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Autore	Bowen W. Richard
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3.7 Effect of Hydrodynamics on Particle-Bubble Interactions3.8 Conclusions; List of Abbreviations; List of Symbols; Chapter 4 Investigating Membranes and Membrane Processes with Atomic Force Microscopy; 4.1 Introduction; 4.2 The Range of Possibilities for Investigating Membranes; 4.3 Correspondence between Surface Pore Dimensions from AFM and MWCO; 4.4 Imaging in Liquid and the Determination of Surface Electrical Properties; 4.5 Effects of Surface Roughness on Interactions with Particles; 4.6 'Visualisation' of the Rejection of a Colloid by a Membrane Pore and Critical Flux 4.7 The Use of AFM in Membrane Development4.8 Characterisation of Metal Surfaces; 4.9 Conclusions; Acknowledgements; List of Abbreviations; Chapter 5 AFM and Development of (Bio)Fouling-Resistant Membranes; 5.1 Introduction; 5.2 Measurement of Adhesion of Colloidal Particles and Cells to Membrane Surfaces; 5.3 Modification of Membranes; 5.4 Modification of Membranes with Sulphonated Poly (Ether-Ether Ketone) Polymers; 5.5 Conclusions; Acknowledgements; Abbreviations and Symbols; Chapter 6 Nanoscale Analysis of Pharmaceuticals by Scanning Probe Microscopy; 6.1 Introduction 6.2 The AFM as a Force Measurement Tool in Pharmaceuticals6.3 AFM Imaging-Based Studies; 6.4 Micro- and Nanothermal Characterisation with SPM; 6.5 Conclusions; Acknowledgements; Abbreviations and Symbols; Chapter 7 Micro/Nanoengineering and AFM for Cellular Sensing; 7.1 Introduction; 7.2 Engineering the ECM for Probing Cell Sensing; 7.3 AFM in Cell Measurement; 7.4 Conclusions; Acknowledgements; Abbreviations and Symbols; Chapter 8 Atomic Force Microscopy and Polymers on Surfaces; 8.1 Introduction; 8.2 Basic Concepts; 8.3 End-grafted Polymer Chains; 8.4 Diblock Copolymers Adsorbed on Surfaces 8.5 Star-shaped Polymers Adsorbed on Surfaces

Sommario/riassunto

Atomic force microscopy (AFM) is a surface imaging technique that can be applied at sub-nanometre resolution in liquids and gases. The same instrumentation can also be used to quantify directly the forces of interfacial interaction in such environments and is therefore a critical tool for process engineers and scientists, where AFM investigations are leading directly to improved processes and products. This is the first book to bring together both the basic theory and proven process engineering practice of AFM, and to present them in a way that is accessible and valuable to both practis
