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Sputtering; 3.2.5 Chemical Vapor Deposition; 3.2.6 Galvanic Deposition; 3.2.7 Deposition by Spinning (Spin Coating); 3.2.8 Shadow-mask Deposition Techniques; 3.3 Preparation of Ultrathin Inorganic Layers and Surface-bound Nanoparticles; 3.3.1 Ultrathin Layers by Vacuum Deposition Processes; 3.3.2 Deposition of Ultrathin Films from the Liquid Phase; 3.3.3 In Situ Generation of Ultrathin Inorganic Films by Chemical Surface Modification; 3.3.4 In Situ Formation of Ultrathin Inorganic Layers on Heteroorganic Materials
3.3.5 Immobilization of Nanoparticles
3.3.6 In Situ Formation of Inorganic Nanoparticles; 3.4 Structure Generation and Fabrication of Lithographic Masks; 3.4.1 Adhesive Mask Technique; 3.4.2 Role of Resist in Photolithography; 3.4.3 Serial Pattern Transfer; 3.4.4 Group Transfer Processes; 3.4.5 Maskless Structure Generation; 3.4.6 Soft Lithography; 3.5 Etching Processes; 3.5.1 Etching Rate and Selectivity; 3.5.2 Isotropic and Anisotropic Etching Processes; 3.5.3 Lithographic Resolution in Etching Processes; 3.5.4 Wet Etching Processes; 3.5.5 Dry Etching Processes
3.5.6 High-resolution Dry Etching Techniques
3.5.7 Choice of Mask for Nanolithographic Etching Processes; 3.6 Packaging; 3.7 Biogenic and Bioanalogue Molecules in Technical Microstructures; 4 Preparation of Nanostructures; 4.1 Principles of Fabrication; 4.1.1 Subtractive and Additive Creation of Nanostructures; 4.1.2 Nanostructure Generation by Lift-off Processes; 4.1.3 Principles of Nanotechnical Shape-definition and Construction; 4.2 Nanomechanical Structure Generation; 4.2.1 Scaling Down of Mechanical Processing Techniques; 4.2.2 Local Mechanical Cutting Processes
4.2.3 Surface Transport Methods

Sommario/riassunto

Expectations of a technological revolution are associated with nanotechnology, and indeed the generation, modification and utilization of objects with tiniest dimensions already permeates science and research in a way that the absence of nanotechnology is no longer conceivable. It has progressed to an independent interdisciplinary field, its great success due to the purposeful combination of physical, mechanical and molecular techniques. This book starts out with the most important fundamentals of microtechnology and chemistry on which the understanding of shaping nanoscale structures a
