Record Nr.	UNINA9910815167303321
Titolo	Progress in adhesion and adhesives / / edited by K. L. Mittal
Pubbl/distr/stampa	Hoboken, New Jersey;; Salem, Massachusetts:,: Scrivener Publishing:,: Wiley,, 2015 ©2015
ISBN	1-119-16233-5 1-119-16234-3 1-119-16232-7
Descrizione fisica	1 online resource (515 p.)
Disciplina	620.1/99
Soggetti	Adhesives
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Includes index.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Cover; Title Page; Copyright Page; Contents; Preface; 1 Adhesion of Condensed Bodies at Microscale: Variation with Movable Boundary Conditions; 1.1 Introduction; 1.2 Kinematics: Energy Variation with Movable Boundary Conditions; 1.3 Microbeam/plate Adhesion; 1.4 Droplet Adhesion to a Solid; 1.5 Elastica Model of CNT Adhesion; 1.6 Cell Adhesion; 1.7 Summary and Prospects; Acknowledgements; References; 2 Imparting Adhesion Property to Silicone Materials: Challenges and Solutions; 2.1 Introduction; 2.2 Cured PDMS; 2.2.1 Curing Reactions; 2.2.1.1 Free-Radical Curing; 2.2.1.2 Condensation Curing 2.2.1.3 Hydrosilylation (Addition) Curing 2.2.2 Surface Properties; 2.2.3 Adhesion Property; 2.3 Methods for Cross-Linked PDMS Surface Modification; 2.3.1 Physical Techniques; 2.3.1.1 Plasma Treatment; 2.3.1.2 Corona Treatment; 2.3.1.3 UV/O3 Treatment; 2.3.1.4 Laser Treatment; 2.3.1.5 Physical Adsorption; 2.3.2 Wet Chemical Techniques; 2.3.2.1 LbL Deposition; 2.3.2.2 Sol-Gel Method; 2.3.2.3 Other Wet Chemical Treatments; 2.3.3 Combination of Physical and Chemical Techniques; 2.3.3.1 Covalent Surface Grafting; 2.3.3.2 Modification by Amphiphilic Block Copolymers 2.3.3.3 Other Combination of Physical and Chemical Techniques; Acknowledgements; References; 3

1.

Functionally Graded Adhesively Bonded Joints; 3.1 Introduction; 3.2 Functionally Graded Materials: 3.3 Constitutive Relations: 3.4 Joints with Functionally Graded Adherends: 3.5 Functionally Graded Adhesives; 3.6 Conclusions; References; 4 Synthetic Adhesives for Wood Panels: Chemistry and Technology; 4.1 Introduction; 4.2 Ureaformaldehyde (UF) Adhesives; 4.3 Melamine-formaldehyde (MF) and Melamine-ureaformaldehyde (MUF) Adhesives; 4.4 Phenolic Resins 4.4.1 Reactivity and Hardening Reactions of PF Adhesive Resins 4.4.2 Modification of Phenolic Resins; 4.4.2.1 Post-addition of Urea; 4.4.2.2 Co-condensation Between Phenol and Urea; 4.4.2.3 Addition of Tannins, Lignins and Isocyanates; 4.5 Isocyanate Wood Adhesives; 4.5.1 Chemistry of Isocyanate Wood Adhesives; 4.5.2 Technology of Isocyanate as Adhesives: 4.5.3 Emulsified/emulsifiable Water-dispersed PMDI; 4.5.4 PF/pMDI and UF/pMDI Hybrid Adhesives; 4.5.5 Conditions for Application of Isocyanate Adhesives for Wood; 4.6 Summary; References: 5 Adhesion Theories in Wood Adhesive Bonding 5.1 Introduction 5.1.1 Wood Material Properties Relevant to Adhesion; 5.1.2 Objectives: 5.2 Mechanical Interlocking and Mechanics of Adhesive-Wood Interactions; 5.2.1 Atomic Force Microscopy (AFM) & Nanoindentation; 5.3 Electrostatic Adhesion; 5.4 Wettability, Surface Energy, Thermodynamic Adhesion: 5.4.1 Wood Anatomy Impact on Wetting; 5.4.2 Extractives; 5.4.3 Adhesive Wettability; 5.4.4 Wood Modification; 5.4.4.1 Acetylation; 5.4.4.2 Grafting; 5.4.4.3 Fire Retardants, Preservatives and Adhesion Promotion; 5.4.5 Test Methods; 5.5 Diffusion Theory of Adhesion; 5.6 Covalent Bonding 5.7 Acid-base Theory

Sommario/riassunto

This book is based on the 13 review articles written by subject experts and published in 2014 in the Journal Reviews of Adhesion and Adhesives. The rationale for publication of this book is that currently the RAA has limited circulation, so this book provides broad exposure and dissemination of the concise, critical, illuminating, and thought-provoking review articles. The subjects of the reviews fall into 4 general areas: 1. Polymer surface modification 2. Biomedical, pharmaceutical and dental fields 3. Adhesives and adhesive joints