PREFACE

This book was written for a broad audience with a prior and basic knowledge of modeling of advanced materials.

The present volume offers a state-of-the-art report on the various recent scientific developments in the theory of engineering materials and the basic theoretical concepts in advanced mechanics of materials as well as the wide range of experimental and numerical applications.

Following this, the volume does not only address the sophisticated reader but also, for the interested beginner in the area of materials and composites, a collection of research-oriented chapters.

The book is addressed to a wide readership, and it will be useful for undergraduate and graduate students and as a reference source for professionals including engineers, applied mathematicians, and others working on different application of nanomaterials in engineering.

This new book also offers an introduction to numerical methods by employing a readily accessible and compact format, and it demonstrates an overview of new methods, for advanced students in mechanical engineering and mechatronics.

It also provides step-by-step descriptions of how to formulate numerical problems and develops techniques for solving them. A number of engineering case studies are also intended for academics, including graduate students and experienced researchers interested in state-of-the-art computational methods for solving challenging problems in engineering.