Preface

Thermoplastic polymers account for more than 80 wt.% of all polymer materials. They will become soft and finally flowable upon heating, and inversely solid when they are cooled down. Therefore, various kinds of products based on thermoplastic polymers, widely used in daily life, automobile and electronic industry, etc., can be facilely fabricated by conventional melt processing methods (e.g., extrusion, injection molding, hot-pressing and so on). In a word, melt processing methods are a crucial bridge between thermoplastic polymers and their wide applications.

Of note, aforementioned melt processing methods share many advantages. For example, on one hand, they are of solvent-free, large-scale, continuous but low-cost production modes. On the other hand, thermoplastic polymers can be reusable and recyclable via aforementioned melt processing methods. In view of these, thermoplastic polymers and their corresponding melt processing methods play significant roles in ecological protection and sustainable development.

More importantly, because of the complicated thermal-mechanical history involved in the melt processing process, various phase morphologies (e.g., droplets, fibrils, lamellae, orientation and so on) will be developed in single-phase or multiphase polymer systems. Since the phase morphology can definitely determine the physical perfor-

mances (e.g., electrical conductivity, thermal conductivity, mechanical properties and barrier properties), it will be of great significance if desired functional architectures can be in-situ constructed during the conventional melt processing process.

In the present book, representative papers about functional processing of thermoplastic polymers, in our own group, published on international authoritative journals were selected. These original studies will provide new and deeper insights on functional architectures of thermoplastic polymers developed directly during conventional melt processing process. We hope this book can help the researchers, students and other related people to better understand the "brighter tomorrow" of conventional melt processing method for in-situ developing functional architectures of thermoplastic polymers.

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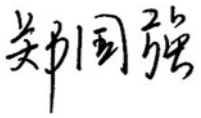

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