Nanotechnology in the Automotive Industry

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Chapter 16 - Magnetic nanoparticles-based coatings

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Abstract

This chapter provides a detailed description of the promising role of magnetic hybrid nanoparticles in coating technology adopted in marine industry, automobiles, aviation, medical implants, defence, electronics, and eventually industrial structure in oil and gas, fertilizer, metallurgical, and other industries. It was also attempted to give an image of the microstructure-properties relationship of coatings in terms of cure behavior and kinetics of hybrid coatings containing MNP. By the use of MNPs, it is possible to tailor various properties of coatings like anticorrosion, superhydrophobicity, self-healing, antifouling, and microwave absorption over a wide range of substrates including metals and fabrics. Latest trends practised in such coatings were concisely discussed. The mechanism of action of MNPs in facilitating special features to these coating was clearly depicted. We also aim to give a concise summary of the potential of MNPs in developing future protective coatings.

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FEEDBACK

Description

Nanotechnology in the Automotive Industry explores how nanotechnology and nanomaterials are used to enhance the performance of materials and devices for automotive application by fabricating nano-alloys, nanocomposites, nano coatings, nanodevices, nanocatalysts and nanosensors. Consisting of 36 chapters in 6 parts, this new volume in the Micro and Nano Technologies series is

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Key Features

- Discusses various approaches and techniques such as nanoalloys, nanocomposites, nanocoatings, nanodevices, nanocatalysts and nanosensors used in modern vehicles
- Presents the challenges and future of automotive materials

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