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| Soggetti                | Nanostructured materials<br>Protective coatings -- Materials<br>Surfaces<br>Protective coatings - Materials<br>Chemical & Materials Engineering<br>Engineering & Applied Sciences<br>Materials Science  |
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| Nota di contenuto       | Cover; Nanomaterials and Surface Engineering; Title Page; Copyright Page; Table of Contents; Preface; Chapter 1. Architecture of Thin Solid Films by the GLAD Technique; 1.1. Introduction; 1.2. The GLAD technique; 1.2.1. Deposition with an oblique angle; 1.2.2. Deposition on mobile substrate; 1.3. Resulting properties; 1.3.1. Structure and morphology; 1.3.1.1. Crystallography; 1.3.1.2. Porosity; 1.3.1.3. Surface morphology; 1.3.2. Mechanical properties; 1.3.2.1. Elasticity; 1.3.2.2. Hardness; 1.3.3. Optical properties; 1.3.3.1. Filtering; 1.3.3.2. Birefringency; 1.3.4. Electronic properties<br>1.3.4.1. Conductivity<br>1.3.4.2. Photonics; 1.4. Conclusions and outlooks; 1.5. Bibliography; Chapter 2. Transparent Polymer Nanocomposites: A New Class of Functional Materials; 2.1. Introduction; 2.2. Nanoparticle |

modifications; 2.2.1. Silane; 2.2.1.1. Grafting of silanes; 2.2.1.2. Polymer grafting using grafted silanes; 2.2.1.3. Silane coating; 2.2.2. Grafted polymer; 2.2.2.1. "Grafting onto"; 2.2.2.2. "Grafting from"; 2.2.3. Coating; 2.2.3.1. Silica coating; 2.2.3.2. Polymer coating; 2.3. Nanoparticles and nanocomposites; 2.3.1. Nanoparticles; 2.3.2. Transparent polymers used as matrices  
2.3.3. Nanocomposite processing  
2.3.3.1. Melt blending; 2.3.3.2. Solvent casting techniques; 2.3.3.3. In situ synthesis; 2.3.4. Desired properties; 2.3.4.1. Optical properties; 2.3.4.2. Thermomechanical and mechanical properties; 2.4. Conclusion; 2.5. Bibliography; Chapter 3. Nanostructures by Ion Irradiation; 3.1. Introduction; 3.2. Physical bases; 3.2.1. The slowing down process; 3.2.2. Spatial distribution of damages in collisional regime; 3.2.3. Damaging by electronic slowing down in swift heavy ion tracks; 3.3. Nanostructures produced in ballistic regime; 3.3.1. Implantation  
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3.4.1.2. Semi-organic polymers and gels  
3.4.2. Filters and templates; 3.4.3. Dissolution or growth of particles in composites; 3.4.4. Modification of magnetic properties; 3.5. Conclusions; 3.6. Appendix: basic formula of ion stopping; 3.7. Bibliography; Chapter 4. Microencapsulation; 4.1. Introduction; 4.2. The processes of microencapsulation; 4.2.1. Physico-chemical processes; 4.2.1.1. Coacervation; 4.2.1.2. Evaporation of solvent; 4.2.2. Chemical processes; 4.2.3. Other chemical and physico-chemical methodologies; 4.2.4. Fluidized bed equipment; 4.2.5. Other physical processes  
4.3. Kinetics of release

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## Sommario/riassunto

This book covers a wide range of topics that address the main areas of interest to scientists, engineers, and students concerned with the synthesis, characterization and applications of nanomaterials. Development techniques, properties, and examples of industrial applications are all widely represented as they apply to various nanostructured materials including nanocomposites and multilayered nanometric coatings. It is recommended to anyone working in the field of nanomaterials, especially in connection with the functionalization and engineering of surfaces.

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