

1. Record Nr.	UNINA9910459820503321
Autore	Mark James E. <1934->
Titolo	The polysiloxanes / / James E. Mark, Dale W. Schaefer and Gui Lin
Pubbl/distr/stampa	New York, New York : , : Oxford University Press, , 2015 ©2015
ISBN	0-19-756232-9 0-19-972047-9
Descrizione fisica	1 online resource (293 p.)
Collana	Oxford scholarship online
Disciplina	668.4/227
Soggetti	Silicones Electronic books.
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Previously issued in print: 2015.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Cover; Contents; Preface; 1. Introduction; 1.1. Background; 1.2. History; 1.3. Nomenclature; 2. Preparation, Analysis, and Degradation; 2.1. Preparation of Monomers; 2.2. Ring-Opening Polymerizations; 2.3. Other Approaches and Copolymerizations; 2.4. Structural Features; 2.5. Elastomer Technology; 2.6. Analysis and Testing; 2.7. Degradation; 3. Types of Polysiloxanes; 3.1. Homopolymers; 3.2. Reactive Chains; 3.3. Dendrimers and Hyperbranched Polymers; 3.4. Liquid-Crystalline Polymers; 3.4.1. Main-Chain Liquid-Crystalline Elastomers; 3.4.2. Side-Chain Liquid-Crystalline Elastomers 3.5. Cyclics3.5.1. Introduction; 3.5.2. Miscellaneous Properties of Polysiloxane Cyclics; 3.5.3. Comparisons Between Polysiloxane Cyclics and Polysiloxane Linear Chains; 3.6. Other Novel Materials; 3.6.1. Blends; 3.6.2. Ceramic Phases and Coatings; 3.6.3. Micropatterned Materials; 3.6.4. Nanofilaments and Molecular Wires; 3.6.5. Thermosets; 4. Some Characterization Techniques Useful for Polysiloxanes; 4.1. General Comments; 4.2. Optical and Spectroscopic Techniques; 4.3. Microscopies; 4.4. Nuclear Magnetic Resonance; 4.5. Thermoporometry; 4.6. Scattering of Light, X-Rays, and Neutrons 4.7. Brillouin Scattering4.8. Pulse Propagation; 4.9. Theory and Simulations; 5. General Properties; 5.1. Some General Information; 5.2. Conformations and Spatial Configurations; 5.2.1. Symmetrically

Substituted Polysiloxanes; 5.2.2. Stereochemically Variable Polysiloxanes; 5.2.3. Some Unusual Side Groups; 5.2.4. Poly (dimethylsilmethylene); 5.3. Flexibility of the Polymer Chains; 5.3.1. Equilibrium Flexibility; 5.3.2. Dynamic Flexibility; 5.3.3. Viscoelasticity; 5.4. Permeability; 5.5. Dielectric Constants and Dipole Moments; 5.6. Stability, Safety Aspects, and Environmental Impacts 5.7. Thermodynamics 5.8. Crystallinity; 5.9. Some Additional Unusual Properties of PDMS; 6. Surfaces; 6.1. Introduction; 6.2. Interactions with Water; 6.2.1. Hydrophilicity and Hydrophobicity; 6.2.2. Superhydrophilicity and Superhydrophobicity; 6.3. Characterization; 6.3.1. Contact Angles; 6.3.2. Wettability; 6.3.3. Spreading; 6.3.4. Surface Pressure; 6.3.5. Atomic Force Microscopy; 6.3.6. Nuclear Magnetic Resonance; 6.3.7. Swelling; 6.3.8. Exposure to Seawater; 6.4. Chains Bonded to or Embedded in Surfaces; 6.4.1. Tethering; 6.4.2. Grafting; 6.5. Radiation Treatments 6.5.1. Plasmas and Photons 6.5.2. UV and UV/Ozone Treatments; 6.5.3. Ion Beams; 6.6. Some Additional Chemical Aspects; 6.6.1. Emulsions; 6.6.2. Radical Polymerization; 6.6.3. Copolymers with Polyurethanes; 6.7. Migration; 6.7.1. Surface Segregation; 6.7.2. Recovery and Restructuring; 6.7.3. Self-Healing; 6.8. Interactions with Biomolecules; 6.8.1. Trapped Biomolecules; 6.8.2. Controlled Release; 6.8.3. Protein Adsorption; 6.8.4. Cells and Antigen Molecules; 6.8.5. Biofouling; 6.9. Mechanical Aspects; 6.9.1. Friction and Lubricity; 6.9.2. Adhesion; 6.9.3. Tribology; 6.10. Some Novel Materials 6.10.1. Dendrimers

Sommario/riassunto

A synthesis of the novel aspects of polysiloxane science and engineering.
