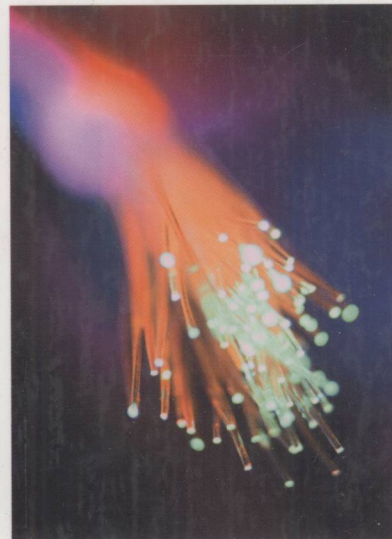
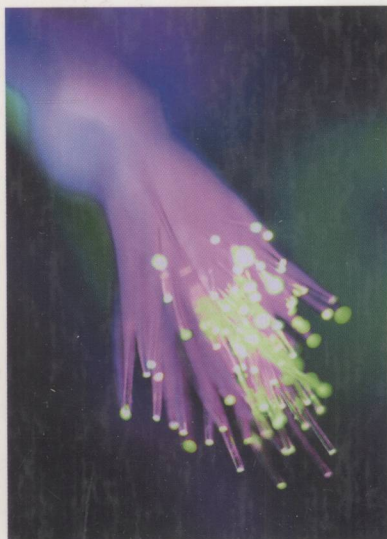
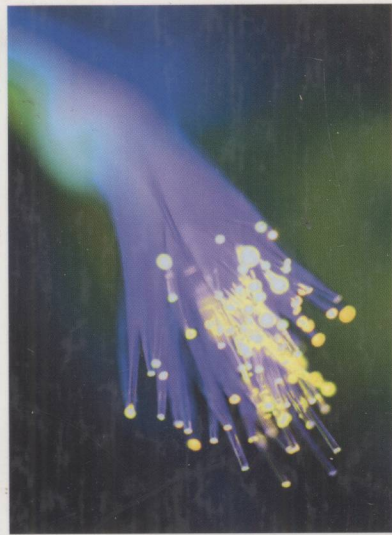
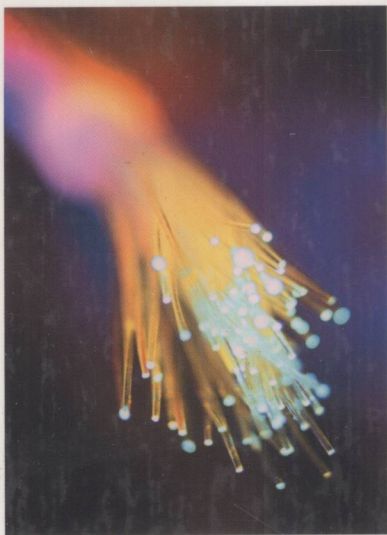


Photodetectors and Fiber Optics

Edited by **Hari Singh Nalwa**



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EDITED BY

Hari Singh Nalwa, M.Sc., Ph.D.

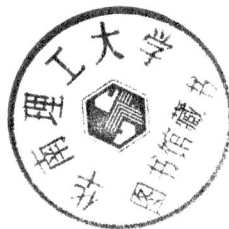
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*Photodetectors and
Fiber Optics*

*For my closest friend,
Krishi Pal Reghuvanshi*

PREFACE

Photodetectors and Fiber Optics is an outgrowth of the recently published 10 volume set, *Handbook of Advanced Electronic and Photonic Materials and Devices*. The objective of this book is aimed to present highly coherent coverage of photodetectors and optical fibers. Semiconductor photoconductors for visible to far-infrared detection are covered by Nancy Haegel, while M. Selim Ünlü, Gokhan Ulu, and Mutlu Gökkavas continue with their topic on resonant cavity enhanced photodetectors. A. G. Unil Perera discusses silicon and gallium arsenide (GaAs) based infrared detectors and Arnold Burger, Jean-Olivier Ndad, Kaushik Chattopadhyay, and Steve Morgan describe bulk semiconductors for infrared applications. Photodetectors have been extensively used for applications in optical fibers. The present boom in fiber optic technology illustrates how important photodetectors are and how they are correlated to fiber optics. A. Bandyopadhyay and M. Jamal Deen have provided an excellent overview on the importance and role of photodetectors for optical fiber communications. Germanium-dioxide-based glasses as optical sensors materials are described by Alfred Margaryan, and M. J. Potasek discusses high-bandwidth optical networks and communication.

This book covers a broad spectrum of photodetectors, including types of materials, their fabrication, physical properties, and industrial applications. Many industries around the world are engaged in developing fiber optic technology for the new millennium. The applications of photodetectors in fiber optics and the role of optical fibers in present communication technology have been discussed extensively. These are exciting areas of research that will play a crucial role in future communication technology. This reference should be a valuable resource to scientists and upper level graduate students working in solid state physics, optical engineering and photophysics, fiber optics, electrical and electronic engineering, materials science, data storage, information technology, and semiconductor industries.

Both editor and publisher are very grateful to the contributors of this volume for their outstanding work.

Hari Singh Nalwa
Los Angeles, USA

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Dr. H. S. Nalwa is the Managing Director of the Stanford Scientific Corporation in Los Angeles, California. Previously, he was Head of Department and R&D Manager at the Ciba Specialty Chemicals Corporation in Los Angeles (1999–2000) and a staff scientist at the Hitachi Research Laboratory, Hitachi Ltd., Japan (1990–1999). He has authored over 150 scientific articles and 18 patents on electronic and photonic materials and devices.

He has published 13 books that include:

Thin Films Handbook, Vols. 1–5 (2001)

Handbook of Surfaces and Interfaces of Materials, Vols. 1–5 (Academic Press, 2001)

Advanced Functional Molecules and Polymers, Vols. 1–4 (Gordon & Breach, 2001)

Supramolecular Photosensitive and Electroactive Materials (Academic Press, 2001)

Silicon-Based Materials and Devices (Academic Press, 2001)

Handbook of Advanced Electronic and Photonic Materials and Devices, Vols. 1–10 (Academic Press, 2001)

Handbook of Nanostructured Materials and Nanotechnology, Vols. 1–5 (Academic Press, 2000)

Handbook of Low and High Dielectric Constant Materials and Their Applications, Vols. 1–2 (Academic Press, 1999)

Handbook of Organic Conductive Molecules and Polymers, Vols. 1–4 (John Wiley & Sons, 1997)

Organic Electroluminescent Materials and Devices (Gordon & Breach, 1997)

Nonlinear Optics of Organic Molecules and Polymers (CRC Press, 1997)

Ferroelectric Polymers (Marcel Dekker, 1995)

Handbook of Nanostructured Materials and Nanotechnology received the 1999 Award of Excellence from the Association of American Publishers. Dr. Nalwa serves on the editorial boards of *Journal of Macromolecular Science-Physics*, *Applied Organometallic Chemistry* (1993–1999), *International Journal of Photoenergy*, and *Photonics Science News*. He is the founder and Editor-in-Chief of the *Journal of Porphyrins and Phthalocyanines*. Dr. Nalwa has been cited in the *Who's Who in Science and Engineering*, *Who's Who in America*, and *Who's Who in the World*.

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