# Preface

Electro- and photoactive polymers are now being considered for use as the active components in a wide range of electronic and photonic devices, such as LC and LED displays, electro-optic modulators, optical attenuators, electronic circuits, solar cells, actuators, memory elements, lasers, and chemical and biological sensors [see review articles in *MRS Bulletin* **27** (6), 441–464 (2002)]. In comparison with inorganic materials, functional polymers can be readily fabricated as thin films on substrates at much lower processing temperatures (for example, below 120 °C) and even directly incorporated into specifically defined locations on a substrate using the printing technology [see review articles in *MRS Bulletin* **28** (11), 802–842 (2003)]. In this issue of *Pure and Applied Chemistry*, a series of papers has been selected from the lectures presented at the symposium on "Polymers in electronics and photonics: Synthesis, characterizations and device applications", as part of the joint 39$^{th}$ IUPAC Congress and 86$^{th}$ Conference of the Canadian Society for Chemistry in Ottawa on 10–15 August 2003.

The article by Yamamoto describes the design, synthesis, and properties of a new class of metal-binding dendrimers. The authors show the state-of-the-art synthesis, unique properties, and potential applications of these polyazomethine dendrimers. In the article by Wong, the synthesis and multifunctional properties of phenylenevinylene oligomers are described. The structurally well-defined oligomers are particularly interesting for a number of applications such as light-emitting diodes and solar cells. The subsequent two review articles by Dalton and Wang deal with the recent advances in the field of organic materials for telecommunication applications. Nonlinear optical polymers as described by Dalton, and near-infrared electrochromic organic materials as reviewed by Wang, show a great potential for use in a number of telecommunication devices, such as modulators and variable optical attenuators that operate in the near-infrared wavelengths (e.g., at 1310 and 150 nm). The next four articles by Barrett, Ikeda, Rochon, and Zhao on the azobenzene and photoactive liquid-crystal polymers are dedicated to the late Prof. Almeria Natansohn for her significant contributions to the field of azobenzene and liquid-crystal polymers. Finally, Sundararajan offers a morphological reasoning in his article to account for the enhanced charge carrier mobility in the doped polymer systems, which is useful for the rational design of polymer-based optoelectronic devices.

It was a pleasure to participate in the organization of this event, and I thank the delegates who supported the symposium and the authors who agreed to contribute to this publication.

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Chair
Symposium on "Polymers in electronics and photonics:
Synthesis, characterizations and device applications"