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OF COMMERCIAL LASERS; Active Media; Gases; Liquids; Insulating Solids; Semiconductors; Excitation; Electrical Pumping; Optical Pumping; Chemical Pumping; Optical Cavity Stability of the Optical Cavity Resonator Support; Output Devices; OUTPUT; Spatial Mode; Cylindrical Symmetry; Rectangular Symmetry; Fresnel Number; Temporal Mode; Q-switching; Cavity Dumping; Mode Locking; Chirping; Frequency Multiplication; Raman Effect; Propagation; Waist; Focused Spot Size; Rayleigh Length; Radius of Curvature; Fields; Divergence; Quality; Bandwidth; Coherence; Brightness; Intensity; Polarization; LASERS FOR MATERIAL PROCESSING; ATOMS; Helium-Neon; Iodine; Free Electron; Xenon; MOLECULES; Carbon Dioxide; Sealed; Transversely Excited Atmospheric Pressure; Slow Axial Flow Fast Axial Flow Transverse Flow; Gas Dynamic; Carbon Monoxide; Hydrogen Fluoride; Deuterium Fluoride; Hydrogen Chloride; Nitrogen; Organic; IONS; Argon; Krypton; Argon-Krypton; Xenon; Copper Vapour; Gold Vapour; Helium-Cadmium; Helium-Selenium; X-ray; EXCIMERS; Argon Fluoride; Krypton Fluoride; Xenon Chloride; Xenon Fluoride; Fluorine; Xenon; Xenon Bromide; LIQUIDS; Rhodamine; Coumarin; SOLIDS; Nd:YAG; Nd:glass; Ruby; Alexandrite; Ti: sapphire; Diode-pumped Solid State; Nd:YAG; Er:YAG; Er:YLF; Ho:YAG and Ho:YLF; Yb: YAG; Nd:YLF; Nd:YAP; Nd:GGG; Tm:YAG; Colour Centre; SEMICONDUCTORS; GaAs; InGaAs; InGaAlAsGaN; Lead Salt; SUMMARY AND CONCLUSIONS; FURTHER READING; 4 SYSTEMS FOR MATERIAL PROCESSING; INTRODUCTION AND SYNOPSIS; OPTICS; OPTICAL TERMINOLOGY; Focal Length; Focal Number; Beam Diameter at Focus; Depth of Focus; TRANSMISSIVE OPTICS; Materials; Coatings; Beam Splitters; LENS PARAMETERS; Plano-convex Lens; Positive Meniscus Lens; Aspheric Lens; Polarizers; Beam Collimators; Axicon Lens; Beam Integrator; Fibreoptics; Line Focus; Aberrations; REFLECTIVE OPTICS; Materials; Coatings; Beam Turning Mirrors; Beam Splitting Mirrors; Spherical Mirrors; Paraboloidal Mirrors Deformable Mirrors

Sommario/riassunto

The complete guide to understanding and using lasers in material processing! Lasers are now an integral part of modern society, providing extraordinary opportunities for innovation in an ever-widening range of material processing and manufacturing applications. The study of laser material processing is a core element of many materials and manufacturing courses at undergraduate and postgraduate level. As a consequence, there is now a vast amount of research on the theory and application of lasers to be absorbed by students, industrial researchers, practising engineers and production
