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Design of Green Liquid Dielectrics for Transformers: An Experimental Approach

Biodegradable Insulating Materials for Transformers

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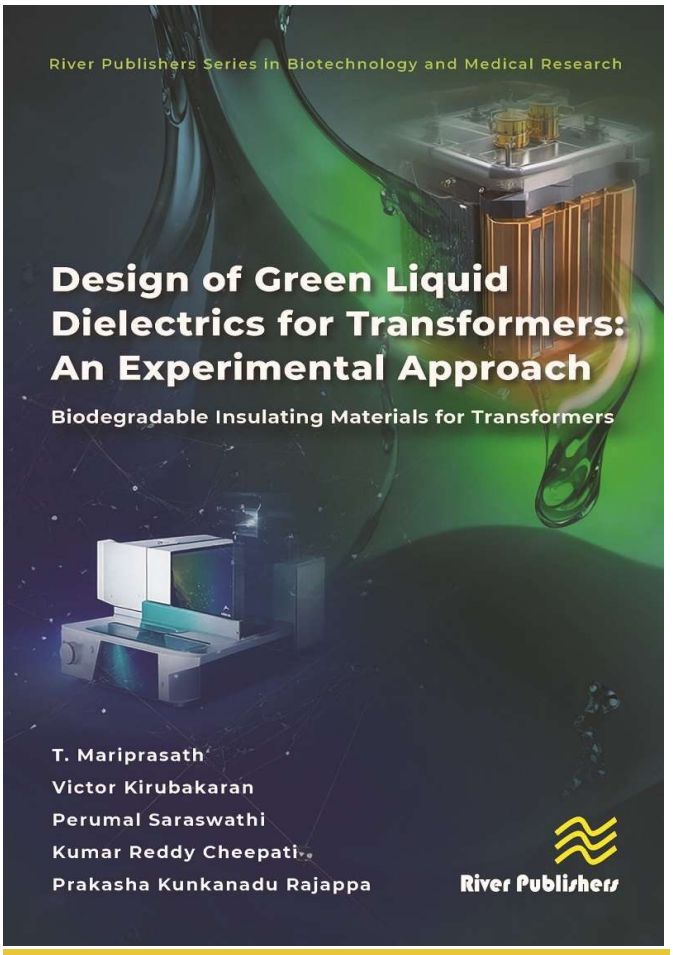
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This book provides in-depth information about the latest trends in transformer insulation design. This practical guide is prepared from a hands-on perspective, offering readers valuable insights into the trends in liquid dielectrics for transformer applications. Chapter 1 covers the necessity of alternate liquid dielectrics for transformers. Chapter 2 delves into the historical development of liquid dielectrics for transformer applications, drawing insights from reputable publications. It also explores the impact of nanoparticles on ester oil characteristics. In Chapter 3, the significance of spectroscopy analysis for investigating the ageing effect on both cellulosic insulating materials and oil samples is discussed. Chapter 4 describes material preparations followed by experimental analysis, estimating the degradation rate of solid and liquid dielectrics using spectroscopies. Chapter 5 discusses the importance of condition monitoring for transformers and its historical methods. Chapter 6 explores the methodology for hot spot indication and its application for assessing the transformer's condition. It covers real-time case studies as well. In Chapter 7, the book investigates the application of artificial intelligence in transformer insulation systems, leveraging machine learning algorithms to predict transformer insulation.

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