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Preface

The role of high polymers as optical materials has developed relatively slowly as compared to their application in the fields of mechanics, thermodynamics, and electricity, just to mention the classical disciplines of physics. It was in the thirties that the invention of high-transparency acrylic glass opened the door for the use of "polymers in optics," which at this time actually meant illumination techniques and lenses for eye-glasses.

The field of micro-optics and its numerous applications is relatively young. Ray tracing by dispersive and diffractive methods, as well as optical storage, came into the focus of interest not only in science, but also in industry. The dramatic development of optical information technology required components such as fibers for long and intermediate distances, strip waveguides for interconnects such as splitters and wavelength selective elements, materials for permanent optical and holographical writing, as well as real-time writable-erasable holographic optical materials. The long-haul trunk transmission has been taken over by the silica fiber, but the field of optical signal processing may be the domain of polymer materials, and it is by far not exhausted today in its possibilities.

This Critical Review conference tries to assess the state of the art of our knowledge about a broad variety of materials, the methods of controlling and patterning the optical properties, as well as the geometry. The field of optical sensors, plastic fibers, optical data storage, and holography will be discussed together with nonlinear optical properties and their use in modulators and switches, as well as sophisticated interconnects. A broad field takes the interaction of light with the chemical structure of the materials.

The chairs wanted this special conference to evaluate the results published in the series of meetings called Polymer Device Physics, Chemistry, and Applications, which has discussed this field over the last six years. They expect a fruitful discussion and statements that can act as guidelines for future work.

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