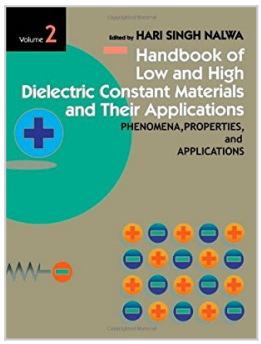

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Recent developments in microelectronics technologies have created a great demand for interlayer dielectric materials with a very low dielectric constant. They will play a crucial role in the future generation of IC devices (VLSI/UISI and high speed IC packaging). Considerable efforts have been made to develop new low as well as high dielectric constant materials for applications in electronics industries. Besides achieving either low or high dielectric constants, other materials' properties such as good processability, high mechanical strength, high thermal and environmental stability, low thermal expansion, low current leakage, low moisture absorption, corrosion resistant, etc., are of equal importance. Many chemical and physical strategies have been employed to get desired dielectric materials with high performance. This is a rapidly growing field of science--both in novel materials and their applications to future packing technologies. The experimental data on inorganic and organic materials having low or high dielectric constant remail scattered in the literature. It is timely, therfore, to consolidate the current knowledge on low and high dielectric constant materials into a sigle reference source.

Handbook of Low and High Dielectric Constant Materials and Their Applications is aimed at bringing together under a sigle cover (in two volumes) all low and high dielectric constant materials currently studied in academic and industrial research covering all spects of inorgani an organic materials from their synthetic chemistry, processing techniques, physics, structure-property relationship to applications in IC devices. This book will summarize the current status of the field covering important scientific developments made over the past decade with contributions from internationally recognized experts from all over the world. Fully cross-referenced, this book has clear, precise, and wide appeal as an essential reference source for all those interested in low and high dielectric constant material.

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Editorial Review

From the Back Cover

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Volume 1 of the Handbook combines the most recent knowledge of the dielectric materials into the one focused reference source - from low dielectric constant polymers, glasses and ceramics for interlayer dielectrics to low-k amorphous carbon films for interconnections of submicron-scale devices; chemical mechanical polishing of organic polymer materials for IC applications.

Volume 2 of the Handbook incorporates the forerunning knowledge of the phenomena, properties and applications of low and high dielectric constant materials into one focused reference work - from rapid photothermal processing to physical and metallorganic chemical vapor deposition of ferroelectric thin films for non-volatile memories, electrical aging and breakdown in dielectric materials, to polymer laminate structures, piezocomposites and capacitors.

With over 2300 bibliographic citations and more than 1000 drawings, tables, photographs, and equations, this handbook is a valuable source for polymer scientists, physicists, material scientists, chemical and electrical engineers, ceramists, chemists; as well as upper-level undergraduate and graduate students in these disciplines.

About the Author

Dr. H. S. Nalwa is the Managing Director of the Stanford Scientific Corporation, Los Angeles, California. 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 more than 150 scientific articles and 18 patents on electronic and photonic materials and devices. He has edited the following books: *Ferroelectric Polymers* (Marcel Dekker, 1995), *Nonlinear Optics of Organic Molecules and Polymers* (CRC Press, 1997), *Organic Electroluminescent Materials and Devices* (Gordon & Breach, 1997), *Handbook of Organic Conductive Molecules and Polymers, Vol. 1-4* (John Wiley & Sons, 1997), *Low and High Dielectric Constant Materials Vol. 1-2* (Academic Press, 1999), **Handbook of Nanostructured Materials and Nanotechnology, Vol. 1-5** (Academic Press, 1999), *Handbook of Advanced Electronic and Photonic Materials and Devices, Vol. 1-10* (Academic Press, 2000), *Advanced Functional Molecules and Polymers, Vol. 1-4* (Gordon & Breach, 2001), *Photodetectors and Fiber Optics* (Academic Press, 2001), *Supramolecular Photosensitive and Electroactive Materials* (Academic Press, 2001), *Nanostructured Materials and Nanotechnology* (Academic Press, 2001), *Handbook of Thin Film Materials, Vol. 1-5* (Academic Press, 2001), and *Handbook of Surfaces and Interfaces of Materials, Vol. 1-5* (Academic Press, 2001). **The Handbook of Nanostructured Materials and Nanotechnology (Vol. 1-5)** edited by him received the 1999 Award of Excellence from the Association of American Publishers.Dr. Nalwa serves on

the editorial board of the Journal of Macromolecular Science-Physics, Applied Organometallic Chemistry (1993-1999), International Journal of Photoenergy,andPhotonics Science News. He was the founder and Editor-in-Chief of the *Journal of Porphyrin*

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