

Foreword

This special issue consists of 18 articles from the Polymer Physics Department of the Centre of Molecular and Macromolecular Studies at the Polish Academy of Sciences in Lodz, Poland. The department, headed by Professor Andrzej Galeski (formerly led by Professor M. Kryszewski), is composed of 27 individuals, including three full professors, two associate professors, and eight senior scientists.

Traditional research areas of this group include polymer crystallization; the relationships between the supermolecular structure and the mechanical, thermal, optical, and electrical properties of polymeric materials; and the mechanisms of the plastic deformation of crystalline polymers, polymer blends, and filled polymers. Group results include new insights into crystallographic slip, molecular orientation, entanglements, cavitation, and the plastic flow of amor-

phous components. The group has also studied the modeling of structure formation and the development of probability theory for the characterization of microdomain structure and the kinetics of its formation. Dielectric and conductive polymers and plasma-deposited amorphous films have also been investigated.

The results of this fundamental research have served as a guide for the development of several new materials with special properties: super toughness and super strength. In the last few years, new topics have been added, including the investigations of polymeric materials made from annually renewable resources and nanocomposites based on semicrystalline polymers.

The articles selected for this special issue describe some of the recent research contributions of this laboratory.