supports for Large, Space-Borne Mirrors.

12. Aligning Refracting, Reflecting and Catadioptric Systems -- Aligning the Individual Lens -- Aligning Multiple Lens Assemblies -- Aligning Reflecting Systems.

13. Estimation of Mounting Stresses -- General Considerations -- Statistical Prediction of Optic Failure -- Rule-of-Thumb Stress Tolerances -- Stress Generation at Point, Line, and Area Contacts -- Peak Contact Stress in an Annular Interface -- Bending Effects in Asymmetrically Clamped Optics.

14. Effects of Temperature Changes -- Athermalization Techniques for Reflective Systems -- Athermalization Techniques for Refractive Systems -- Effects of Temperature Change on Axial Preload -- Radial Effects in Rim Contact Optics -- Effects of Temperature Gradients -- Thermally Induced Stresses in Bonded Optics.

15. Hardware Examples -- Infrared Sensor Lens Assembly -- A Family of Commercial Mid-Infrared Lenses -- Using SPDT to Mount and Align Poker Chip Subassemblies -- A Dual Field IR Tracker Assembly -- A Dual Field IR Camera Lens Assembly -- A Passively Stabilized 10:1 Zoom Lens Objective -- A 90 mm, f/2 Projection Lens Assembly -- A Solid Catadioptric Lens Assembly -- An All Aluminum Catadioptric Lens Assembly -- A Catadioptric Star Mapping Objective Assembly -- A 150 in., f/10 Catadioptric Camera Objective -- The Camera Assembly for the DEIMOS Spectrograph -- Mountings for Prisms in a Military Articulated Telescope -- A Modular Porro Prism Erecting System for a Binocular -- Mounting Large Dispersing Prisms in a Spectrograph Imager -- Mounting Gratings for the FUSE Spectrograph -- The Spitzer Space Telescope -- A Modular Dual Collimator Assembly -- Lens Mountings for the JWST's NIR Cam -- A Double-Arch Mirror Featuring Silicon-Foam-Core-Technology.

[Appendices] -- Unit Conversion Factors -- Mechanical Properties of Materials -- Torque-Preload Relationship for a Threaded Retaining Ring -- Summary of Methods for Testing Optical Components and Optical Instruments Under Adverse Environmental Conditions.

Sommario/riassunto

Entirely updated to cover the latest technology, this second edition gives optical designers and optomechanical engineers a thorough understanding of the principal ways in which optical components--lenses, windows, filters, shells, domes, prisms, and mirrors of all sizes--are mounted in optical instruments.