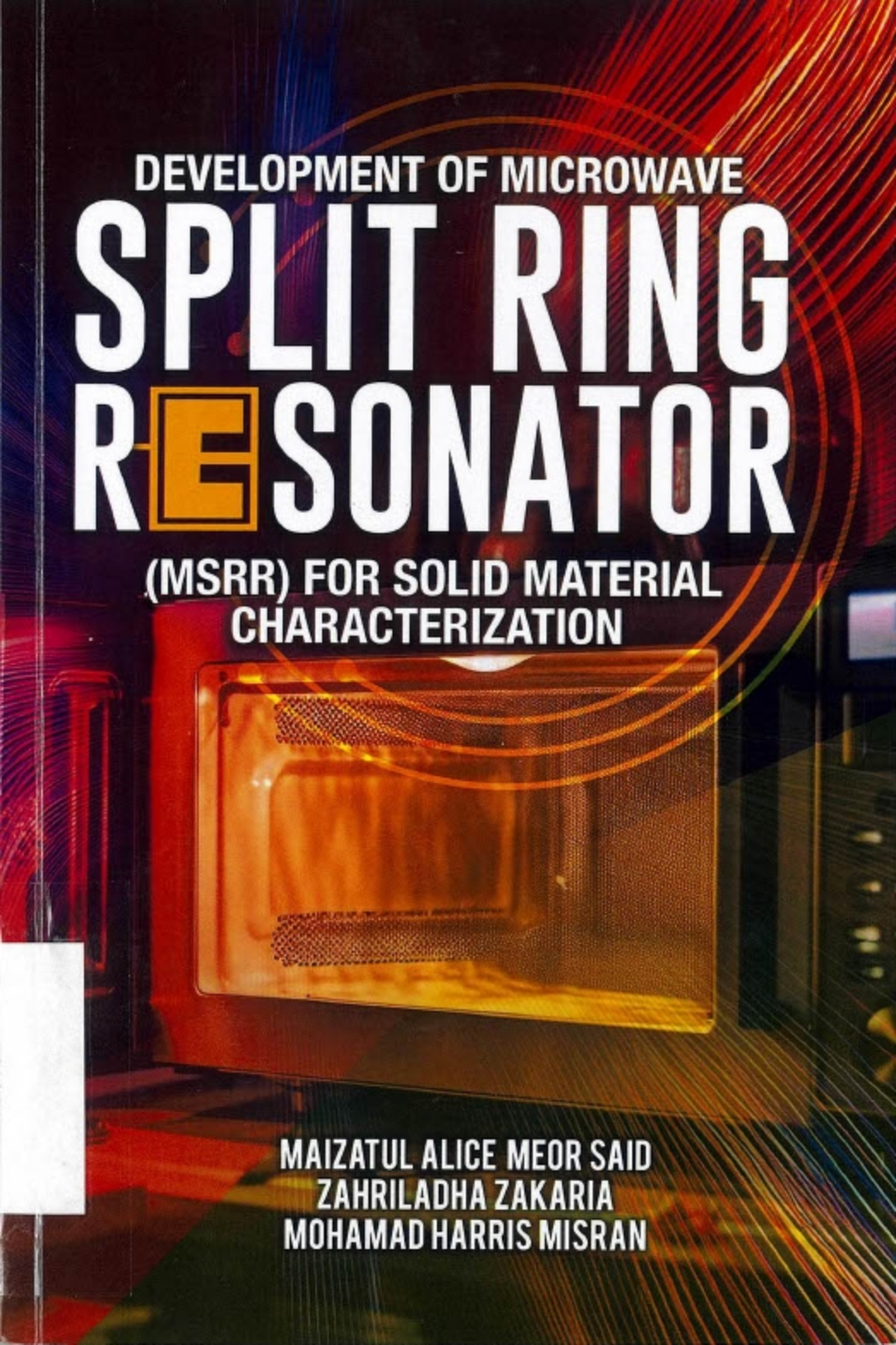
DEVELOPMENT OF MICROWAVE SPLIT RING RESONATOR (MSRR) FOR SOLID MATERIAL CHARACTERIZATION



MAIZATUL ALICE MEOR SAID
ZAHRILADHA ZAKARIA
MOHAMAD HARRIS MISRAN

DEVELOPMENT OF MICROWAVE SPLIT RING RESONATOR (MSRR) FOR SOLID MATERIAL CHARACTERIZATION

Development of Microwave Split Ring Resonator (MSRR) for Solid Material Characterization discover the inductive energy transfer and material characterization with this easy-to-understand guide. This book explores the innovative technology of split ring resonators (SRR) and learn about microwave resonator sensors and how they are used.

Starting with the fundamental principles of split ring resonators and microwave sensors, the book addresses the challenges and goals of this cutting-edge research. It offers a detailed exploration of microwave resonator sensor design, comparative material characterization methods, and the critical perturbation technique. With clear explanations of mathematical analysis, formula, simulations design, fabrication, and testing, readers will learn how to design high-sensitivity planar microwave sensors. Diagrams and flow charts make the learning process easier and more engaging, helping to understand complex ideas.

Ideal for researchers, engineers, and students, this book equips readers with the tools and knowledge to revolutionize communication links and material characterization techniques. Dive into the future of sensor technology and energy transfer with this essential resource.

MAIZATUL ALICE MEOR SAID received the BEng in Electronics Engineering (Telecommunication) from University of Surrey, UK in 2006. She obtained MEng in Master of Engineering (Telecommunication) in 2009 from University of Wollongong, Australia. Currently, she is a PhD holder at the Universiti Teknikal Malaysia Melaka (UTeM), Melaka, Malaysia. Her research areas include RF energy harvesting, resonators, amplifiers, antennas and microwave sensors. She can be contacted via email at maizatul@utem.edu.my

ZAHRILADHA ZAKARIA received the B.Eng. and M. Eng in Electrical and Electronic Engineering from the University Teknologi Malaysia in 1998 and 2004 respectively, and the PhD degree in Electrical and Electronic Engineering from the Institute of Microwaves and Photonics (IMP), University of Leeds, United Kingdom in 2010. From 1998 to 2002, he was with STMicroelectronics, Malaysia where he worked as product engineer. He is currently a Professor at Universiti Teknikal Malaysia Melaka (UTeM). His research interests include variety of RF/microwave devices and he has published more than 350 scientific manuscripts. He holds 8 intellectual property rights, and he has won several awards, including gold medal during several research and innovation exhibitions at the national, and international levels. He can be contacted at email: zahriladha@utem.edu.my

MOHAMAD HARRIS MISRAN was born in Johor, Malaysia He obtained his degree in BEng in Electronics Engineering (Telecommunication) from University of Surrey, UK in 2006 and MEng in Master of Engineering (Telecommunication) in 2008 from University of Wollongong, Australia. He is currently a full-time PhD research student at the Wireless Communication Centre (WCC), Faculty of Electrical Engineering, Universiti Teknologi Malaysia (UTM), Johor, Malaysia. He can be contacted at email: harris@utem.edu.my

UTeM
UNIVERSITI TEKNIKAL MALAYSIA MELAKA

PENERBIT
UTeM
Press

Website : **https://penerbit.utem.edu.my**
Books Online : **https://utembooks.utem.edu.my**
Email : **penerbit@utem.edu.my**

ISBN 978-629-7741-05-5

03500

ISBN: 978-629-7741-05-5

FIRST PUBLISHED 2025

Member of the Malaysian Scholarly Publishing Council (MAPIM)
Member of the Malaysian Book Publishers Association (MABOPA)
Member of Clarivate Analytics

Proof Reader
Nornikman Hassan

Manuscript Editor
Mohd Hafizuddin Yusof

Book Cover Designer and Typesetter
Ahmad Masmuliyadi Mohd Yusof

Published and Printed in Malaysia by
Penerbit UTeM Press
Universiti Teknikal Malaysia Melaka
Hang Tuah Jaya, 76100 Durian Tunggal, Melaka, Malaysia.
Phone: +606 270 1241 Fax: +606 270 1038

Cataloguing-in-Publication Data

Perpustakaan Negara Malaysia

A catalogue record for this book is available from the National Library of Malaysia

ISBN 978-629-7741-05-5

TABLE OF CONTENTS