1. Record Nr. UNINA9910133837203321

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Titolo	Multilayer Thin Films : Sequential Assembly of Nanocomposite Materials
Pubbl/distr/stampa	Hoboken, : Wiley, 2012
ISBN	9786613642561 9783527646760 3527646760 9781280665639 1280665637 9783527646777 3527646779 9783527646746 3527646744
Edizione	[2nd ed.]
Descrizione fisica	1 online resource (1124 p.)
Altri autori (Persone)	SchlenoffJoe B
Disciplina	530.4275
Soggetti	Nanostructured materials Polyelectrolytes Thin films, Multilayered Nanocomposites (Materials)
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di contenuto	Multilayer Thin Films: Sequential Assembly of Nanocomposite Materials; Contents; List of Contributors; 1 Layer-by-Layer Assembly (Putting Molecules to Work); 1.1 The Whole is More than the Sum of its Parts; 1.2 From Self-Assembly to Directed Assembly; 1.3 History and Development of the Layer-by-Layer Assembly Method; 1.4 LbL-Assembly is the Synthesis of Fuzzy Supramolecular Objects; 1.5 Reproducibility and Choice of Deposition Conditions; 1.6 Monitoring Multilayer Build-up; 1.7 Spray- and Spin-Assisted Multilayer Assembly; 1.8 Recent Developments; 1.8.1 Self-patterning LbL-Films 1.8.2 Deposition of LbL-Films on Very Small Particles 1.8.3 Purely Inorganic LbL-''Films''; 1.9 Final Remarks; References; Part I: Preparation and Characterization; 2 Layer-by-Layer Processed

Multilayers: Challenges and Opportunities; 2.1 Introduction; 2.2 Fundamental Challenges and Opportunities; 2.2.1 LbL Assembly on Nanoscale Elements and in Confined Geometries; 2.2.2 Living Cells as Functional Elements of Polyelectrolyte Multilayers; 2.2.3 Multilayer Cellular Backpacks; 2.2.4 Direct LbL Processing of Living Cells; 2.3 Technological Challenges and Opportunities
2.3.1 Improving Processing Time and Versatility 2.3.2 Towards Mechanically Robust Multilayer Coatings; 2.4 The Path Forward; References; 3 Layer-by-Layer Assembly: from Conventional to Unconventional Methods; 3.1 Introduction; 3.2 Conventional LbL Methods; 3.2.1 Electrostatic LbL Assembly; 3.2.2 Hydrogen-Bonded LbL Assembly; 3.2.3 LbL Assembly Driven by Coordination Interaction; 3.2.4 To Combine LbL Assembly and Post-Chemical Reaction for the Fabrication of Robust Thin Films; 3.3 Unconventional LbL Methods; 3.3.1 Electrostatic Complex for Unconventional LbL Assembly
3.3.1.1 Nanoreactors with Enhanced Quantum Yield 3.3.1.2 "Ion Traps" for Enhancing the Permselectivity and Permeability; 3.3.1.3 Surface Imprinted LbL Films; 3.3.1.4 Cation-Selective CP Based on SMILbL Film; 3.3.2 Hydrogen-Bonded Complex for Unconventional LbL Assembly; 3.3.3 Block Copolymer Micelles for Unconventional LbL Assembly; 3.3.4 - Interaction Complex for Electrostatic LbL Assembly; 3.4 Summary and Outlook; References; 4 Novel Multilayer Thin Films: Hierarchic Layer-by-Layer (Hi-LbL) Assemblies; 4.1 Introduction; 4.2 Hi-LbL for Multi-Cellular Models
4.3 Hi-LbL for Unusual Drug Delivery Modes 4.4 Hi-LbL for Sensors; 4.4.1 Mesoporous Carbon Hi-LbL; 4.4.2 Mesoporous Carbon Capsule Hi-LbL; 4.4.3 Graphene/Ionic-Liquid Hi-LbL; 4.5 Future Perspectives; References; 5 Layer-by-Layer Assembly Using Host-Guest Interactions; 5.1 Introduction; 5.2 Supramolecular Layer-by-Layer Assembly; 5.3 3D Patterned Multilayer Assemblies on Surfaces; 5.4 3D Supramolecular Nanoparticle Crystal Structures; 5.5 Porous 3D Supramolecular Assemblies in Solution; 5.6 Conclusions; References
6 LbL Assemblies Using van der Waals or Affinity Interactions and Their Applications

Sommario/riassunto

This second, comprehensive edition of the pioneering book in this field has been completely revised and extended, now stretching to two volumes. The result is a comprehensive summary of layer-by-layer assembled, truly hybrid nanomaterials and thin films, covering organic, inorganic, colloidal, macromolecular and biological components, plus the assembly of nanoscale films derived from them on surfaces. For anyone working in the field as well as scientists and researchers active in materials development who need the key knowledge provided here for linking the fields of molecular self-assembly