

1. Record Nr.	UNINA9910959628903321
Titolo	High performance coatings for automotive and aerospace industries // Abdel Salam Hamdy Makhlof
Pubbl/distr/stampa	New York, : Nova Science, c2010
ISBN	1-61668-376-7
Edizione	[1st ed.]
Descrizione fisica	1 online resource (423 p.)
Collana	Materials science and technology
Altri autori (Persone)	MakhlofAbdel Salam Hamdy
Disciplina	629.2/32
Soggetti	Airplanes - Painting Automobiles - Painting Corrosion and anti-corrosives Metals - Finishing Protective coatings
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	""HIGH PERFORMANCE COATINGS FOR AUTOMOTIVE AND AEROSPACE INDUSTRIES""; ""HIGH PERFORMANCE COATINGS FOR AUTOMOTIVE AND AEROSPACE INDUSTRIES""; ""Contents""; ""Preface""; ""Description""; ""Scope of Study""; ""Novel Silicone Ceramer Coatings for Aluminum Protection""; ""Introduction""; ""1.1 Background""; ""Synthesis and Developments""; ""2.1 Silicone-Rich Coatings""; ""2.2 Coatings via Silicone-Polymer Blending""; ""2.3 Nano- and Molecular Composite Coatings""; ""2.4 Coating Containing Fillers and Pigments""; ""2.5 Effect of Catalyst in Coating Formulations"" ""2.6 Factors Affecting the Coating Process""""2.6.1 Surface Preparation""; ""2.6.2 Pretreatments""; ""2.6.3 Method of Application""; ""2.6.4 Drying and Curing""; ""3. Characterization of Silicone Coatings""; ""3.1 Fourier Transformation Infra-Red Spectroscopy""; ""3.2 Raman Spectroscopy""; ""3.3 Nuclear Magnetic Resonance Spectroscopy""; ""3.4 X-Ray Photoelectron Spectroscopy""; ""3.5 Secondary Ion Mass Spectroscopy""; ""3.6 X-Ray Diffraction""; ""4. Thermal Analysis""; ""4.1 Thermogravimetry""; ""4.2 Differential Scanning Calorimetry""; ""4.3 Dynamic Mechanical Analysis"" ""5.0 Mechanical Properties""""5.1 Peel Test""; ""5.2 Nano-indentation

and Nano-scratch Tests"; "6. Morphology"; "6.1 Electron Microscopy"; "6.2 Atomic Force Microscopy"; "6.3 Contact Angle"; "7. Electrochemical and Corrosion Analyses"; "7.1 Cathodic and Anodic Polarization"; "7.2 Exposure Tests"; "7.3 Accelerated Weathering"; "8. Microbial and Anti-fouling Characteristics"; "References"; "Thermally Stable Coatings for the Corrosion Protection of Magnesium Alloys: Double Layered Coatings Consisting of a Nanoparticulate Primer and a Sol-Gel Sealing"; "Abstract"; "Introduction"; "Application of Nanoparticulate Coatings"; "Application of Sol-Gel Sealings"; "Salt Spray Tests"; "Conclusion"; "Acknowledgment"; "References"; "Sol-Gel Enhanced Ni-P Composite Coatings"; "Abstract"; "1 Introduction"; "2 Experimental"; "3 Influence of Processing Parameters on Ni-P-TiO<sub>2</sub> Composite Coatings"; "3.1 The Effects of Dripping Rates of TiO<sub>2</sub> Sol"; "3.1.1 Surface and Cross-Sectional Morphologies"; "3.1.2 Phase analysis"; "3.1.3 Mass Gains of Ni-P-TiO<sub>2</sub> Composite Coatings"; "3.1.4 Micro-hardness of Ni-P-TiO<sub>2</sub> Composite Coatings"; "3.1.5 Wear resistance"; "3.1.6 Corrosion resistance"; "3.1.7 Summary for the Effects of Dripping Rate"; "3.2 The Effects of Concentration of TiO<sub>2</sub> Sol"; "3.2.1 The Effects of Sol Concentration on the Surface and Cross-Sectional Morphologies of the Coatings"; "3.2.2 The Effects of Sol Concentration on the Phase Structures of the Coatings"; "3.2.3 The Effects of Concentration on the Deposition Mass Gains of the Coatings"; "3.2.4 The Effects on Micro-hardness of the Coatings"; "3.2.5 Wear Resistance of the Novel Ni-P-TiO<sub>2</sub> Composite Coatings"; "3.2.6 Corrosion Resistance"; "3.2.7 Summary"

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#### Sommario/riassunto

This text is both a reference and a tutorial for understanding the most advanced coatings used in transportation industries. It discusses the basics of the materials used in such industries, including the durability to resist corrosion in severe environments.

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