1. Record Nr. UNINA9910483448303321

Titolo	Materials with extreme wetting properties : methods and emerging industrial applications / / Majid Hosseini, Ioannis Karapanagiotis, editors
Pubbl/distr/stampa	Cham, Switzerland : , : Springer, , [2021] Â©2021
ISBN	3-030-59565-X
Edizione	[1st ed. 2021.]
Descrizione fisica	1 online resource (XVI, 370 p. 167 illus., 143 illus. in color.)
Disciplina	541.33
Soggetti	Wetting Materials
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Robust, superhydrophobic self-cleaning surfaces -- Structural color films with lotus effects -- Transparent superhydrophobic surfaces -- Self-Recovery Superhydrophobic Surfaces -- Non-fluorinated superhydrophobic films -- Superhydrophobic Sponges -- Electrochemical Processes for the production of Superhydrophobic Surfaces -- Superhydrophobic polymer/nanoparticle composites -- Superhydrophobic polyimide films -- Superhydrophobic polymer/carbon composites -- Superhydrophobic cellulose surfaces & fabrics -- Superhydrophobic Coatings for Flexible and Wearable Sensing Electronics -- Superhydrophobic wood surfaces -- Functional and smart coatings for corrosion protection -- Superhydrophobic surfaces from austenitic stainless steel -- Corrosion resistant superhydrophobic aluminium and copper alloys -- Stimuli-Responsive Surfaces for Reversible Control of Wettability -- Graphene: From Superhydrophilic to Superhydrophobic Surfaces -- Porous graphene for efficient water and wastewater treatment -- Robust superamphiphobic coatings -- Emerging applications of superhydrophilic-superhydrophobic micropatterns -- Transparent superomphiphobic coatings -- Superomniphobic membranes to capture CO2 -- Engineered wettability for dew collection -- Robust superhydrophobic surfaces for effective oil-water separation -- Superhydrophobic

	breathable fibrous membranes -- Smart fluid gating membranes -- Bio-inspired anti-icing coatings -- Antibacterial and superhydrophobic surface coatings -- Superhydrophobic blood-repellent surfaces.
Sommario/riassunto	This book aims at identifying novel advanced materials of extreme wetting properties (MEWP) for practical, industrial applications. The state-of-the art superhdyrophobic, superhdyrophilic, superoleophobic, superoleophilic, and superomniphobic materials, that are MEWP, with respect to their technological and emerging industrial applications are discussed in this book. MEWP offer new perspectives providing numerous potential applications. Hence, these advanced MEWP have the potential to lead to a new generation of products and devices with unique properties and functionalities. Despite the large scientific progress on MEWP there are still some obstacles which have to be solved to make these materials available for real life applications. Recent advances on the production strategies, including methods and materials, of MEWP has shown that the durability and sustainability obstacles can be addressed thus offering the possibility for industrial exploitation. MEWP with wettabilities ranging from superhydrophobicity to superhydrophilicity provide promising avenues for several and important applications, which sometimes are crucial for the humankind. This book also discusses a large variety of other potential applications of MEWP, thus providing new ideas to scientists and engineers for further exploitation of these novel materials. Moreover, the whole spectrum of the recent technological developments, current research progress, future outlook, and the modern trends in the applications of MEWP are discussed in a consistent approach.