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Autore	Phogat Peeyush
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Altri autori (Persone)	SharmaShreya RaiSoumya ThakurJahanvi
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Sommario/riassunto

This book highlights the transformative potential of self-healing materials in addressing global challenges related to sustainability, durability, and efficiency across industries. By bridging the disciplines of physics, chemistry, and engineering, it provides a comprehensive exploration of self-healing mechanisms, material classifications, and cutting-edge applications in energy systems, biomedical devices, and infrastructure. The book also delves into the thermodynamics, kinetics, and biomimetic inspirations driving advancements in this field. With an emphasis on scalability, environmental impact, and future technologies, this resource equips researchers, engineers, and professionals with the knowledge to innovate and implement sustainable solutions. It is an essential guide for those aiming to contribute to a circular economy and design materials for a more resilient and eco-friendly future.