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Altri autori (Persone)	WangPeng XieJun ZhangYiyi
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Soggetti	Condensed matter Surfaces (Physics) Polymers Nanotechnology Materials - Analysis Thermodynamics Heat engineering Heat transfer Mass transfer Structure of Condensed Matter Surface and Interface and Thin Film Nanoscale Design, Synthesis and Processing Characterization and Analytical Technique Engineering Thermodynamics, Heat and Mass Transfer
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Nota di contenuto	Chapter 1 Study on the construction method of epoxy resin crosslinking model -- Chapter 2 Study of model construction methods for epoxy resin composites -- Chapter 3 Modulation of surface properties of epoxy resin by plasma modification -- Chapter 4 Regulation method and mechanism of functionalized modified nano filler on electrical properties of epoxy resin -- Chapter 5 Research on

	the influence of nanoparticles and surface microstructure on the hydrophobic and electrical properties of silicone rubber materials -- Chapter 6 Molecular dynamics simulation of the effect of water intrusion on the epoxy resin/glass fiber interface of composite insulator core -- Chapter 7 Preparation and thermal-mechanical property evaluation of cellulose insulation paper with differing nano-SiC contents.
Sommario/riassunto	This book highlights the latest advances in advanced insulating materials. Energy crisis and environmental pollution are two major themes currently faced by the human society. It is of unprecedented strategic importance to construct a strong smart grid with super/ultra-high voltage network as the backbone and clean energy transmission as the leading force. However, the performance of electrical equipment and devices is greatly determined by the properties of their insulating materials, especially when they have to work in extreme circumstances including high-temperature differences, intense radiation, and strong electric fields. The key advantage of polymers is that their properties could be adjusted by changing their chemical composition and molecular structure. Research on polymer insulating materials has been highly successful as progress has been made in characterizing these properties, designing molecular structures, and studying polymers' specialized properties. On the other hand, nanodielectrics are prepared by adding certain nanoscale fillers into a polymer matrix to yield better electrical, thermal, and mechanical properties. When the particle pretreatment methods and the content or category of fillers are adjusted, nanodielectrics tend to have greater breakdown strength as well as better high-temperature resistance and space charge suppression. Therefore, this book covers investigations of properties of insulating materials that explore their interface effects and composite structures and introduces findings in methods that improve the performance of electrical devices. The book is not only used as a timely reference for engineering and technical personnel in related fields but also as a comprehensive textbook for college students.