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Nota di contenuto	SELF-HEALING POLYMERS AND POLYMER COMPOSITES; CONTENTS; PREFACE; 1: BASICS OF SELF-HEALING: STATE OF THE ART; 1.1 BACKGROUND; 1.1.1 Adhesive Bonding for Healing Thermosetting Materials; 1.1.2 Fusion Bonding for Healing Thermoplastic Materials; 1.1.3 Bioinspired Self-Healing; 1.2 INTRINSIC SELF-HEALING; 1.2.1 Self-Healing Based on Physical Interactions; 1.2.2 Self-Healing Based on Chemical Interactions; 1.2.3 Self-Healing Based on Supramolecular Interactions; 1.3 EXTRINSIC SELF-HEALING; 1.3.1 Self-Healing in Terms of Healant Loaded Pipelines 1.3.2 Self-Healing in Terms of Healant Loaded Microcapsules1.4 INSIGHTS FOR FUTURE WORK; REFERENCES; 2: THEORETICAL CONSIDERATION AND MODELING; 2.1 MOLECULAR MECHANISMS; 2.1.1 Self-Healing Below Glass Transition Temperature; 2.1.2 Self-Healing Above Glass Transition Temperature; 2.2 HEALING MODELING; 2.2.1 Percolation Modeling; 2.2.2 Continuum and Molecular-Level Modeling of Fatigue Crack Retardation; 2.2.3 Continuum Damage and Healing Mechanics; 2.2.4 Discrete Element Modeling and Numerical Study; 2.3

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2.3.2 Optimization of Microvascular Networks2.4 CONCLUDING REMARKS; REFERENCES; 3: EXTRINSIC SELF-HEALING VIA ADDITION POLYMERIZATION; 3.1 DESIGN AND SELECTION OF HEALING SYSTEM; 3.2 MICROENCAPSULATION OF MERCAPTAN AND EPOXY BY IN SITU POLYMERIZATION; 3.2.1 Microencapsulation of Mercaptan; 3.2.2 Microencapsulation of Epoxy; 3.3 CHARACTERIZATION OF SELF-HEALING FUNCTIONALITY; 3.3.1 Self-Healing Epoxy Materials with Embedded Dual Encapsulated Healant: Healing of Crack Due to Monotonic Fracture; 3.3.2 Factors Related to Performance Improvement
3.3.3 Self-Healing Epoxy Materials with Embedded Dual EncapsulatedHealant: Healing of Fatigue Crack3.3.4 Self-Healing Epoxy/Glass Fabric Composites with Embedded Dual Encapsulated Healant: Healing of Impact Damage; 3.4 CONCLUDING REMARKS; REFERENCES; 4: EXTRINSIC SELF-HEALING VIA CATIONIC POLYMERIZATION; 4.1 MICROENCAPSULATION OF EPOXY BY UV IRRADIATION-INDUCED INTERFACIAL COPOLYMERIZATION; 4.2 ENCAPSULATION OF BORON-CONTAINING CURING AGENT; 4.2.1 Loading Boron-Containing Curing Agent onto Porous Media; 4.2.2 Microencapsulation of Boron-Containing Curing Agent via Hollow Capsules Approach
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Sommario/riassunto

"This book covers the fundamentals, theory, design, fabrication, characterization, and application of self-healing polymers and polymer composites. Innovative routes that correlate materials chemistry to the self-healing functionality are summarized for future industrial use. Throughout the book, the authors emphasize integration of existing techniques and / or novel synthetic approaches for target-oriented materials design and fabrication. With this book, experienced readers will gain a comprehensive view of the emerging field, while new researchers will understand the framework for creating new materials or new applications"--
"This book covers the fundamentals, theory, design, fabrication, characterization, and application of self-healing polymers and polymer composites"--