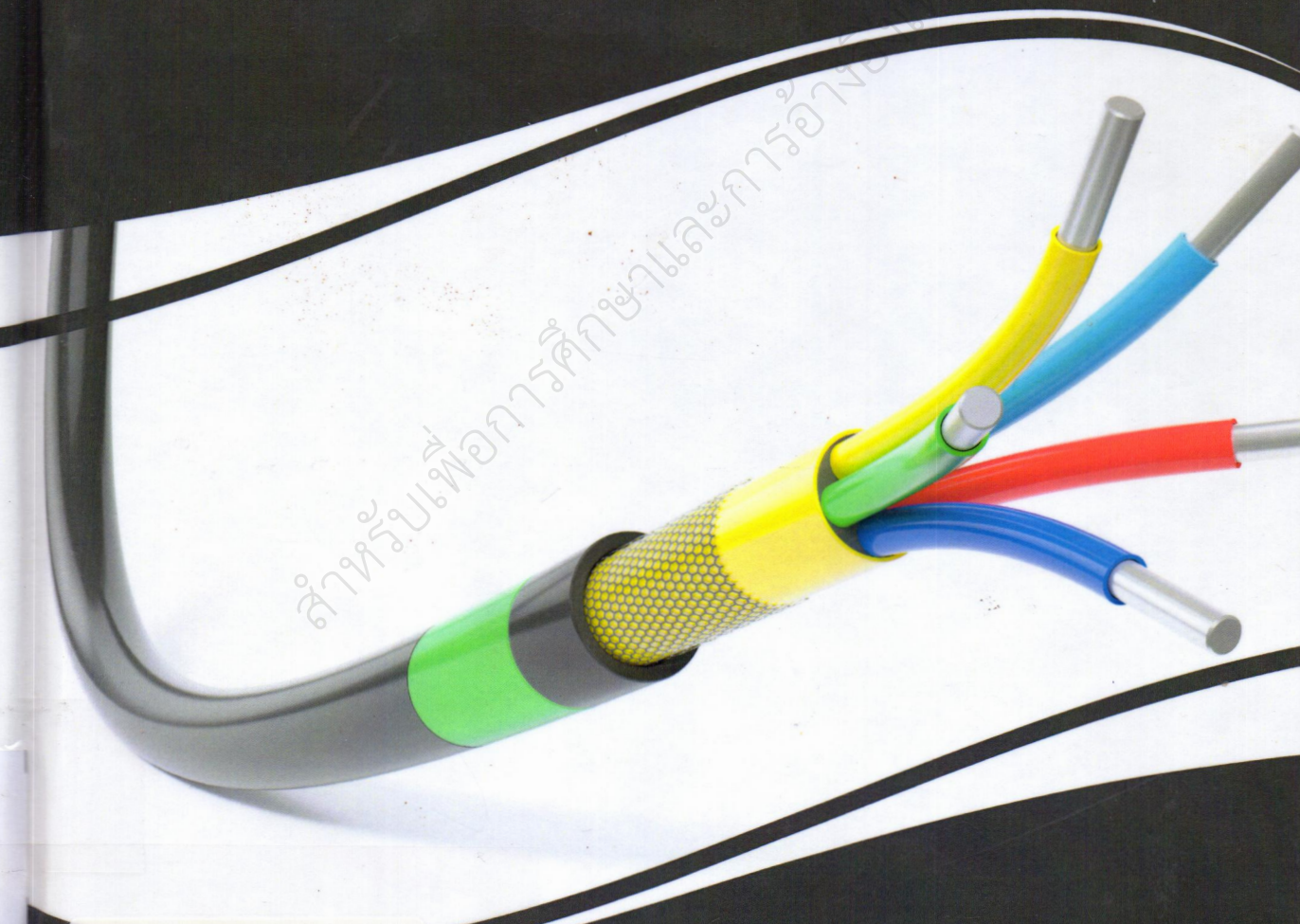


Premier Reference Source

Accelerating the Discovery of New Dielectric Properties in Polymer Insulation



สำหรับเพื่อการศึกษาและการอ้างอิง

มหาวิทยาลัยเทคโนโลยีราชมงคลพระนคร

ห้องสมุดสาขาพระนครเหนือ



502006153



Table of Contents

Preface	vii
Chapter 1 Introduction for Topics in Polymer Insulation.....	1
Chapter 2 Polyimide Film for Generator Winding	15
Chapter 3 SiR Insulation for Outdoor Insulator	57
Chapter 4 Polypropylene Insulation for Cables.....	114
Chapter 5 HVDC Cable Accessory Insulation	160
Chapter 6 Oil and Paper Insulation for DC Converter Transformer.....	194
Chapter 7 Epoxy Resin for GIS Disc-Type Insulator.....	232
Chapter 8 High Thermal Conductivity Polymer Insulation.....	264
Chapter 9 Polymer Insulation in Nuclear Power Station.....	316

Chapter 10

Polymer Insulation for Superconductive Application.....350

Index..... 387

สำหรับเพื่อการศึกษาและการอ้างอิงเท่านั้น

Preface

Modern power system is more complex than before and new technologies are integrated in even faster. We can see power systems with HVDC, wind generator and other components came into practice around the world. Obviously new insulation materials matching new standards are now in urgent need. Polymer dielectrics have been used in power system for long. As a fast-moving technology, the old principles of polymer dielectrics have been revised in recent decades due to the marvelous development of power system.

There are several important properties that matters a lot in polymer insulation such as interface property, space charge and treeing. Researches on these properties have always been a significant issue especially when the concept of nanocomposites came into our view. This provide a prospective path to new properties in discovery new properties of polymer dielectrics. However, polymer dielectrics is really an interdisciplinary area concerning chemistry, physics and mechanics. Many principle and theory are not confirmed or even unknown for both academic researchers and industrialists. To this end, we write this book to provide some valuable researches, hoping to inspire readers with new ideas of polymer properties and new research methods.

This book is a collection of our previous researches. People with some basic background knowledge may find it with abundant content covering many hot topics in recent years. In Chapter 1 and 8, we focused on the insulation in new power energy. Polymer properties in wind generator winding and the effect of radiation in nuclear power station on polymer were discussed. In Chapter 2, we provided an interesting study on insulators in high speed railway system which required new dielectric properties different from traditional power system. In Chapter 3, 4, and 5, polymer insulation exposed to multi-field in HVDC power system provided clues for the discovery of new polymer materials. We also paid attention to traditional equipment like GIS in chapter 6. Besides, the edge of new technology is our first concern. In Chapter 7, 9, and 10, polymer dielectrics with better thermal behavior and

insulation applied in superconducting environment were involved. Some of this technology has just come into practice in power system for few years and we are aiming to provide data and experiments support for practice with our current research.

Accelerating the Discovery of New Dielectric Properties in Polymer Insulation started for me when I worked as the leader of the High voltage lab of Tianjin University, China. This book includes many aspects of power system insulation, some of which are quite different from each other. It is really a team effort to finish this book. It is my pleasure to acknowledge the numerous contributions made by my team, among which the data provided by Dr. Yong Liu in Chapter 2 and the proofreading done by Mr. Zhuoran Yang are highly recognized.

Chapter 1

Introduction for Topics in Polymer Insulation

ABSTRACT

Polymer dielectrics have been used as insulation for long. Many Properties have drawn researches' attention in different occasions. Generally, these topics are usually interdisciplinary while requiring necessary professional knowledge of electrical system. Potential readers may find some ideas and methods mentioned in this book hard to understand if they are not quite into the modern high voltage power system. People may want to learn some basic principles and concepts in the area of polymer insulation. To this end, this chapter provides the introduction of methods and concepts which concern with the content of this book. It is hard to be all-sided, but the introduction is sure to be helpful to understand these topics better.

MODIFICATION OF POLYMER

Modern power system is developing fast, becoming large-scaled, ultra-high voltage, distributed, flexible and hybrid. The insulation materials are now required to be multifunctional to match the operation of smart grid. Traditional materials such as silicon rubber, epoxy resin and low-density polyethylene are of great insulation, but the defects are also quite obvious, especially when the working condition or the ambient influences are quite extreme. For example, insulation in transformer usually suffers from temperature much higher than cables while super-conduction system works in cryogenic

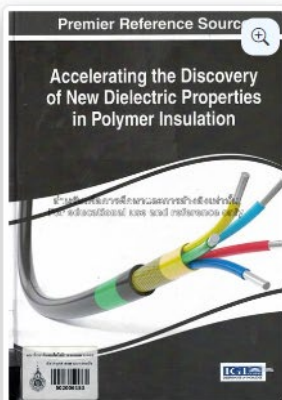
DOI: 10.4018/978-1-5225-2309-3.ch001

สามารถยืมและติดตามหนังสือใหม่ได้ที่ ระบบห้องสมุดอัตโนมัติ Walai Autolib

<https://lib.rmutp.ac.th/bibitem?bibid=b00108263>

B Accelerating the discovery of new dielectric properties in polymer insulation / Boxue Du.
Du, Boxue.

My list 



Subject [Dielectrics.](#)
[Electric insulators and insulation -- Polymers.](#)

Details

Published Hershey : Engineering Science Reference, c2017.
Edition 1st ed.
Detail viii, 388 p. : ill ; 26 cm.
ISBN 9781522523093

 10  10  0

 MARC

 Export

 Save

 Share

สำหรับการเพื่อการศึกษาและการอ้างอิงเท่านั้น