Record Nr. UNINA9910826357803321 Functional polymer coatings: principles, methods and applications // **Titolo** edited by Limin Wu, Jamil Baghdachi Pubbl/distr/stampa Hoboken, New Jersey:,: John Wiley & Sons, Inc.,, 2015 ©2015 **ISBN** 1-118-88292-X 1-118-88305-5 Edizione [1st ed.] Descrizione fisica 1 online resource (369 p.) Collana Wiley Series on Polymer Engineering and Technology Disciplina 668.9/2 Soggetti Coating processes Plastic coating Polymers - Industrial applications 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 Title Page; Copyright Page; Contents; Contributors; Preface; Chapter 1 Transparent Organic-Inorganic Nanocomposite Coatings; 1.1 INTRODUCTION; 1.2 FABRICATION STRATEGIES; 1.2.1 Blending Method; 1.2.2 Sol-Gel Process; 1.2.3 Intercalation Method; 1.3 MECHANICALLY ENHANCED NANOCOMPOSITE CLEARCOATS; 1.3.1 Solventborne Polyurethane Nanocomposite Coatings: 1.3.2 Waterborne Nanocomposite Clearcoats; 1.3.3 UV-Curable Nanocomposite Coatings; 1.3.4 Other Mechanically Strong Nanocomposite Coatings; 1.4 OPTICAL NANOCOMPOSITE COATINGS: 1.4.1 Transparent UV-Shielding Nanocomposite Coatings 1.4.2 High Refractive Index Nanocomposite Coatings1.4.3 Transparent NIR-Shielding Nanocomposite Coatings; 1.5 TRANSPARENT BARRIER NANOCOMPOSITE COATINGS: 1.6 TRANSPARENT CONDUCTING NANOCOMPOSITE COATINGS; 1.7 OTHER FUNCTIONAL NANOCOMPOSITE COATINGS; 1.8 CONCLUSIONS AND OUTLOOK; REFERENCES: Chapter 2 Superhydrophobic and Superoleophobic Polymeric Surfaces; 2.1 INTRODUCTION; 2.2 SURFACE WETTABILITY; 2.3 VARIOUS APPROACHES TO OBTAIN SUPER-REPELLENT SURFACES; 2.3.1

Template-Replicating Methods; 2.3.2 Hierarchically Structured

Particles; 2.3.3 LbL Deposition; 2.3.4 Plasma Treatment
3.7 COMMERCIAL COATINGS3.8 CONCLUSIONS AND OUTLOOK;
REFERENCES; Chapter 4 Self-Healing Polymeric Coatings; 4.1
INTRODUCTION; 4.1.1 Self-Healing Materials; 4.1.2 Self-Healing
Polymeric Coatings; 4.2 SELF-HEALING APPROACHES FOR FUNCTIONAL
POLYMERIC COATINGS; 4.2.1 Intrinsic Healing; 4.2.2 Extrinsic Healing;
4.3 FUNCTIONALITIES RECOVERY AND POSSIBLE APPLICATIONS; 4.3.1
Surface Properties: Wettability and Anti-(bio)adhesion; 4.3.2 Barrier and
Corrosion Protection; 4.3.3 Interfacial Bonding Between Dissimilar
Materials; 4.4 CONCLUDING REMARKS AND CHALLENGES;
ACKNOWLEDGMENTS; REFERENCES
Chapter 5 Stimuli-Responsive Polymers as Active Layers for Sensors

Sommario/riassunto

Focusing on a variety of coatings, this book provides detailed discussion on preparation, novel techniques, recent developments, and design theories to present the advantages of each function and provide the tools for better product performance and properties. Presents advantages and benefits of properties and applications of the novel coating types Includes chapters on specific and novel coatings, like nanocomposite, surface wettability tunable, stimuli-responsive, anti-fouling, antibacterial, self-healing, and structural coloring Provides detailed discussion on recent developments in the field as well as current and future perspectives Acts as a guide for polymer and materials researchers in optimizing polymer coating properties and increasing product performance.