



# Self-healing Materials: Fundamentals, Design Strategies, and Applications

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## Self-healing Materials: Fundamentals, Design Strategies, and Applications

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The book covers self-healing concepts for all important material classes and their applications: polymers, ceramics, non-metallic and metallic coatings, alloys, nanocomposites, concretes and cements, as well as ionomers.

Beginning with the inspiration from biological self-healing, its mimickry and conceptual transfer into approaches for the self-repair of artificially created materials, this book explains the strategies and mechanisms for the readers' basic understanding, then covers the different material classes and suitable self-healing concepts, giving examples for their application in practical situations.

As the first book in this swiftly growing research field, it is of great interest to readers from many scientific and engineering disciplines, such as physics and chemistry, civil, architectural, mechanical, electronics and aerospace engineering.

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### Editorial Review

#### Review

"Ghosh has assembled a selection of chapters that will catalyze future researchers to pursue fundamental studies in self-healing materials; the goals are rich for societal impact and intertwined in the fundamental concepts of chemical structure and physical characterization. This text will stay on the office shelf for a long time." (Macromolecular Chemistry and Physics, March 2009)

#### From the Back Cover

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#### About the Author

Swapan Kumar Ghosh received his Ph.D in 2000 from the Indian Institute of Technology, India. His thesis was based on the synthesis and structure-property relationship of elastomeric ionomers. Following a PostDoc position at the Technical University of Eindhoven, The Netherlands, he joined as a Research Engineer at ArcelorMittal R& D Industry Gent, Belgium in 2002. He managed and coordinated both industrial and governmental funded projects in the field of coatings as well as knowledge development on new coatings related ideas for metallic substrates especially for steel. Since September 2008 he has been appointed as the chief executive of Procoat India Private Limited (a subsidiary of ProCoat Technolog?as, Barcelona/Spain). In addition, he has edited the book 'Functional Coatings by Polymer Microencapsulation', and has published several research papers in international journals and is inventor /co-inventor of several patents in the fields of coatings technology.

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