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Advances in Polymer Science

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Polymers for Photonics Applications II

**Nonlinear Optical, Photorefractive and Two-Photon
Absorption Polymers**

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This series presents critical reviews of the present and future trends in polymer and biopolymer science including chemistry, physical chemistry, physics and materials science. It is addressed to all scientists at universities and in industry who wish to keep abreast of advances in the topics covered.

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Preface

The future of information technology requires ultra-high speed processing and large data storage capacity. Since the electronics technology using semi-conductors and inorganic materials is about to reach its limits, much current research is focused on utilizing much faster photons than electrons, namely photonics. To achieve any significant effect on the actual use of the science of photonics, developments of more efficient photonics materials, better optical property evaluations, manufacture of devices for system applications, etc. are the subjects which need to be explored. In particular, the development of photonics materials stands in the forefront of research as this constitutes the most pertinent factor with regard to the development of ultra-high speed and large capacity information processing. In this respect, there has been continuous research on photo-responsive materials through molecular structure design and architecture and the results so far are very promising as functions and performances are beginning to realize their high expectations.

The two special volumes "Polymers for Photonics Applications" give authoritative and critical reviews on up-to-date activities in various fields of photonic polymers including their promising applications. Seven articles have been contributed by internationally recognized and they deal with, polymers for second- and third-order nonlinear optics, quadratic parametric interactions in polymer waveguides, electroluminescent polymers as light sources, photoreflexive polymers for holographic information storage, and highly efficient two-photon absorbing organics and polymers. This review should provide individuals working in the field of photonics polymers with invaluable scientific knowledge on the state of the art while giving directions for future research to those deeply interested.

Finally, I would certainly like to give my heartfelt thanks to the contributors to this two volume special issue and although the publication has been delayed, I am very grateful that this issue can be dedicated to Professor Gerhard Wegner in celebration of his 60th birthday.

Taejon, December 2002

Kwang-Sup Lee

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