A look at the current and future uses of magnesium-based products and their role in the world's environmental and technological revolution.

The lightest of all structural metals, having one-fourth the density of steel and two-thirds that of aluminum, magnesium has already been adopted as an alternative construction material in applications as far ranging as automotive and sports equipment, electronics, and space technology. In a world concerned with minimizing the environmental impact of products, the choice of light-weight, energy-saving, and high-performance materials, like magnesium, would seem a small, significant step towards improving life on this planet. Magnesium, Magnesium Alloys, and Magnesium Composites introduces the science and current applications of this important metal, shedding light on the magnesium-based composites developed over the last fifteen years. Chapters include in-depth discussion of:

- The characteristics of pure magnesium—including atomic properties and crystal structure as well as physical, electrical, and mechanical properties
- Magnesium alloys—and the effects of the alloying elements, such as aluminum, lithium, copper, nickel, and silicon
The properties of magnesium-based composites—and the effects of different types (metallic, ceramic, interconnected, and intermetallic) of reinforcements of varying length (from micron scale to nanometric length)

Corrosion aspects of magnesium-based materials

Magnesium-based products in medicine, sports equipment, and the automotive, aerospace, and electronics industries

Bringing together, for the first time, the science, properties, and technologies relating to the current and future uses of magnesium, this important reference also offers readers a glimpse of a not-too-distant world in which environmental safety and sound engineering are a reality.

ABOUT THE AUTHOR

Manoj Gupta is an Associate Professor and head of the Materials Group of Mechanical Engineering at the National University of Singapore.

Nai Mui Ling Sharon was a research fellow in the Department of Mechanical Engineering at the National University of Singapore at the time she coauthored the book. Currently, she is an Assistant Research Scientist at the Singapore Institute of Manufacturing Technology (SIMTech).

To purchase this product, please visit https://www.wiley.com/en-us/9780470494172