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"*This book is very critical for understanding the advances of the dielectric polymers and their nanocomposites. It provides insightful theoretical knowledge by giving detailed examples for understanding powerful applications of dielectric polymers. It is suitable for beginners and senior scientific researchers/engineers in both academic and industrial fields.*"

Dr. John Zhanhu Guo
University of Tennessee, USA

Polymers have been used as dielectric materials due to their light weight, great flexibility, and processability as well as high insulation properties. To enhance their performance for various desired dielectric applications, fabrication of polymeric nanocomposites is believed to be one of the most effective approaches. By controlling the nanomaterial dispersion and interfacial structures with the polymer matrices in nanocomposites, dielectric properties can be tailored for specific applications.

This book reviews representative polymer nanocomposite systems, focusing on the roles of nanodispersion, interfacial structures, and properties of polymer matrix materials in the dielectric properties and energy storage performance. It discusses various dielectric relaxation models applicable to the analysis of polymer nanocomposites. It illustrates the roles of polymer matrices in their polymer nanocomposites in fluoropolymers and their copolymers and compiles the recent progress in new dielectric polymer nanocomposites based on biomaterials and hybrid nanomaterial systems for advanced dielectric applications.

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