

1. Record Nr.	UNINA9910522964903321
Titolo	Polyvinylchloride-based blends : preparation, characterization and applications // edited by Visakh P. M., Raluca Nicoleta Darie-Nita
Pubbl/distr/stampa	Cham, Switzerland : , : Springer, , [2022] ©2022
ISBN	3-030-78455-X
Descrizione fisica	1 online resource (240 pages)
Collana	Springer Series on Polymer and Composite Materials
Classificazione	UWE
Disciplina	668.4236
Soggetti	Polyvinyl chloride
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	Intro -- Preface -- Contents -- About the Editors -- 1 Polyvinylchloride (PVC)-Based Blends: State of Art, New Challenges and Opportunities -- Abstract -- 1.1 PVC: Structure and Properties Relationship -- 1.2 Characterization Techniques of PVC/Thermoplastic Nanoblends -- 1.3 Applications of PVC/Thermoplastic Nano-, Micro- and Macro-Blends -- 1.4 Factors Affecting the Properties of PVC Nano, Micro- and Macro-Blends -- 1.5 Interface Modification and Compatibilization of PVC Nano-, Micro- and Macro-Blends -- 1.6 Biobased Plasticizers for PVC -- 1.7 PVC/Polysaccharides Blends -- 1.8 Preparation of PVC Membranes, Characterization, Modification, Applications and Mathematical Model -- 1.9 Biobased PVC-Related Blends -- 1.10 Conclusions -- References -- 2 Polyvinylchloride (PVC): Structure and Properties Relationship -- Abstract -- 2.1 Introduction -- 2.2 Structure -- 2.3 Synthesis -- 2.4 Polymerization Processes -- 2.4.1 Radical Polymerization -- 2.4.2 Emulsion Polymerization -- 2.4.3 Suspension Polymerization -- 2.5 Additives -- 2.5.1 Heat Stabilizer -- 2.5.2 Plasticizer -- 2.5.3 Impact Modifier -- 2.5.4 Process Aid -- 2.5.5 Lubricant -- 2.5.6 Filler -- 2.5.7 Flame Retardant/Smoke Suppressant -- 2.5.8 Pigment -- 2.5.9 Blowing Agent -- 2.5.10 Biocide -- 2.5.11 Viscosity Modifier -- 2.5.12 Antistatic Agent -- 2.5.13 Antioxidant -- 2.5.14 Antifogging Agent -- 2.5.15 Bonding Agent -- 2.5.16 UV Absorber -- 2.6 Processing of PVC -- 2.6.1 Extrusion -- 2.6.2 Injection Molding -- 2.6.3 Blow Molding -- 2.6.4 Calendering -- 2.6.5

Thermoforming -- 2.7 Properties of PVC -- 2.7.1 Physical Properties -- 2.7.2 Chemical Properties -- 2.7.3 Electrical and Optical Properties -- 2.7.4 Thermal Properties and Flammability -- 2.7.5 Mechanical Properties -- 2.7.6 Morphology -- 2.7.7 Crystal Structure and Crystallization Behavior -- 2.7.8 Weathering and Radiation Resistance. 2.8 Suppliers -- 2.9 Applications -- 2.9.1 Construction -- 2.9.2 Medical -- 2.9.3 Electrical -- 2.9.4 Automobiles -- 2.9.5 Packaging -- 2.9.6 Cards -- 2.9.7 Leisure and Sports -- 2.9.8 Office -- 2.9.9 Clothing -- 2.10 Future and Environmental Impact -- 2.11 Conclusions -- References -- 3 Characterization Techniques of Polyvinylchloride (PVC)/Thermoplastic Nano-Blends -- Abstract -- 3.1 Introduction -- 3.2 Overview of Physicochemical Characteristics -- 3.3 Modalities for Physicochemical Characterization -- 3.4 Conclusion -- Acknowledgements -- References -- 4 Applications of Polyvinylchloride (PVC)/Thermoplastic Nano-, Micro- and Macroblends -- Abstract -- 4.1 Introduction -- 4.2 Applications of PVC/Thermoplastic Nanoblends -- 4.2.1 Packaging Applications -- 4.2.2 Structural Applications -- 4.2.3 Military Applications -- 4.2.4 Aerospace Applications -- 4.3 Applications of PVC/Thermoplastic Microblends -- 4.3.1 Structural Applications -- 4.3.2 Military Applications -- 4.3.3 Aerospace Applications -- 4.3.4 Optical Applications -- 4.4 Applications of PVC/Thermoplastic Macroblends -- 4.4.1 Packaging Applications -- 4.4.2 Aerospace Applications -- 4.4.3 Recycling and Lifetime Studies -- 4.5 Conclusions -- References -- 5 Factors Affecting the Properties of Polyvinylchloride (PVC) Nano-, Micro- and Macro-Blends -- Abstract -- 5.1 Introduction -- 5.2 Mechanical Properties -- 5.2.1 Tensile Strength -- 5.2.2 Young's Modulus -- 5.2.3 Elongation at Break -- 5.2.4 Hardness -- 5.3 Thermal Stability -- 5.4 Electrical Properties -- 5.5 Conclusions -- References -- 6 Interface Modification and Compatibilization of Polyvinylchloride (PVC) Nano-, Micro- and Macro-Blends -- Abstract -- 6.1 PVC and the Basic Principles on Compatibilization of Polymeric Blends -- 6.1.1 Types of Polymeric Blends -- 6.1.2 Miscibility of Polymers. 6.1.3 Strategies for the Compatibilization of Polymeric Blends -- 6.2 Interface Modification of PVC Macro, Micro, and Nano Blends -- 6.2.1 Interface Particularities of PVC Blends -- 6.2.2 Physical Modification of PVC Blends -- 6.2.3 Chemical Modification of PVC Blends -- 6.2.4 Physical-Chemical Modification of PVC Blends -- 6.2.5 Stimuli-Responsive Interfaces -- 6.3 Compatibilization of PVC Macro, Micro, and Nano Blends -- 6.3.1 Thermodynamics of PVC Blends -- 6.3.2 Physical Compatibilization -- 6.3.3 Reactive Polymer Synthesis -- 6.4 Analytic Methods for the Study of Interface and Compatibilization of PVC Blends -- 6.5 Conclusions -- References -- 7 Bio-Based Plasticizers for Polyvinylchloride (PVC) -- Abstract -- 7.1 Introduction -- 7.2 Recent Progress in Performance of PVC Plasticizers as Alternative to DEHP -- 7.2.1 Petroleum-Derived PVC Plasticizers -- 7.2.2 Green Plasticizers for PVC -- 7.2.2.1 External Plasticizers -- 7.2.2.2 PVC Plasticized with Two Bio-Based Plasticizers -- 7.2.2.3 Chemical Modification of PVC/Bio-Based Plasticizers -- 7.2.2.4 Industrial Scale of PVC-Bio-Based Plasticizers -- 7.3 Conclusions and Future Trends -- References -- 8 Polyvinylchloride (PVC)/Polysaccharides Blends -- Abstract -- 8.1 Introduction -- 8.2 PVC/Polysaccharides Blends -- 8.2.1 PVC/Chitosan Blends -- 8.2.2 PVC/Starch blend -- 8.2.2.1 Starch Influence on Mechanical Properties and Biodegradation of PVC Composites -- 8.2.2.2 Solution Blending PVC/starch Acetate -- 8.2.2.3 Biodegradation of PVC/starch Blended Films -- 8.2.3 PVC/Cellulose and Wood Flour Blends -- 8.3 Compatibility of PVC/Polysaccharides Blend -- 8.3.1 PVC/Wood Blends -- 8.3.2 PVC/Chitosan Blends -- 8.3.3

Compatibilization of PVC/Starch Blends -- 8.4 Conclusions --
References.

9 Preparation of Polyvinylchloride (PVC) Membranes, Characterization,
Modification, Applications, and Mathematical Model -- Abstract -- 9.1
Introduction -- 9.2 Polyvinylchloride (PVC) Membrane Preparation
Methods -- 9.2.1 Phase Inversion (PI) Method -- 9.2.2 Modification of
PVC Membrane -- 9.3 PVC Membrane Characterization [20, 30] --
9.3.1 Polymer Solution Properties -- 9.3.2 Mechanical Properties --
9.3.3 PVC Membrane Thickness -- 9.3.4 Pore Size and Porosity --
9.3.5 Scanning Electron Microscopy (SEM) Analysis -- 9.3.6 Atomic
Force Microscopy (AFM) -- 9.3.7 Contact Angles -- 9.3.8 Differential
Scanning Calorimetry (DSC) -- 9.3.9 X-Ray Diffraction (XRD) -- 9.3.10
Energy-Dispersive X-Ray Spectroscopy (EDX) -- 9.3.11 Fourier
Transform Infrared Spectroscopy (FTIR) -- 9.3.12 Thermogravimetric
Analysis (TGA) -- 9.3.13 Abrasion Resistance Test -- 9.4 Application of
PVC Membrane -- 9.4.1 Microfiltration -- 9.4.2 Ultrafiltration (UF) --
9.4.3 Nanofiltration (NF) -- 9.4.4 Reverse Osmosis (RO) Process --
9.4.5 Pervaporation (PV) -- 9.4.6 Membrane Distillation (MD) -- 9.4.7
Electrodialysis (ED) -- 9.5 Mathematical Model for PVC Membrane
Preparation -- 9.5.1 Flory-Huggins Model for Polymeric Solution --
9.5.2 Diffusion Model of Immersion Precipitation -- References -- 10
Bio-Based Polyvinylchloride (PVC)-Related Blends -- Abstract -- 10.1
Introduction -- 10.2 PVC Bio-Related Nanoblends -- 10.3
PVC/Polyester Bio-Related Blends -- 10.3.1 PVC/Polyhydroxyalkanoate
(PHA) Blends -- 10.3.2 PVC/Poly(-Caprolactone) (PCL) Blends -- 10.4
PVC/Polysaccharide Bio-Related Blends -- 10.4.1 PVC/Starch Blends --
10.4.2 PVC/Chitosan (CS) Blends -- 10.5 PVC/Natural Filler Bio-Related
Blends -- 10.6 PVC/Protein (Collagen) Bio-Related Blends -- 10.7 PVC/
Poly(Vinyl Alcohol) (PVA) Bio-Related Blends -- 10.8 Conclusions and
Future Trends -- References.
