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Collana	Adhesion and adhesives : fundamental and applied aspects
Altri autori (Persone)	MittalK. L. <1945->
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Nota di contenuto	Cover; Title Page; Copyright Page; Contents; Preface; Acknowledgements; Part 1: Fundamental Aspects; 1 Correlation between Contact Line Pinning and Contact Angle Hysteresis on Heterogeneous Surfaces: A Review and Discussion; 1.1 Introduction; 1.2 Contact Line Pinning on Chemically Heterogeneous Flat Surfaces; 1.3 Contact Line Pinning on Hydrophobic Structured Surfaces; 1.4 Summary and Conclusion; References; 2 Computational and Experimental Study of Contact Angle Hysteresis in Multiphase Systems; 2.1 Introduction; 2.2 Origins of the CA Hysteresis 2.3 Modeling Wetting/Dewetting in Multiphase Systems2.3.1 CA in Multiphase Systems; 2.3.2 CA Hysteresis in Multiphase Systems; 2.4 Experimental Observations; 2.5 Numerical Modeling of CA Hysteresis; 2.5.1 Background; 2.5.2 The Cellular Potts Model; 2.5.3 The Cellular Potts Modeling of Wetting; 2.5.4 Results; 2.6 Conclusions; Acknowledgement; References; 3 Heterogeneous Nucleation on a Completely Wettable Substrate; 3.1 Introduction; 3.2 Interface-Displacement Model; 3.3 Nucleation on a Completely-Wettable Flat Substrate; 3.3.1 d = 2-dimensional Nucleus; 3.3.2 d = 3-dimensional

Nucleus

3.4 Nucleation on a Completely-Wettable Spherical Substrate3.5 Conclusion; Acknowledgments; References; 4 Local Wetting at Contact Line on Textured Hydrophobic Surfaces; 4.1 Introduction; 4.2 Static Contact Angle; 4.2.1 Global Approach - Thermodynamic Equilibrium; 4.2.2 Local Approach - Force Balance; 4.3 Wetting of Single Texture Element; 4.4 Summary; References; 5 Fundamental Understanding of Drops Wettability Behavior Theoretically and Experimentally; 5.1 Introduction; 5.2 Discussion; 5.3 Conclusion; References

6 Hierarchical Structures Obtained by Breath Figures Self-Assembly and Chemical Etching and their Wetting Properties6.1 Introduction; 6.2 Materials and Methods; 6.2.1 Fabricating Hierarchical Polymer Surfaces; 6.2.2 Characterization of the Wetting Properties of Polymer Surfaces; 6.2.3 Plasma Treatment of the Surfaces; 6.2.4 B.E.T Characterization of the Surfaces; 6.3 Results and Discussion; 6.3.1 Morphology and Wetting Properties of the Multi-scaled PC Surfaces; 6.3.2 Modification of Wetting Properties of the Multi-scaled Surfaces with Cold Radiofrequency Plasma Treatment

6.3.3 B.E.T Study of the Surfaces6.4 Conclusions; Acknowledgements; References; 7 Computational Aspects of Self-Cleaning Surface Mechanisms; 7.1 Introduction; 7.2 Droplet Membrane; 7.2.1 Governing Equations in Strong Form; 7.2.1.1 Surface Contact; 7.2.1.2 Line Contact; 7.2.1.3 Surface Roughness; 7.2.2 Weak Formulation of the Governing Equations; 7.2.2.1 Finite Element Implementation; 7.2.3 Model Verification; 7.2.3.1 Force Equilibrium; 7.2.4 Particle-Droplet Interaction; 7.3 Flow Model; 7.3.1 Governing Equations; 7.3.2 Finite Element Implementation

7.3.3 Normal and Tangential Velocities at the Boundary

Sommario/riassunto

The topic of wettabilty is extremely important from both fundamental and applied aspects. The applications of wettability range from self-cleaning windows to micro- and nanofluidics. This book represents the cumulative wisdom of a contingent of world-class (researchers engaged in the domain of wettability. In the last few years there has been tremendous interest in the ""Lotus Leaf Effect"" and in understanding its mechanism and how to replicate this effect for myriad applications. The topics of superhydrophobicity, omniphobicity and superhydrophilicity are of much contemporary interest and

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