Preface

The developed original principles and approaches in advanced materials and composites define the main achievements and directions of modern natural and technical sciences, technologies, techniques and industry. Direct improvement of the materials and device characteristics are based on numerous chemical, physical and mechanical studies, modern numerical approaches, and methods of mathematical modeling and physical experiment. New scientific knowledge is based on the results of these researches, which give a possibility to understand and estimate the due technological processes and transformations of structure-sensitive properties, taking place in the fabrication of novel developed materials, composites and nanocomposites.

The success of the International Conference "Physics and Mechanics of New Materials and Their Applications" (PHENMA), held every single year from 2012 to 2019, and "Advanced Materials Development and Performance" (AMDP), held in Korea Maritime and Ocean University (KMOU) in 2014, have been a great motivation for leading this publication. The chapters have been written by several prominent scholars and scientific pioneers in this field and contain their outstanding achievements. This book is intended to contribute to the leap toward convergence technology in industries encompassing aerospace, transportation and shipbuilding based on composites engineering and its nano-bridging technology. Since the core ideology of the research is based on mutual exchange and continuity across industry–academia–research centers, this publication

hopes to provide some guidance as a meaningful and intensive outcome that can encompass both academic and industrial perspectives.

Based on publications by World Scientific Publishing Company through the success of the PHENMA2018 (Chair, Yun-Hae Kim) and AMDP2014 (Chair, Yun-Hae Kim) conferences, we summarized this book on *Advanced Composites Engineering and Its Nano-Bridging Technology*. This book focused on the *in situ* research, utilization and development of advanced materials based on the following areas; materials science, polymer composites, nanomaterials, structural design, fracture mechanics, industrial applications, functionalization, physics and manufacturing process. Instead of providing a broad introduction of advanced composites and their fundamental theories with nanomaterials, the book includes practical nano-bridging techniques on nanostructures, manufacturing, analysis, applications of advanced composites using the basis of the research know-how, which had been accumulated over the years by prominent experts in these areas. The *Advanced Composites Engineering and Its Nano-Bridging Technology* book is aimed at a broad knowledge for students, engineers and specialists interested and participating in R&D of modern scientists, as their reference book.

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