
Guest Editorial

Optical Properties of Optical Materials

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Modern high technology is somewhat taken for granted by most people. To those who have witnessed and participated, even to a limited extent, in the tremendous and rapid changes in electronics since the 1940s, the times have caused some confusion and consternation, but always with a sense of excitement and urgency to get on with the next development. Optics and its related technologies have been a part of this upheaval and have moved so far to the forefront that today the line between electronics and optics has all but faded out. Consider the implications of such disciplines as quantum optics, electro-optics, and opto-electronics. It was only a short time ago that the national determination to enter the space age and the advent of the laser accelerated optics toward its present place in high technology, with spinoffs into countless other fields. A listing of SPIE symposiums over the years indicates the extent of this penetration of optics.

That optical signal generation, detection, processing and storage require a variety of media, including optical materials, is obvious. Less obvious is that the means for the measurement and characterization of those materials have undergone changes fully as revolutionary as the field of optics itself. The areas of understanding concerning the fundamental properties of materials have changed, mostly by the application of modern optical and electronic tools. This issue of *Optical Engineering* has the goal of bringing to the reader a new awareness and appreciation of the changes, both in techniques and in the measurements themselves, of the properties of solid materials used in modern optics.

W. Lee Smith, in his paper, quotes Lord Kelvin on measurements and the need to express the results in numbers. This issue of *Optical Engineering* is in harmony with Kelvin's concepts on numbers but goes somewhat further. One must know or understand where the numbers come from in order to assess the extent of their validity. Thus, the ten papers on optical properties in this issue dwell, in varying degrees, on measurement techniques for materials to be used in lasers, with lasers, optical storage media, and a variety of other types of optical devices.

I must thank the authors for their responsiveness and punctuality. I expect the reader will find much that is revealing and thought provoking. I did.