ideas would not be possible without the continuous research and development of new materials and fabrication techniques used in the electronics industry. For example, the discovery and development of new materials (low-k dielectrics and SiC) enables higher speed and higher temperature electronics. Conductive plastic composites are used for RFI/EMI shielding, and other types of inherently conductive plastics are used in chemical sensing. New coatings protect PC boards, and new deposition processes and multilayer board layouts and board materials allow for a much higher packing density, resulting in very small packages. New materials and layouts are also used for increasing the thermal capacity of devices.

This third edition, reflecting recent dramatic changes that have occurred since the previous edition, is broken down into three main parts. The first set of chapters covers materials critical to electronics, including semiconductors, plastics, elastomers, composites, glasses, ceramics, and various metals. The following set of chapters describes materials and interconnection processes. These include circuit board and processing, metallic coatings, electroplating, adhesives, underfills, and coatings for assemblies. The final chapter describes packaging materials for thermal management and factors determining thermal resistance.

Each chapter is loaded with practical graphs, illustrations, photographs, and information written by experts in the field and would be useful to materials scientists, engineers, and anyone who needs up-to-date information on materials and processes critical to the electronics industry.

Handbook of Optical Materials

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Knowing the physical properties of optical materials is essential in the design of optical and laser systems, especially when choosing a material for optimum system performance. This handbook is a compilation of the physical properties of optical materials. It replaces the *CRC Handbook of Laser Science and Technology* that some readers may already be familiar with. Much of the numerical data in this handbook is from Volumes III, IV, V, and Supplement 2 of the *Laser Science and Technology Handbook*.

The data in this new book are grouped by material properties to allow one to compare different materials for a particular application. The handbook is divided into six sections covering crystals, glasses, polymers, metals, liquids, and gases. Each section contains data on a material's physical properties and linear and nonlinear optical properties; if a material exhibits special properties, such as electro-optic, magneto-optic, and elasto-optic properties, these are also included. The wavelength range covered is from vacuum UV to infrared up to 100 μm. The solids are mainly inorganic materials, except for the polymers; the optical liquids are generally organic in nature. Although there are a great deal of materials included in this book, it generally only covers bulk materials and does not include thin films and multilayer structures, nor does it cover photorefractives, liquid crystals, optical fibers, phase-change recording materials, or luminescent materials. It also is not completely exhaustive, but rather, in some cases, gives representative examples of a class of materials rather than every individual material ever created. Some of the new sections added to this book include the optical transmission in gases, Faraday rotation, and frequency conversion materials. The extensive appendices include coverage of those sometimes hard-to-figure-out optical abbreviations and acronyms, mineralogical names for optical materials, and Russian optical glasses. It is an excellent reference for being able to quickly compare the physical differences or similarities of optical materials generally used in today's laser and optical systems.

Readers who work with and design lasers or optical systems for commercial or research purposes would find this handbook to be a very useful reference for their work.