

Preface

Lightweight materials are getting critically important for weight-saving engineering and biomedical sectors. The use of these materials is getting increasingly important for sustainable planet earth and human comfort. Aluminum and magnesium are two lightweight materials that are of paramount importance for engineers and material selectors. Efforts have been made in past few decades to evolve these two principal elements so that they can cater to a wider spectrum of applications. Composite technology utilizing micron length scale reinforcement was used actively in the past century to realize properties beyond the common alloying technique to enhance certain properties such as elastic modulus, strength, wear and damping response. With the advent of nanotechnology in the late 1990s, researchers worldwide started to use reinforcements at nano-length scale (<100 nm). The resultant nanocomposites exhibited superior combination of properties when compared to micro-composites with significantly reduced weight penalty. In view of significantly different response of elemental matrix in the presence of reinforcement at nano-length scale, it was realized by authors to put together current level of understanding of aluminum and magnesium based nanocomposites. It is hoped that this book will serve as a useful reference for students, teachers, engineers, and researchers to gain understanding of these fascinating materials.

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Aluminum and Magnesium Metal Matrix

Nanocomposites

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