

## Preface

The development of human civilization and modern life styles depend greatly on the materials science, technology, manufacture and processing. Since the large scale commercialization and application of synthetic polymers in 20<sup>th</sup> century, polymer materials have been used in almost all aspects of human lives, science, engineering, biotechnologies, medicine, space exploration, goods production and package etc. In the past two decades, nanoscale materials such as metallic and inorganic nanoparticles, polymer nanofibers and carbon nanotubes merged with synthetic and natural polymer materials and triggered new investigations and applications, all of these progresses need new material processing techniques, facilities and methodologies. Since polymer materials possess superb properties such as elasticity, toughness, flexibility, low density and high performance etc, polymer materials are the key engineering materials and widely used in the fields of economic development, scientific & technological innovation. Rapid economic and social developments in 21<sup>st</sup> Century for China require more advanced manufacturing and processing technologies, also since China has entered “The 12th 5-Year Plan”, Chinese polymer material industry turned from manufacture to innovation step by step. With the new regulations and development for energy saving, CO<sub>2</sub> release, clean energy science and technologies, applications of nanomaterials, new standards for production technology and craft level are required. With future improving in scientific and technological levels, the development direction in high performance modification, functionalization, environment-friendly technologies for polymer and polymer composite materials will raise a whole world of research subject to the scientific community and engineering world.

The book aims to exchange and share a number of experts and scholars's experiences and research results about all aspects of polymer processing and modification technology, Modern mold technology, Rapid prototyping technology, Automobiles, home appliances, electronic and aviation materials processing, Materials processing simulation technology, Molding equipment and process data acquisition and monitoring and other areas of new concepts, new technology. Hope to communicate through the book further enhance the interrelationships between realms of processing equipment, molding technology, mould design, mould manufacture and materials modification, to raise the application level for polymer and composite material in technologies such as cash manufacturing.

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