



# UNION CHRISTIAN COLLEGE ALUVA-2



Criterion 3

SSR 5<sup>th</sup> CYCLE 2023

**3.3.2: Details of books and chapters in edited volumes/books published and papers in national/international conference proceedings - 2023**



# Biopolymers as Engineering Materials

P. S. Shasiya, K. Simi Pushpan, and Ajalesh B. Nair

## Contents

Introduction .....	2
Classification .....	4
Biopolymers as Engineering Materials .....	7
Biopolymer-Based Antimicrobial Packaging .....	7
Cosmetics .....	8
In Geotechnical Engineering .....	10
Civil Engineering Applications .....	11
Agriculture .....	12
Biopolymers for Biomedical Applications .....	13
In Drug Delivery .....	14
In Tissue Engineering .....	16
In Medical Implants .....	17
In Wound-Healing Materials .....	18
Outlook and Perspectives .....	20
References .....	22

## Abstract

The search for eco-friendly and renewable resources endowed with high stability and low toxicity has directed researchers around the globe to focus their attention on biomaterials, namely, biopolymers, which reduce the pollution caused by the rise in synthetic material-mediated pollution. As investment and research into biopolymers increases, several conventional material utilities are reduced in various optoelectrical, biological, and technological applications. Biopolymers in conjunction with nanotechnology have opened up novel and extremely useful arenas for their applications, namely, in the biomedical, energy sector, etc. This chapter is envisioned to outline the significant status of biopolymers as a

P. S. Shasiya · K. Simi Pushpan · A. B. Nair (✉)  
Department of Chemistry, Union Christian College, Aluva, Kerala, India  
e-mail: [ajaleshbair@uccollege.edu.in](mailto:ajaleshbair@uccollege.edu.in)

A complex molecular structure graphic in shades of purple and blue, featuring interconnected nodes and lines, set against a dark blue background with glowing circular patterns.

*Emerging Materials and Technologies*

# **POLYMER NANOCOMPOSITES IN SUPERCAPACITORS**

Edited by

Soney C George, Sam John and Sreelakshmi Rajeevan

A complex molecular structure graphic in shades of cyan and blue, featuring interconnected nodes and lines, set against a dark blue background with glowing circular patterns.

 **CRC Press**  
Taylor & Francis Group

First edition published 2023  
by CRC Press  
6000 Broken Sound Parkway NW, Suite 300, Boca Raton, FL 33487-2742

and by CRC Press  
4 Park Square, Milton Park, Abingdon, Oxon, OX14 4RN

*CRC Press is an imprint of Taylor & Francis Group, LLC*

© 2023 selection and editorial matter, Soney C George, Sam John and Sreelakshmi Rajeevan; individual chapters, the contributors

Reasonable efforts have been made to publish reliable data and information, but the author and publisher cannot assume responsibility for the validity of all materials or the consequences of their use. The authors and publishers have attempted to trace the copyright holders of all material reproduced in this publication and apologize to copyright holders if permission to publish in this form has not been obtained. If any copyright material has not been acknowledged please write and let us know so we may rectify in any future reprint.

Except as permitted under U.S. Copyright Law, no part of this book may be reprinted, reproduced, transmitted, or utilized in any form by any electronic, mechanical, or other means, now known or hereafter invented, including photocopying, microfilming, and recording, or in any information storage or retrieval system, without written permission from the publishers.

For permission to photocopy or use material electronically from this work, access [www.copyright.com](http://www.copyright.com) or contact the Copyright Clearance Center, Inc. (CCC), 222 Rosewood Drive, Danvers, MA 01923, 978-750-8400. For works that are not available on CCC please contact [mpkbookspermissions@tandf.co.uk](mailto:mpkbookspermissions@tandf.co.uk)

*Trademark notice:* Product or corporate names may be trademarks or registered trademarks and are used only for identification and explanation without intent to infringe.

*Library of Congress Cataloging-in-Publication Data*

A catalog record has been requested for this book

ISBN: 978-1-032-00545-4 (hbk)

ISBN: 978-1-032-00549-2 (pbk)

ISBN: 978-1-003-17464-6 (ebk)

DOI: 10.1201/9781003174646

Typeset in Times New Roman  
by Apex CoVantage, LLC

---

# 13 Future Perspectives of Polymer Supercapacitors for Advanced Energy Storage Applications

*Ajalesh Balachandran Nair, Shasiya Panikkaveetil  
Shamsudeen, Minu Joys, and Neethumol Varghese*

## CONTENTS

13.1 Introduction .....	237
13.2 Conducting Polymer-Based Supercapacitors .....	238
13.3 CNT-Based Polymer Supercapacitors .....	241
13.4 Graphene-Based Polymer Supercapacitors.....	241
13.5 CPs/Graphene/CNT Ternary Supercapacitors.....	243
13.6 Fiber-Based Supercapacitors.....	244
13.7 Challenges and Future Perspectives .....	246
13.8. Conclusion .....	252
References.....	252

## 13.1 INTRODUCTION

The supercapacitor is a novel type of device to store energy and it is an advanced form of conventional capacitor, which contains two electrode materials. They are progressively used for energy transformation and in storing energy. Interest in the field of supercapacitors is mainly owing to their excellent energy capacity, excellent power density, outstanding storage capacity, faster charging and discharge rates, and longer shelf life. These important characteristics of supercapacitors bridge the performance gap between classical capacitors and novel secondary cells/rechargeable batteries, and they have tremendous applications such as in electronic communication, transportation, aerospace, and energy storage fields [1–3].

Conducting polymers (CPs) are considered important pseudocapacitive redox active materials due to their attributes. Some of the prominent and well-known CPs in the field of supercapacitors are polyaniline (PANi), polypyrrole (PPy), and polythiophene (PTh). The solid electrodes fabricated with CPs demonstrate various benefits like high conductivity, excellent flexibility, and ease of preparation methods [4]. The electrochemical capability of these electrodes is undesirable and various techniques were tried to enhance their performance. The polymerization of aniline monomer through different techniques such as chemical or electrochemical exhibited several added attractions such as facile synthesis, basic doping/de-doping systems, and ecological stability [5]. It is among the most prominent materials appropriate for pseudocapacitors. PPy also has many benefits including ease of preparation, excellent capacitance, and improved cycle stability. The supercapacitor system based on PPy shows superior electrochemical properties in high performance applications [6]. PTh and functionalized PTh finds applications in the field of supercapacitors due to their improved conductivity, ecological stability, and higher absorption [7–8]. The electrochemical performance of supercapacitor electrode developed from pristine PTh was examined by several scientists [9–10] and have attempted various fabricated methods to improve their properties.



# Gas Barrier Properties and Applications of Nanocellulose-Based Materials

Nisha Nandakumar and Ajalesh B. Nair

## Contents

Introduction .....	2
Gas Barrier Properties – Present Scenario and Green Barriers .....	3
Gas Barrier Performances of Different Nanocellulosic Materials .....	5
Cellulose Nanocrystals (CNC) .....	5
Cellulose Nanofibrils (CNF) .....	6
Bacterial Nanocellulose .....	7
Microfibrillar Cellulose (MFC) .....	7
Nanocellulose Hybrid Materials .....	9
Nanocellulose-Reinforced Composites .....	12
Summarized Comparison of Barrier Performances of Nanocellulose .....	13
Conclusions and Prospects .....	14
References .....	15

## Abstract

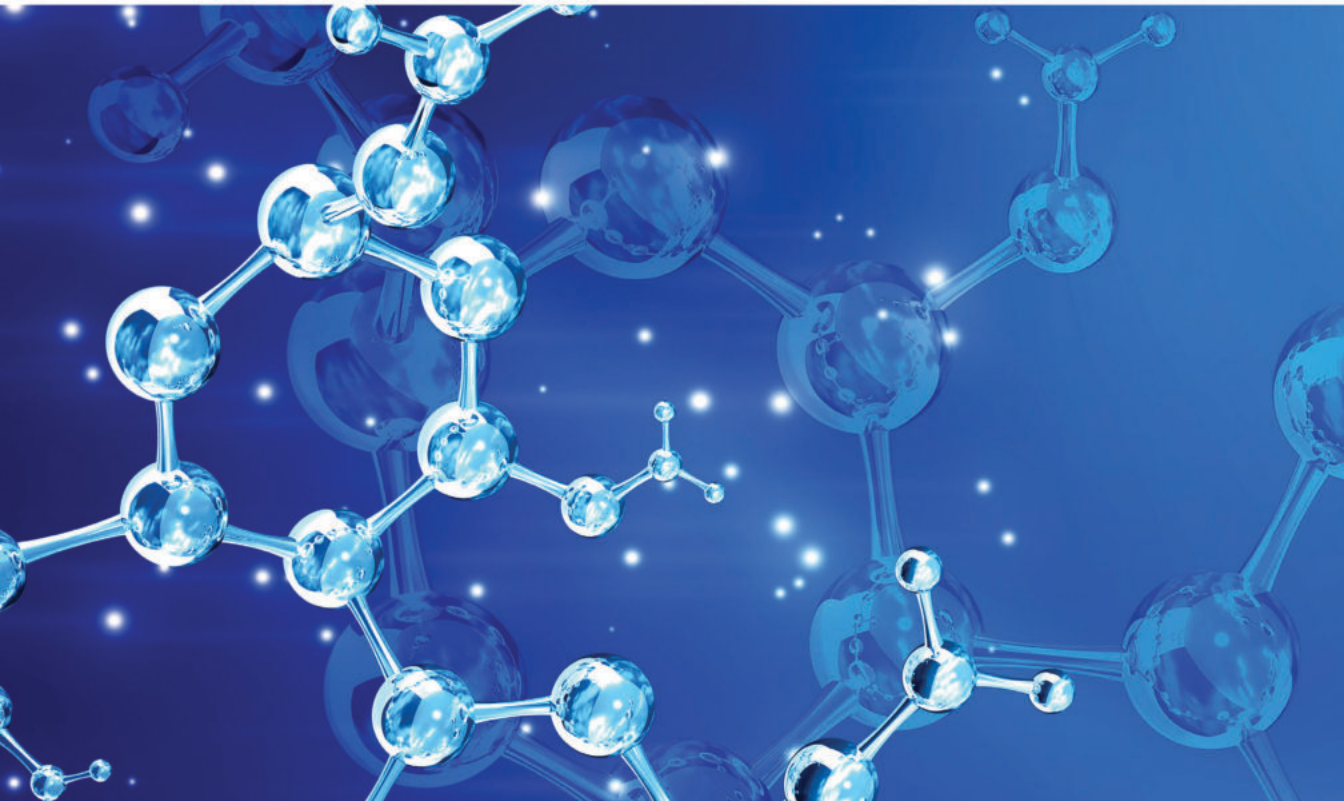
Cellulose is a biomass that occurs abundantly in plants, animals, or bacteria. It can exhibit enhanced gas barrier performances due to their high degree of crystallinity and polar nature. Its linear polymer chain built out of  $\beta$ -D glucopyranosyl units linked via 1,4 positions and its fibrillar nature adds to its performance in slowing down diffusion of gases such as O<sub>2</sub>, CO<sub>2</sub>, N<sub>2</sub>, and vapor. During the last decade, this bio-nanomaterial was identified as a potential filler in composites to taper its reinforcement capacity. “Nanocellulose” refers to the cellulosic materials whose structure falls to the nanoscale regime. Its dimensions falling in nanoscale and formation of strong entangled nanofibrillar network and porosity, have inspired the evolution of novel applications. They may be cellulose nanocrystals, fibers, or bacterial cellulose. Nanocellulose is a non-hazardous, biocompatible, degradable

N. Nandakumar · A. B. Nair (✉)

Department of Chemistry, Union Christian College, Aluva, India

Department of Chemistry, Sri Vyasa N. S. S. College, Wadakkanchery, India

e-mail: [ajaleshnair@uccollege.edu.in](mailto:ajaleshnair@uccollege.edu.in)



# Specialty Polymers

Fundamentals, Properties,  
Applications and Advances

Edited by  
**Ram K. Gupta**



CRC Press  
Taylor & Francis Group

Cover image © Shutterstock

First edition published 2023

by CRC Press

6000 Broken Sound Parkway NW, Suite 300, Boca Raton, FL 33487-2742

and by CRC Press

4 Park Square, Milton Park, Abingdon, Oxon, OX14 4RN

*CRC Press is an imprint of Taylor & Francis Group, LLC*

© 2023 selection and editorial matter, Ram K. Gupta; individual chapters, the contributors

Reasonable efforts have been made to publish reliable data and information, but the author and publisher cannot assume responsibility for the validity of all materials or the consequences of their use. The authors and publishers have attempted to trace the copyright holders of all material reproduced in this publication and apologize to copyright holders if permission to publish in this form has not been obtained. If any copyright material has not been acknowledged please write and let us know so we may rectify in any future reprint.

Except as permitted under U.S. Copyright Law, no part of this book may be reprinted, reproduced, transmitted, or utilized in any form by any electronic, mechanical, or other means, now known or hereafter invented, including photocopying, microfilming, and recording, or in any information storage or retrieval system, without written permission from the publishers.

For permission to photocopy or use material electronically from this work, access [www.copyright.com](http://www.copyright.com) or contact the Copyright Clearance Center, Inc. (CCC), 222 Rosewood Drive, Danvers, MA 01923, 978-750-8400. For works that are not available on CCC please contact [mpkbookspermissions@tandf.co.uk](mailto:mpkbookspermissions@tandf.co.uk)

*Trademark notice:* Product or corporate names may be trademarks or registered trademarks and are used only for identification and explanation without intent to infringe.

*Library of Congress Cataloging-in-Publication Data*

Names: Gupta, Ram K., editor.

Title: Specialty polymers : fundamentals, properties, applications and advances / edited by Ram K. Gupta.

Other titles: Specialty polymers (CRC Press)

Description: First edition. | Boca Raton : CRC Press, 2023. |

Includes bibliographical references and index. |

Identifiers: LCCN 2022037366 (print) | LCCN 2022037367 (ebook) |

Subjects: LCSH: Polymers. | Polymers—Industrial applications.

Classification: LCC TP1087 .S64 2023 (print) |

LCC TP1087 (ebook) | DDC 668.9—dc23/eng/20221108

LC record available at <https://lcn.loc.gov/2022037366>

LC ebook record available at <https://lcn.loc.gov/2022037367>

ISBN: 9781032243726 (hbk)

ISBN: 9781032243740 (pbk)

ISBN: 9781003278269 (ebk)

DOI: 10.1201/9781003278269

Typeset in Times

by Newgen Publishing UK



---

# 29 Polymers in Display Devices

*Neena George,<sup>1</sup> Ajalesh B. Nair,<sup>2</sup> Simi Pushpan K.,<sup>2</sup> and Rani Joseph<sup>3</sup>*

<sup>1</sup> Post Graduate and Research Department of Chemistry, Maharaja's College, Ernakulam-682 011, Kerala, India

<sup>2</sup> Post Graduate and Research Department of Chemistry, Union Christian College, Aluva-683 102, Kerala, India

<sup>3</sup> Department of Polymer Science and Rubber Technology, Cochin University of Science and Technology, Cochin-22, Kerala, India

## 1 INTRODUCTION

The present digital era demands instantaneous audio-visual information, even from remote global locations. People favor compact, light, low-power displays when they're on the go, while huge and flat/thin panels are preferred at home. In the current scenario, we prefer high-resolution colored photographs with a lot of brightness and contrast that can be seen from any angle. In man-machine communication, the display is crucial. New display concepts are popping up. Polymer-based LED displays, electro-chromic displays, and electro-phoretic displays based on nanoparticles are all recent examples. The polymer-driven market is a highly competent area for transparent, robust, light-weight, and flexible displays which are comparatively less expensive materials and suitable for bulk production.

Polymer-based flexible electronics allow border-line technology and are used to offer novel methods to interact with the wider world and unlock doors in the direction of innovative applications such as wearable display devices [1], e-skin (electronic skins) [2], flexible/bendable display devices [3], and electronic papers. The main compensation of flexible electronics includes inter-facial conformation changes, and their flexibility, stretchability, and lower weight.

Polymeric materials are integrated into the construction and performance of liquid crystal displays (LCDs). Polymeric or organic LEDs are semiconductor display devices that can be used for inkjet and screen-printing technologies because of their conductivity, flexibility, and transparency, and also their structural properties. Electrochromic polymers are widely used in transparent semiconductor technology. In addition, thin-film transistors (TFTs) and electronic papers are a key component in flexible thin-film electronics.

The aim of this chapter is to provide an understand of the use of conjugated/conducting polymers in LEDs, LCDs, TFTs, and other display devices such as electrochromic and electrophoretic displays. The use of transparent polymer- and nanomaterial-based conductive electrodes in electro-optic devices is also discussed. Additionally, research gaps/future perspectives of polymers in display devices are also highlighted in this chapter.

## 2 POLYMER-BASED LCDS

Liquid crystals (LCs) are rod-like complex organic molecules with an organized meso-phase change between the melting temperature of crystal form and its isotropic liquid. In solid-state liquid crystal, there exist parallel arrangements of molecules. In the cloudy liquid state at slightly higher temperatures, the molecules have more freedom than in the solid state but they are inclined to line up in the same direction which results in reflecting light that creates cloudiness, while in the higher temperature range, the disconcerted molecules tend to create a clear liquid.

# APPLICATIONS OF UNSATURATED POLYESTER RESINS

SYNTHESIS, MODIFICATIONS,  
AND PREPARATION METHODS

EDITED BY  
SABU THOMAS  
CINTIL JOSE CHIRAYIL



Elsevier

Radarweg 29, PO Box 211, 1000 AE Amsterdam, Netherlands  
The Boulevard, Langford Lane, Kidlington, Oxford OX5 1GB, United Kingdom  
50 Hampshire Street, 5th Floor, Cambridge, MA 02139, United States

Copyright © 2023 Elsevier Inc. All rights reserved.

No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or any information storage and retrieval system, without permission in writing from the publisher. Details on how to seek permission, further information about the Publisher's permissions policies and our arrangements with organizations such as the Copyright Clearance Center and the Copyright Licensing Agency, can be found at our website: [www.elsevier.com/permissions](http://www.elsevier.com/permissions).

This book and the individual contributions contained in it are protected under copyright by the Publisher (other than as may be noted herein).

### Notices

Knowledge and best practice in this field are constantly changing. As new research and experience broaden our understanding, changes in research methods, professional practices, or medical treatment may become necessary.

Practitioners and researchers must always rely on their own experience and knowledge in evaluating and using any information, methods, compounds, or experiments described herein. In using such information or methods they should be mindful of their own safety and the safety of others, including parties for whom they have a professional responsibility.

To the fullest extent of the law, neither the Publisher nor the authors, contributors, or editors, assume any liability for any injury and/or damage to persons or property as a matter of products liability, negligence or otherwise, or from any use or operation of any methods, products, instructions, or ideas contained in the material herein.

ISBN: 978-0-323-99466-8

For information on all Elsevier publications visit our website at  
<https://www.elsevier.com/books-and-journals>

*Publisher:* Matthew Deans

*Acquisitions Editor:* Ana Claudia A. Garcia

*Editorial Project Manager:* Rafael Guilherme Trombaco

*Production Project Manager:* Prem Kumar Kaliamoorthi

*Cover Designer:* Vicky Pearson Esser

Typeset by TNQ Technologies



# Unsaturated polyester resins and their classification

**Divya Susan Philips and Ajalesh B. Nair**

*Department of Chemistry, Union Christian College, Aluva, Kerala, India*

## 2.1 Introduction

The word “polymer” requires no introduction to any modern society in the present scenario. Our world and our body as such are composed and entangled by the vast majority of polymer materials [1]. The polymer industry of the modern era is blooming with innovative products adorned with amazing properties that are made better each day. Among the different members of polymer family, polyesters have attained growing interest owing to their commercial importance [2]. Polyesters are copolymers of dicarboxylic acids and diols resulting in ester linkages in the polymeric backbone. Polyesters have outstanding thermal stability, exceptional mechanical properties, and the flexibility to be molded into desired shape and size depending on their application [2]. A subtle change in the monomeric units taken—be it the dicarboxylic acid or the diol, can completely alter the properties of the resulting polyester, and this makes it an extremely sought-after material in the industrial sector for technological innovations. This means that these can be tailor-made to meet the desired application. Polyesters are further classified into *linear saturated polyesters*, *polycarbonates*, *alkyd resins*, and *unsaturated* (i.e., cross-linkable) *polyesters*. Among these, unsaturated polyesters (UPs) are of greater significance because of the unsaturation present in them which offers the freedom to prepare 3D frameworks.

UPs resins are condensation products of unsaturated acids or anhydrides and diols with/without diacids [3]. The physical nature (viscous liquid/brittle solid) of these resins largely depends on the chemical constituents and extent of cross-linking. These resins are widely used as components in plastics, coatings,

# APPLICATIONS OF UNSATURATED POLYESTER RESINS

SYNTHESIS, MODIFICATIONS,  
AND PREPARATION METHODS

EDITED BY  
SABU THOMAS  
CINTIL JOSE CHIRAYIL



# **APPLICATIONS OF UNSATURATED POLYESTER RESINS**

## **Synthesis, Modifications, and Preparation Methods**

Edited by

**SABU THOMAS**

International and Inter University Centre for Nanoscience and Nanotechnology, Mahatma Gandhi University, Kottayam, Kerala, India

**CINTIL JOSE CHIRAYIL**

Department of Chemistry, Newman College Thodupuzha, Idukki, Kerala, India



ELSEVIER

# Application of UPR in marine applications

**Annie Stephy<sup>1</sup>, Neethumol Varghese<sup>2</sup>, Minu Joys<sup>2</sup>,  
Tania Francis<sup>1</sup> and Ajalesh B. Nair<sup>2</sup>**

<sup>1</sup>Department of Chemistry, St. Joseph's College (Autonomous), Devagiri, Calicut, Kerala, India; <sup>2</sup>Department of Chemistry, Union Christian College, Aluva, Kerala, India

## 13.1 Introduction

Polymers have been the focus of a myriad of research over the past 40 years owing to the high significance in efficiency and low-weight material innovation for various technical structures. Unsaturated polyester resins (UPRs), epoxy resins, vinyl esters, and other matrices have been developed by scientists in the 21st century for use in polymer-based composites. UPRs, a type of thermosetting polymeric material having excellent wetting characteristics with reinforcements, high physiochemical characteristics, is highly cost-effective [1]. It has been widely employed for a variety of applications over the last four decades [2]. It is extensively used in commercial applications as fibers, polymers, composites, and coatings, and its widespread use can be attributed to its relatively inexpensive cost and ease of availability.

The diversity in the properties of the resin, combined with their inexpensive price, has rekindled attention to these resins as a fundamental matrix material for a variety of applications. UPRs are indeed the outcome of the condensation of unsaturated acids or anhydrides, along with diols with or without diacids. Unsaturated acids or anhydrides, in addition to diols with or without diacids, are indeed condensed to produce UPRs as the outcome. The unsaturation serves as a site for further cross-linking [3,4].

UPR has been proven to be beneficial in various applications, rendering it a significant thermosetting system [5,6]. These resins are attributed to various fillers and reinforcements and hardened using free-radical precursors to develop thermoset structures with a wide range of physicochemical and mechanical potentials,

# APPLICATIONS OF UNSATURATED POLYESTER RESINS

SYNTHESIS, MODIFICATIONS,  
AND PREPARATION METHODS

EDITED BY  
SABU THOMAS  
CINTIL JOSE CHIRAYIL





Elsevier

Radarweg 29, PO Box 211, 1000 AE Amsterdam, Netherlands  
The Boulevard, Langford Lane, Kidlington, Oxford OX5 1GB, United Kingdom  
50 Hampshire Street, 5th Floor, Cambridge, MA 02139, United States

Copyright © 2023 Elsevier Inc. All rights reserved.

No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or any information storage and retrieval system, without permission in writing from the publisher. Details on how to seek permission, further information about the Publisher's permissions policies and our arrangements with organizations such as the Copyright Clearance Center and the Copyright Licensing Agency, can be found at our website: [www.elsevier.com/permissions](http://www.elsevier.com/permissions).

This book and the individual contributions contained in it are protected under copyright by the Publisher (other than as may be noted herein).

### Notices

Knowledge and best practice in this field are constantly changing. As new research and experience broaden our understanding, changes in research methods, professional practices, or medical treatment may become necessary.

Practitioners and researchers must always rely on their own experience and knowledge in evaluating and using any information, methods, compounds, or experiments described herein. In using such information or methods they should be mindful of their own safety and the safety of others, including parties for whom they have a professional responsibility.

To the fullest extent of the law, neither the Publisher nor the authors, contributors, or editors, assume any liability for any injury and/or damage to persons or property as a matter of products liability, negligence or otherwise, or from any use or operation of any methods, products, instructions, or ideas contained in the material herein.

ISBN: 978-0-323-99466-8

For information on all Elsevier publications visit our website at  
<https://www.elsevier.com/books-and-journals>

*Publisher:* Matthew Deans

*Acquisitions Editor:* Ana Claudia A. Garcia

*Editorial Project Manager:* Rafael Guilherme Trombaco

*Production Project Manager:* Prem Kumar Kaliamoorthi

*Cover Designer:* Vicky Pearson Esser

Typeset by TNQ Technologies



# Application of UPR in pipeline corrosion: protection and applications

**Manjusha Hariharan, Shasiya Panikkaveetil Shamsudheen, Neethumol Varghese and Ajalesh B. Nair**

*Department of Chemistry, Union Christian College, Aluva, Kerala, India*

## 16.1 Introduction

Pipeline corrosion is the deterioration of the pipe material and associated system due to its interaction with the working environment. Corrosion damages pipelines and accessories made of metals like copper, aluminum, cast iron, carbon steel, stainless steel and alloy steel pipes buried underground, and underwater or other pipelines.

Pipeline damage is one of the biggest problems reducing the capacity of metallic pipelines, while matrix cracking/abrasion can cause leakage of composite pipelines significant damage and can reduce the structural integrity of the pipelines [1]. Both corrosion and abrasion cause significant damage and reduce the structural integrity of pipelines. Pipeline corrosion and associated catastrophic failures will cost the economy billions of dollars. The pipeline network system used for maximum lifespan must be protected from damage. With proper pipeline monitoring and maintenance, corrosion is completely manageable. Designing and selecting the best systems and materials for pipelines are a very important issue for the oil and gas industry. There are a number of methods of protection against corrosion that are in common use, whether by providing a physical barrier or deliberate control of the corrosion reaction, but unfortunately very few possibilities are appropriate or feasible in the oral environment.

Basically, there are five methods of corrosion control such as change to a more suitable material, modification to the environment. The use of protective coating, design modification to the

# **Nurturing Connections: A Holistic Guide To Inspired Parenting**

**Editors**

**Dr. Seena M Mathai**

**Ms. Shahina H**

**Ms. Nimmy Johns**



**Research and Post Graduate  
Department of Psychology  
Union Christian College, Aluva, Kerala**

# **Nurturing Connections: A Holistic Guide To Inspired Parenting**

Research and Post Graduate Department of Psychology,  
Union Christian College, Aluva, Kerala

Editors:

Dr. Seena M Mathai

Ms. Shahina H

Ms. Nimmy Johns

**Copyright©2023 by Research and Post Graduate  
Department of Psychology**

**Publisher:** Union Christian College, Aluva- 683102

**ISBN: 978-81-960457-3-9**

**All rights reserved.** No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without written permission from the Research and Post Graduate Department of Psychology, Union Christian College, Aluva, Kerala.

The chapters published in this book are the individual research and opinion of the authors and the Department of Psychology or the editors are not responsible for any misinterpretation.

**Printing:** Indu Systems, Kalamassery, Kerala

**Cover Design:** Ms. Shahina H.

**Price:** Rs. 200/-

## **UNDERSTANDING CHILD DEVELOPMENT: NURTURING THE PATH TO THRIVING**

*Dr. Malini R.*

*“If parents want to give their children a gift, the best thing they can do is to teach their children to love challenges, be intrigued by mistakes, enjoy effort, and keep on learning. That way, their children don’t have to be slaves of praise. They will have a lifelong way to build and repair their confidence”*

*-Carol. S. Dweck*

Child development is a multifaceted process that begins in the womb and continues throughout a person's life. It encompasses various aspects, including prenatal development, physical development, cognitive development, social and emotional development, parenting styles, the interplay of nature and nurture, developmental milestones, individual differences, and the cultural context. Recognizing and understanding these factors is crucial for parents to provide effective support and guidance, ultimately enabling children to reach their full potential.

### **Prenatal period and its significance**

Child development commences even before birth, emphasizing the importance of prenatal care in promoting healthy growth and development. The prenatal developmental period, which refers to the time from

# **Nurturing Connections: A Holistic Guide To Inspired Parenting**

**Editors**

**Dr. Seena M Mathai**

**Ms. Shahina H**

**Ms. Nimmy Johns**



**Research and Post Graduate  
Department of Psychology  
Union Christian College, Aluva, Kerala**

# **Nurturing Connections: A Holistic Guide To Inspired Parenting**

Research and Post Graduate Department of Psychology,  
Union Christian College, Aluva, Kerala

Editors:

Dr. Seena M Mathai

Ms. Shahina H

Ms. Nimmy Johns

**Copyright©2023 by Research and Post Graduate  
Department of Psychology**

**Publisher:** Union Christian College, Aluva- 683102

**ISBN: 978-81-960457-3-9**

**All rights reserved.** No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without written permission from the Research and Post Graduate Department of Psychology, Union Christian College, Aluva, Kerala.

The chapters published in this book are the individual research and opinion of the authors and the Department of Psychology or the editors are not responsible for any misinterpretation.

**Printing:** Indu Systems, Kalamassery, Kerala

**Cover Design:** Ms. Shahina H.

**Price:** Rs. 200/-

## GOOD COUPLES AS GOOD PARENTS

*Dr Seena M Mathai*

*“If there is anything that we wish to change in the child,  
we should first examine it and see whether it is  
something that could better be changed in ourselves”*

*-Carl. G. Jung*

Effective parenting plays a vital role in promoting children's healthy development. Creating a caring and supportive environment helps children acquire emotional, cognitive, and social skills. Parenting knowledge, attitudes, and practices are interconnected and reciprocally influence each other. Practices are informed by knowledge and attitudes, and the application of knowledge is often driven by attitudes. For instance, behaviour modification theory suggests that attitudes play a role in determining whether individuals will utilize the knowledge and translate it into action (Ajzen & Fishbein, 1980). Parenting practices also contribute to parents' knowledge and shape their attitudes. Parenting attitudes are influenced by parenting self-efficacy, which refers to parents' belief in their ability to succeed in the parenting role. Furthermore, parenting knowledge, attitudes, and practices are not only influenced by each other but also by various contextual factors. These factors include children's characteristics, such as gender and temperament, as well as parents' own experiences and circumstances. Expectations learned from family, friends, and social networks, as well as cultural systems, also



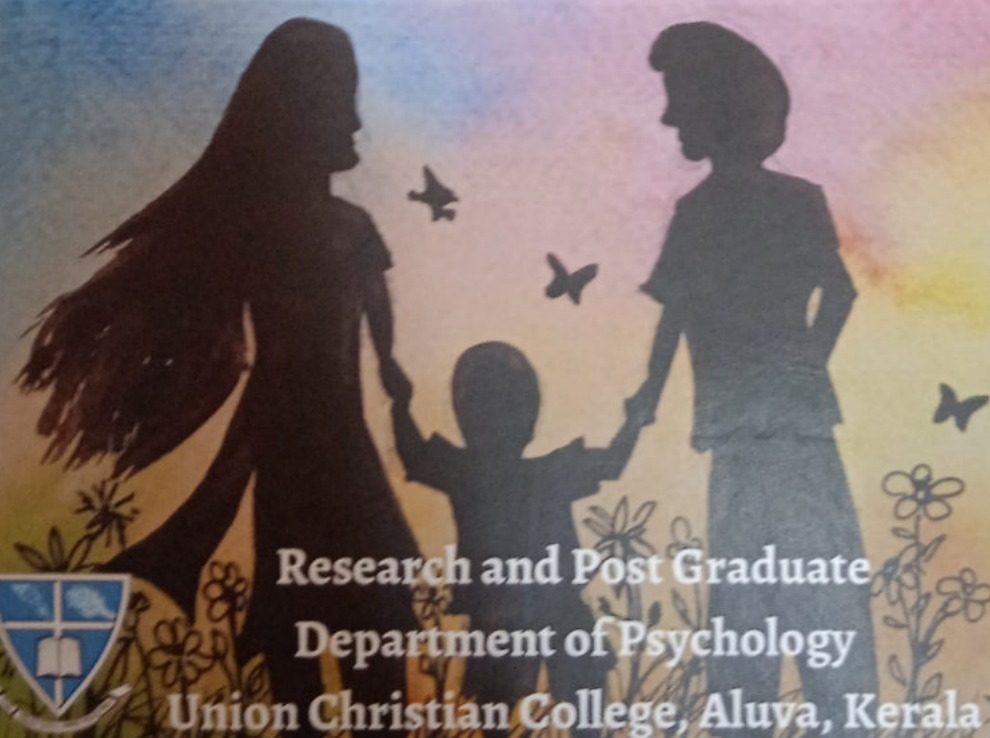
# Nurturing Connections: A Holistic Guide To Inspired Parenting

Editors

Dr. Seena M Mathai

Ms. Shahina H

Ms. Nimmy Johns



Research and Post Graduate  
Department of Psychology  
Union Christian College, Aluva, Kerala

**NURTURING CONNECTIONS: A HOLISTIC  
GUIDE TO INSPIRED PARENTING**

**Editors:**

**Dr. Seena M Mathai**

**Ms. Shahina H**

**Ms. Nimmy Johns**

**Research and Post Graduate Department of  
Psychology**

**Union Christian College, Aluva – 683102**

# **Nurturing Connections: A Holistic Guide To Inspired Parenting**

Research and Post Graduate Department of Psychology,  
Union Christian College, Aluva, Kerala

Editors:

Dr. Seena M Mathai

Ms. Shahina H

Ms. Nimmy Johns

Copyright©2023 by Research and Post Graduate  
Department of Psychology

**Publisher:** Union Christian College, Aluva- 683102

**ISBN:** 978-81-960457-3-9

**All rights reserved.** No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without written permission from the Research and Post Graduate Department of Psychology, Union Christian College, Aluva, Kerala.

The chapters published in this book are the individual research and opinion of the authors and the Department of Psychology or the editors are not responsible for any misinterpretation.

**Printing:** Indu Systems, Kalamassery, Kerala

**Cover Design:** Ms. Shahina H.

**Price:** Rs. 200/-

## Contents

PREFACE

GOOD COUPLES AS GOOD PARENTS ..... 1

Dr Seena M Mathai

UNDERSTANDING CHILD DEVELOPMENT: NURTURING  
THE PATH TO THRIVING ..... 15

Dr. Malini R.

UNDERSTANDING PERCEIVED PARENTING ..... 27

Fr. Johnson Joseph CST and Dr Vidhya Ravindranadan

PARENTING STYLES AND ITS CONCERNS: A SNEAK  
PEEK.....36

Swathymol P. S.

PARENTING IN DIVERSE CONTEXTS ..... 46

Anjali Sudhindran

OPTIMIZING PARENT-CHILD RELATIONSHIP ..... 57

Dr Muhsina Lubaiba K. M. Asif

ROLE OF FOSTERING HABITS IN CHILDREN ..... 65

Shahina H

NURTURING POSITIVE EMOTIONAL DEVELOPMENT IN  
PARENTS AND THE CHILDREN..... 74

Asna M Nesrin

EFFECTIVE COMMUNICATION IN PARENTING..... 83

Shahina H

EFFECTIVE PARENTING METHODS.....	93
Dr Seena M. Mathai	
EMPOWERING GROWTH: NURTURING THROUGH POSITIVE DISCIPLINE.....	103
Nimmy Johns	
MANAGING DIFFICULT CHILDREN.....	112
Dr Nadia Moideen and Dr. Seena M Mathai	
TOXICITY IN PARENTING.....	122
Asritha Raj and Dr Vidhya Ravindranadan	
SOCIAL ENGINEERING IN PARENTING.....	132
Syna Soosan Abraham and Dr Vidhya Ravindranadan	
CHALLENGES IN PARENTING.....	143
Deepa Francis M. and Dr Justine K. James	
REVERSE PARENTING: PARENTING THE ELDERLY WITH DEMENTIA IN THEIR SECOND CHILDHOOD.....	154
Dr Neelima Ranjith	
EPILOGUE.....	162
REFERENCES.....	167
INDEX OF KEY WORDS	
AUTHOR INDEX	
LIST OF CONTRIBUTORS	

## GOOD COUPLES AS GOOD PARENTS

*Dr Seena M Mathai*

*"If there is anything that we wish to change in the child,  
we should first examine it and see whether it is  
something that could better be changed in ourselves."*

*-Carl. G. Jung*

Effective parenting plays a vital role in promoting children's healthy development. Creating a caring and supportive environment helps children acquire emotional, cognitive, and social skills. Parenting knowledge, attitudes, and practices are interconnected and reciprocally influence each other. Practices are informed by knowledge and attitudes, and the application of knowledge is often driven by attitudes. For instance, behaviour modification theory suggests that attitudes play a role in determining whether individuals will utilize the knowledge and translate it into action (Ajzen & Fishbein, 1980). Parenting practices also contribute to parents' knowledge and shape their attitudes. Parenting attitudes are influenced by parenting self-efficacy, which refers to parents' belief in their ability to succeed in the parenting role. Furthermore, parenting knowledge, attitudes, and practices are not only influenced by each other but also by various contextual factors. These factors include children's characteristics, such as gender and temperament, as well as parents' own experiences and circumstances. Expectations learned from family, friends, and social networks, as well as cultural systems, also

# UNDERSTANDING CHILD DEVELOPMENT: NURTURING THE PATH TO THRIVING

*Dr. Malini R.*

*“If parents want to give their children a gift, the best thing they can do is to teach their children to love challenges, be intrigued by mistakes, enjoy effort, and keep on learning. That way, their children don't have to be slaves of praise. They will have a lifelong way to build and repair their confidence”*

*-Carol. S. Dweck*

Child development is a multifaceted process that begins in the womb and continues throughout a person's life. It encompasses various aspects, including prenatal development, physical development, cognitive development, social and emotional development, parenting styles, the interplay of nature and nurture, developmental milestones, individual differences, and the cultural context. Recognizing and understanding these factors is crucial for parents to provide effective support and guidance, ultimately enabling children to reach their full potential.

## **Prenatal period and its significance**

Child development commences even before birth, emphasizing the importance of prenatal care in promoting healthy growth and development. The prenatal developmental period, which refers to the time from

## UNDERSTANDING PERCEIVED PARENTING

*Fr. Johnson Joseph and Dr Vidhya Ravindranadan*

*"Don't worry that children never listen to you; worry that they are always watching you."*

*-Robert Fulghum*

Parenting is a skilful craft, yielding profound influence over an individual's personality and the intricate interplay of their psychological and social mechanisms, ultimately shaping their essence. The growth and development of any living organism are profoundly impacted by the fundamental conditions and processes of nature and nurture. Nature encompasses the innate tendencies and capacities inherent in life while nurturing represents a multifaceted and diverse blend of biological, psychological, and social influences.

In an era of rapid societal transformation, the task of raising children becomes increasingly daunting. This is evident in the intricate web of evolving family structures, the delicate balance of managing professional and personal commitments, and the pervasive influence of social and environmental issues on communities. Amidst these complexities, parents bear the unique responsibility of nurturing their children. Employing effective parenting strategies allows them to shape a child's behaviour, which, in turn, manifests itself in their interactions, education, support systems, and limitations. It is through family dynamics and parental practices that social and educational development are profoundly influenced.



## EFFECTIVE PARENTING METHODS

*Dr Seena M. Mathai*

*"You can't stop the waves, but you can learn to surf."*

*-Jon Kabat-Zinn*

Parenting can be a challenging and rewarding experience, but it is not without its difficulties. When dealing with their children, parents may find it difficult to come up with appropriate disciplinary measures to control their child's behaviour or communication problems. For working parents in particular, juggling the demands of parenting with work and other obligations can be difficult. Relationships can suffer from having children, especially if the parents have conflicting parenting philosophies or find it difficult to spend time together. It is significant to remember that ineffective parenting can be detrimental to a child's well-being.

### **Mindful Parenting**

Mindful parenting is an approach to parenting that involves being fully present and engaged with your child at the moment, without judgment or distraction. It is founded on mindfulness principles, which include developing present-moment awareness and acceptance and applying those ideas to your relationships with your child.

By encouraging children to be in the now, paying attention, and showing empathy, mindful parenting can

## MANAGING DIFFICULT CHILDREN

*Dr Nadia Moideen and Dr. Seena M Mathai*

*"Behaviorally challenging kids are challenging because they're lacking the skills to not be challenging."*

*-Ross W. Greene*

For most parents, attempting to regulate a child's behaviour is frustrating. However, very few of these parents experience the same level of suffering from dramatic outbursts. Many parents scream angrily and punish the youngster right away. This might temporarily cease the behaviour, but it won't address the underlying problems that gave rise to it in the first place. Such behaviours, when persistent, indicate a child's need for mental health care. While trying to understand a young child's hard behaviour, one cannot always assume that "what a child does" and "why he does it" are related. Children express themselves in a wide range of ways and experience a wide range of emotions. Due to their social situations, schoolchildren frequently exhibit rebellion and occasionally lack emotional control, while they are still developing their social and emotional abilities. The caregivers must encourage the child as he grows and discovers how to control his own emotions. Guidance and support given to a child's good behaviour will aid him in learning appropriate behaviours.

## TOXICITY IN PARENTING

*Asritha Raj and Dr Vidhya Ravindranadan*

*"The only people who think parenting and teaching are easy, are those who have never done either one."*

*- Thomas W. Phelan*

The development of a child can be influenced either positively or negatively by parenting. Fogel and Melson (1988) define parenting style as the consistent behavioural tendencies exhibited by parents when disciplining or interacting with their children. The primary focus of the parent-child relationship is to fulfil both the physical and emotional needs of the child. The impact of parenting extends beyond early childhood and can continue to shape individuals throughout their adult lives, even influencing their parenting styles. Research indicates that parenting practices play a significant role in shaping the personality development of adolescents (Belsky & Barends, 2002).

No one is inherently a flawless parent, as they are human beings who can sometimes yell at their children, be emotionally distant, or exhibit occasional controlling behaviour, among other things. However, when a parent consistently and dominantly displays negative patterns of behaviour that harm a child, they are referred to as toxic parents. Toxic parents inflict emotional harm, abuse, ongoing trauma, and degradation upon their children, and these effects persist throughout the child's life. Various types of toxic parenting exist, such as Inadequate Parents,

# **SOCIAL ENGINEERING IN PARENTING**

*Syna Soosan Abraham and Dr Vidhya Ravindranadan*

*“There can be no keener revelation of a society’s soul than the way in which it treats its children.”*

*-Nelson Mandela*

The influence and manipulation tactics in social engineering have long been used by scammers and con artists, with devastating results. There are widespread reports of the use of social engineering as an art of exploiting human psychology, rather than technical hacking techniques, to gain access to buildings, systems, or data. (Fruhlinger, 2022). Technology continues to change, and it outpaces our evolution. That is, our behaviour as humans, socially and from a psychological standpoint, changes slower than technology. This is what social engineering exploits.

Social Engineering often relies on the six Principles of Influence established by Dr Robert Cialdini, a behavioural Psychologist, Professor and author of ‘Influence: The Psychology of Persuasion.’ He has spent his entire career studying what makes people say “Yes” to requests. In his book, Dr Cialdini, (2007) states, “Social Proof; for example, in one experiment, one or more confederates would look up into the sky; bystanders would then look up into the sky to see what they were seeing. At one point this experiment aborted, as so many people were looking up that they stopped traffic.”

# **REVERSE PARENTING: PARENTING THE ELDERLY WITH DEMENTIA IN THEIR SECOND CHILDHOOD**

*Dr Neelima Ranjith*

*“By the time you’re 80 years old, you’ve learned  
everything; You only have to remember it”*

*-George Burns*

Ageing is a normal process in all life forms. Nevertheless, human beings are probably the only species on earth viewing the process of ageing or older age as a concern. Several factors could contribute to this concern such as retirement from jobs, the general decline in physical and mental health, the decline in cognitive and emotional condition, changes in sleep patterns causing health and emotional disturbances and social isolation resulting from the death of a spouse, or a friend (Zillmer, Spiers & Culbertson, 2008). These factors would probably make individuals dependable on others for their day-to-day activities; where their children who are mostly in their middle adulthood take up the responsibilities and roles of parenting their parents; a concept known as ‘reverse parenting’.

## **Reverse Parenting and related issues**

Reverse parenting or role reversal is common in most cultures, especially in India, and in most situations, even if the elderly is financially independent the old age

# **Nurturing Connections: A Holistic Guide To Inspired Parenting**

**Editors**

**Dr. Seena M Mathai**

**Ms. Shahina H**

**Ms. Nimmy Johns**



**Research and Post Graduate  
Department of Psychology  
Union Christian College, Aluva, Kerala**

# **Nurturing Connections: A Holistic Guide To Inspired Parenting**

Research and Post Graduate Department of Psychology,  
Union Christian College, Aluva, Kerala

Editors:

Dr. Seena M Mathai

Ms. Shahina H

Ms. Nimmy Johns

**Copyright©2023 by Research and Post Graduate  
Department of Psychology**

**Publisher:** Union Christian College, Aluva- 683102

**ISBN: 978-81-960457-3-9**

**All rights reserved.** No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without written permission from the Research and Post Graduate Department of Psychology, Union Christian College, Aluva, Kerala.

The chapters published in this book are the individual research and opinion of the authors and the Department of Psychology or the editors are not responsible for any misinterpretation.

**Printing:** Indu Systems, Kalamassery, Kerala

**Cover Design:** Ms. Shahina H.

**Price:** Rs. 200/-

## UNDERSTANDING PERCEIVED PARENTING

*Fr. Johnson Joseph and Dr Vidhya Ravindranadan*

*“Don't worry that children never listen to you; worry that they are always watching you.”*

*-Robert Fulghum*

Parenting is a skilful craft, yielding profound influence over an individual's personality and the intricate interplay of their psychological and social mechanisms, ultimately shaping their essence. The growth and development of any living organism are profoundly impacted by the fundamental conditions and processes of nature and nurture. Nature encompasses the innate tendencies and capacities inherent in life while nurturing represents a multifaceted and diverse blend of biological, psychological, and social influences.

In an era of rapid societal transformation, the task of raising children becomes increasingly daunting. This is evident in the intricate web of evolving family structures, the delicate balance of managing professional and personal commitments, and the pervasive influence of social and environmental issues on communities. Amidst these complexities, parents bear the unique responsibility of nurturing their children. Employing effective parenting strategies allows them to shape a child's behaviour, which, in turn, manifests itself in their interactions, education, support systems, and limitations. It is through family dynamics and parental practices that social and educational development are profoundly influenced.



# **Nurturing Connections: A Holistic Guide To Inspired Parenting**

**Editors**

**Dr. Seena M Mathai**

**Ms. Shahina H**

**Ms. Nimmy Johns**



**Research and Post Graduate  
Department of Psychology  
Union Christian College, Aluva, Kerala**

# **Nurturing Connections: A Holistic Guide To Inspired Parenting**

Research and Post Graduate Department of Psychology,  
Union Christian College, Aluva, Kerala

Editors:

Dr. Seena M Mathai

Ms. Shahina H

Ms. Nimmy Johns

**Copyright©2023 by Research and Post Graduate  
Department of Psychology**

**Publisher:** Union Christian College, Aluva- 683102

**ISBN: 978-81-960457-3-9**

**All rights reserved.** No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without written permission from the Research and Post Graduate Department of Psychology, Union Christian College, Aluva, Kerala.

The chapters published in this book are the individual research and opinion of the authors and the Department of Psychology or the editors are not responsible for any misinterpretation.

**Printing:** Indu Systems, Kalamassery, Kerala

**Cover Design:** Ms. Shahina H.

**Price:** Rs. 200/-

## TOXICITY IN PARENTING

*Asritha Raj and Dr Vidhya Ravindranadan*

*“The only people who think parenting and teaching are easy, are those who have never done either one.”*

*- Thomas W. Phelan*

The development of a child can be influenced either positively or negatively by parenting. Fogel and Melson (1988) define parenting style as the consistent behavioural tendencies exhibited by parents when disciplining or interacting with their children. The primary focus of the parent-child relationship is to fulfil both the physical and emotional needs of the child. The impact of parenting extends beyond early childhood and can continue to shape individuals throughout their adult lives, even influencing their parenting styles. Research indicates that parenting practices play a significant role in shaping the personality development of adolescents (Belsky & Barends, 2002).

No one is inherently a flawless parent, as they are human beings who can sometimes yell at their children, be emotionally distant, or exhibit occasional controlling behaviour, among other things. However, when a parent consistently and dominantly displays negative patterns of behaviour that harm a child, they are referred to as toxic parents. Toxic parents inflict emotional harm, abuse, ongoing trauma, and degradation upon their children, and these effects persist throughout the child's life. Various types of toxic parenting exist, such as Inadequate Parents,

# **Nurturing Connections: A Holistic Guide To Inspired Parenting**

**Editors**

**Dr. Seena M Mathai**

**Ms. Shahina H**

**Ms. Nimmy Johns**



**Research and Post Graduate  
Department of Psychology  
Union Christian College, Aluva, Kerala**

# **Nurturing Connections: A Holistic Guide To Inspired Parenting**

Research and Post Graduate Department of Psychology,  
Union Christian College, Aluva, Kerala

Editors:

Dr. Seena M Mathai

Ms. Shahina H

Ms. Nimmy Johns

**Copyright©2023 by Research and Post Graduate  
Department of Psychology**

**Publisher:** Union Christian College, Aluva- 683102

**ISBN: 978-81-960457-3-9**

**All rights reserved.** No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without written permission from the Research and Post Graduate Department of Psychology, Union Christian College, Aluva, Kerala.

The chapters published in this book are the individual research and opinion of the authors and the Department of Psychology or the editors are not responsible for any misinterpretation.

**Printing:** Indu Systems, Kalamassery, Kerala

**Cover Design:** Ms. Shahina H.

**Price:** Rs. 200/-

## **SOCIAL ENGINEERING IN PARENTING**

*Syna Soosan Abraham and Dr Vidhya Ravindranadan*

*“There can be no keener revelation of a society’s soul than the way in which it treats its children.”*

*-Nelson Mandela*

The influence and manipulation tactics in social engineering have long been used by scammers and con artists, with devastating results. There are widespread reports of the use of social engineering as an art of exploiting human psychology, rather than technical hacking techniques, to gain access to buildings, systems, or data. (Fruhlinger, 2022). Technology continues to change, and it outpaces our evolution. That is, our behaviour as humans, socially and from a psychological standpoint, changes slower than technology. This is what social engineering exploits.

Social Engineering often relies on the six Principles of Influence established by Dr Robert Cialdini, a behavioural Psychologist, Professor and author of ‘Influence: The Psychology of Persuasion.’ He has spent his entire career studying what makes people say “Yes” to requests. In his book, Dr Cialdini, (2007) states, “Social Proof; for example, in one experiment, one or more confederates would look up into the sky; bystanders would then look up into the sky to see what they were seeing. At one point this experiment aborted, as so many people were looking up that they stopped traffic.”

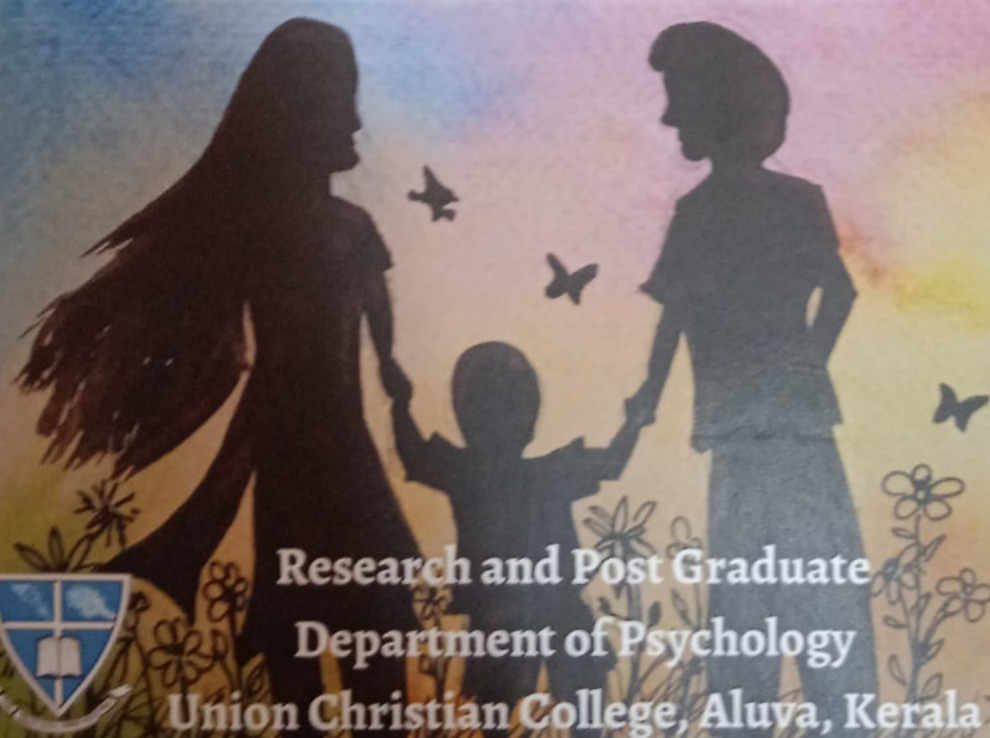
# Nurturing Connections: A Holistic Guide To Inspired Parenting

Editors

Dr. Seena M Mathai

Ms. Shahina H

Ms. Nimmy Johns



Research and Post Graduate  
Department of Psychology  
Union Christian College, Aluva, Kerala

**NURTURING CONNECTIONS: A HOLISTIC  
GUIDE TO INSPIRED PARENTING**

**Editors:**

**Dr. Seena M Mathai**

**Ms. Shahina H**

**Ms. Nimmy Johns**

**Research and Post Graduate Department of  
Psychology**

**Union Christian College, Aluva – 683102**



# **Nurturing Connections: A Holistic Guide To Inspired Parenting**

Research and Post Graduate Department of Psychology,  
Union Christian College, Aluva, Kerala

Editors:

Dr. Seena M Mathai

Ms. Shahina H

Ms. Nimmy Johns

Copyright©2023 by Research and Post Graduate  
Department of Psychology

**Publisher:** Union Christian College, Aluva- 683102

**ISBN:** 978-81-960457-3-9

**All rights reserved.** No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without written permission from the Research and Post Graduate Department of Psychology, Union Christian College, Aluva, Kerala.

The chapters published in this book are the individual research and opinion of the authors and the Department of Psychology or the editors are not responsible for any misinterpretation.

**Printing:** Indu Systems, Kalamassery, Kerala

**Cover Design:** Ms. Shahina H.

**Price:** Rs. 200/-

## Contents

PREFACE

GOOD COUPLES AS GOOD PARENTS ..... 1

Dr Seena M Mathai

UNDERSTANDING CHILD DEVELOPMENT: NURTURING  
THE PATH TO THRIVING ..... 15

Dr. Malini R.

UNDERSTANDING PERCEIVED PARENTING ..... 27

Fr. Johnson Joseph CST and Dr Vidhya Ravindranadan

PARENTING STYLES AND ITS CONCERNS: A SNEAK  
PEEK.....36

Swathymol P. S.

PARENTING IN DIVERSE CONTEXTS ..... 46

Anjali Sudhindran

OPTIMIZING PARENT-CHILD RELATIONSHIP ..... 57

Dr Muhsina Lubaiba K. M. Asif

ROLE OF FOSTERING HABITS IN CHILDREN ..... 65

Shahina H

NURTURING POSITIVE EMOTIONAL DEVELOPMENT IN  
PARENTS AND THE CHILDREN..... 74

Asna M Nesrin

EFFECTIVE COMMUNICATION IN PARENTING..... 83

Shahina H

EFFECTIVE PARENTING METHODS.....	93
Dr Seena M. Mathai	
EMPOWERING GROWTH: NURTURING THROUGH POSITIVE DISCIPLINE.....	103
Nimmy Johns	
MANAGING DIFFICULT CHILDREN.....	112
Dr Nadia Moideen and Dr. Seena M Mathai	
TOXICITY IN PARENTING.....	122
Asritha Raj and Dr Vidhya Ravindranadan	
SOCIAL ENGINEERING IN PARENTING.....	132
Syna Soosan Abraham and Dr Vidhya Ravindranadan	
CHALLENGES IN PARENTING.....	143
Deepa Francis M. and Dr Justine K. James	
REVERSE PARENTING: PARENTING THE ELDERLY WITH DEMENTIA IN THEIR SECOND CHILDHOOD.....	154
Dr Neelima Ranjith	
EPILOGUE.....	162
REFERENCES.....	167
INDEX OF KEY WORDS	
AUTHOR INDEX	
LIST OF CONTRIBUTORS	

## EFFECTIVE PARENTING METHODS

*Dr Seena M. Mathai*

*"You can't stop the waves, but you can learn to surf."*

*-Jon Kabat-Zinn*

Parenting can be a challenging and rewarding experience, but it is not without its difficulties. When dealing with their children, parents may find it difficult to come up with appropriate disciplinary measures to control their child's behaviour or communication problems. For working parents in particular, juggling the demands of parenting with work and other obligations can be difficult. Relationships can suffer from having children, especially if the parents have conflicting parenting philosophies or find it difficult to spend time together. It is significant to remember that ineffective parenting can be detrimental to a child's well-being.

### **Mindful Parenting**

Mindful parenting is an approach to parenting that involves being fully present and engaged with your child at the moment, without judgment or distraction. It is founded on mindfulness principles, which include developing present-moment awareness and acceptance and applying those ideas to your relationships with your child.

By encouraging children to be in the now, paying attention, and showing empathy, mindful parenting can

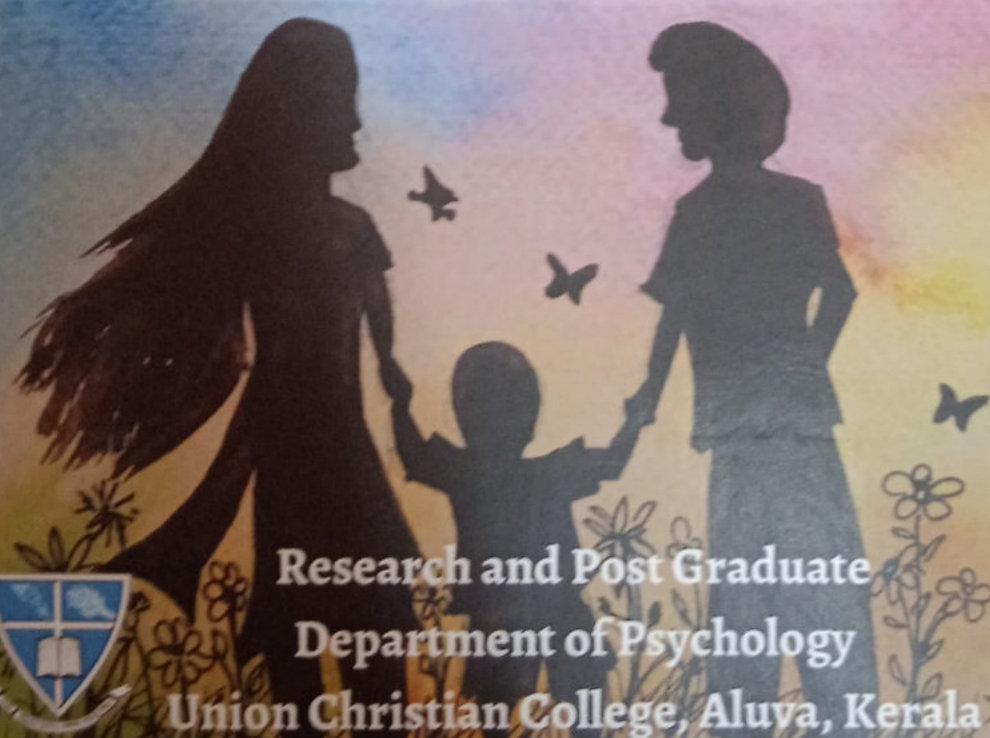
# Nurturing Connections: A Holistic Guide To Inspired Parenting

Editors

Dr. Seena M Mathai

Ms. Shahina H

Ms. Nimmy Johns



Research and Post Graduate  
Department of Psychology  
Union Christian College, Aluva, Kerala

# MANAGING DIFFICULT CHILDREN

*Dr Nadia Moideen and Dr. Seena M Mathai*

*"Behaviorally challenging kids are challenging because they're lacking the skills to not be challenging."*

*-Ross W. Greene*

For most parents, attempting to regulate a child's behaviour is frustrating. However, very few of these parents experience the same level of suffering from dramatic outbursts. Many parents scream angrily and punish the youngster right away. This might temporarily cease the behaviour, but it won't address the underlying problems that gave rise to it in the first place. Such behaviours, when persistent, indicate a child's need for mental health care. While trying to understand a young child's hard behaviour, one cannot always assume that "what a child does" and "why he does it" are related. Children express themselves in a wide range of ways and experience a wide range of emotions. Due to their social situations, schoolchildren frequently exhibit rebellion and occasionally lack emotional control, while they are still developing their social and emotional abilities. The caregivers must encourage the child as he grows and discovers how to control his own emotions. Guidance and support given to a child's good behaviour will aid him in learning appropriate behaviours.

# **Nurturing Connections: A Holistic Guide To Inspired Parenting**

**Editors**

**Dr. Seena M Mathai**

**Ms. Shahina H**

**Ms. Nimmy Johns**



**Research and Post Graduate  
Department of Psychology  
Union Christian College, Aluva, Kerala**

# **Nurturing Connections: A Holistic Guide To Inspired Parenting**

Research and Post Graduate Department of Psychology,  
Union Christian College, Aluva, Kerala

Editors:

Dr. Seena M Mathai

Ms. Shahina H

Ms. Nimmy Johns

**Copyright©2023 by Research and Post Graduate  
Department of Psychology**

**Publisher:** Union Christian College, Aluva- 683102

**ISBN: 978-81-960457-3-9**

**All rights reserved.** No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without written permission from the Research and Post Graduate Department of Psychology, Union Christian College, Aluva, Kerala.

The chapters published in this book are the individual research and opinion of the authors and the Department of Psychology or the editors are not responsible for any misinterpretation.

**Printing:** Indu Systems, Kalamassery, Kerala

**Cover Design:** Ms. Shahina H.

**Price:** Rs. 200/-



# **REVERSE PARENTING: PARENTING THE ELDERLY WITH DEMENTIA IN THEIR SECOND CHILDHOOD**

*Dr Neelima Ranjith*

*“By the time you’re 80 years old, you’ve learned  
everything; You only have to remember it”*

*-George Burns*

Ageing is a normal process in all life forms. Nevertheless, human beings are probably the only species on earth viewing the process of ageing or older age as a concern. Several factors could contribute to this concern such as retirement from jobs, the general decline in physical and mental health, the decline in cognitive and emotional condition, changes in sleep patterns causing health and emotional disturbances and social isolation resulting from the death of a spouse, or a friend (Zillmer, Spiers & Culbertson, 2008). These factors would probably make individuals dependable on others for their day-to-day activities; where their children who are mostly in their middle adulthood take up the responsibilities and roles of parenting their parents; a concept known as ‘reverse parenting’.

## **Reverse Parenting and related issues**

Reverse parenting or role reversal is common in most cultures, especially in India, and in most situations, even if the elderly is financially independent the old age



# TRUE to self WITH WORK AND LIFE

*Proceedings of*

**Dr. V. K. Alexander Memorial National Seminar**

11 February 2022



*Organized by*

**RESEARCH AND POST GRADUATE  
DEPARTMENT OF PSYCHOLOGY  
UNION CHRISTIAN COLLEGE, ALUVA, KERALA**

**Dr. Malini R.  
Dr. Marikutty P. J. (Eds.)**



## **TRUE TO SELF WITH WORK AND LIFE**

Proceedings of

**Dr. V. K. Alexander Memorial National Seminar**

Organized by Research and Post Graduate Department of Psychology,  
Union Christian College, Aluva, Kerala held on 11<sup>th</sup> February 2022.

Edited by **Dr. Malini R. and Dr. Marikutty P. J.**

Copyright © 2023 by Research and Post Graduate Department of Psychology,  
Union Christian College, Aluva, Kerala.

Publishers: **Union Christian College, Aluva 683102**  
[www.uccollege.edu.in](http://www.uccollege.edu.in)

**ISBN: 978-81-960457-2-2**

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recoding or otherwise, without written permission from the Research and Post Graduate Department of Psychology, Union Christian College, Aluva, Kerala.

The papers published in this book are the individual research and opinion of the authors and the Department of Psychology or the editors are not responsible for any misinterpretation.

Cover Design: Mr. Crismon Thomas

Cover image: Ms. Fareeda Ismail

Printed at: Rajsree Industrial Printer, Aluva

**Price: Rs. 300/-**

## EMOTIONAL COMPETENCE AND STUDY SKILLS AMONG MARRIED AND UNMARRIED THEOLOGICAL STUDENTS

Anagha Boas, M.Sc. Psychology, Women's Christian College, Chennai

Email: [anaghaboas2000@gmail.com](mailto:anaghaboas2000@gmail.com)

Dr. Vidhya Ravindranadan, Asst. Professor of Psychology, Union Christian

College, Kerala. Email: [vidhyaravindranadan@uccollege.edu.in](mailto:vidhyaravindranadan@uccollege.edu.in)

### ABSTRACT

*Emotional competence is defined as a person's ability to express or release his or her feelings or emotions. Study skills is defined as the methods and techniques that aid effective learning, especially viewed as a set of skills that can be acquired or taught; the ability to study effectively. The aim of the present study is to investigate emotional competence and study skills among the married and unmarried theological students and to study the relationship of variables. Participants (N=60) consist of equal number of married and unmarried theological students in the age group 23-35 years. The instruments used for data collection are the Emotional Competence Scale developed by Dahiya and Gahlawat (2018) and the Study Skills Inventory developed by Congos (2011). The data were analyzed using independent sample t-test and Pearson's correlation method. As per the findings there is significant difference in empathy between the married and the unmarried theological students. It was also found that there is a significant difference in text book reading skills between two groups. A significant positive relationship between the emotional competence and study skills was found in married and unmarried students.*

*Key words – Emotional Competence, Study Skills, Theological Students*

Emotional competence is defined as the “person's ability to manage his feelings so that those feelings are expressed appropriately and effectively” (Goleman, 1995). The clear-cut difference between emotional intelligence and emotional competence is still not known and is at debate to a very great extent. One of the differences between emotional competence and emotional intelligence is that emotional competence is transactional between oneself and other and emotional intelligence is less transactional when compared. Another difference is that emotional competence is a developed skill and emotional intelligence is something that is inborn in a person. According to Daniel Goleman “if your emotional abilities aren't in hand, if you don't have self-awareness, if



# TRUE to self WITH WORK AND LIFE

*Proceedings of*

**Dr. V. K. Alexander Memorial National Seminar**

11 February 2022



*Organized by*

RESEARCH AND POST GRADUATE  
DEPARTMENT OF PSYCHOLOGY  
UNION CHRISTIAN COLLEGE, ALUVA, KERALA

Dr. Malini R.  
Dr. Marikutty P. J. (*Eds.*)



## **TRUE TO SELF WITH WORK AND LIFE**

Proceedings of

**Dr. V. K. Alexander Memorial National Seminar**

Organized by Research and Post Graduate Department of Psychology,  
Union Christian College, Aluva, Kerala held on 11<sup>th</sup> February 2022.

Edited by **Dr. Malini R. and Dr. Marikutty P. J.**

Copyright © 2023 by Research and Post Graduate Department of Psychology,  
Union Christian College, Aluva, Kerala.

Publishers: **Union Christian College, Aluva 683102**

[www.uccollege.edu.in](http://www.uccollege.edu.in)

**ISBN: 978-81-960457-2-2**

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recoding or otherwise, without written permission from the Research and Post Graduate Department of Psychology, Union Christian College, Aluva, Kerala.

The papers published in this book are the individual research and opinion of the authors and the Department of Psychology or the editors are not responsible for any misinterpretation.

Cover Design: Mr. Crismon Thomas

Cover image: Ms. Fareeda Ismail

Printed at: Rajsree Industrial Printer, Aluva

**Price: Rs. 300/-**

## PARENTING STYLE AND HELPING BEHAVIOUR AMONG ADOLESCENTS

Anoopa V. R., Final year B.SC. Psychology, Department of Psychology, Union Christian College, Aluva

Marikutty P. J., Assistant Professor, Department of Psychology, Union Christian College, Aluva

### Abstract

*Parenting is the process of raising children and providing them a healthy environment for their healthy development into adulthood. Parenting styles refers to a set of parental attitudes and behaviours that parents often use. Parenting styles have an influence in transmission of values and certain behaviours including prosocial or helping behaviours. Prosocial behaviours are the actions by which individuals help others. The present study was aimed to investigate the relationship between perceived parenting styles and helping behaviour among adolescents. It is also attempted to explore whether there is any significant difference in these variables between the groups categorized on the basis of gender as well as location of residence. The sample of the study consisted of 77 adolescent students belonged to the age range of 13-19 years and studying in 8th standard to 2nd year under graduation and they were selected randomly. Helping Attitude Scale was developed by Nickel (1998) and Parental Authority Questionnaire developed by Buri (1991) and a Personal Data Schedule were used for data collection. The data were collected using Google forms which were sent to each participant via e mail. The obtained data were analysed in SPSS 20 using Pearson's correlation coefficient. The result are as follows: Authoritative parenting style of mother shows significant correlation with helping behaviour. Adolescents who live in rural areas have significantly more helping behaviour and perceive their parents as significantly more permissive than the adolescents who resides in urban areas. There is no significant gender difference in the helping behaviour and perceived parenting styles of both parents.*

*Key words: Parenting Style, Helping Behaviour, Adolescents*



# TRUE to self WITH WORK AND LIFE

*Proceedings of*

**Dr. V. K. Alexander Memorial National Seminar**

11 February 2022



*Organized by*

RESEARCH AND POST GRADUATE  
DEPARTMENT OF PSYCHOLOGY  
UNION CHRISTIAN COLLEGE, ALUVA, KERALA

Dr. Malini R.  
Dr. Marikutty P. J. (*Eds.*)





## **TRUE TO SELF WITH WORK AND LIFE**

Proceedings of

**Dr. V. K. Alexander Memorial National Seminar**

Organized by Research and Post Graduate Department of Psychology,  
Union Christian College, Aluva, Kerala held on 11<sup>th</sup> February 2022.

Edited by **Dr. Malini R. and Dr. Marikutty P. J.**

Copyright © 2023 by Research and Post Graduate Department of Psychology,  
Union Christian College, Aluva, Kerala.

Publishers: **Union Christian College, Aluva 683102**  
[www.uccollege.edu.in](http://www.uccollege.edu.in)

**ISBN: 978-81-960457-2-2**

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recoding or otherwise, without written permission from the Research and Post Graduate Department of Psychology, Union Christian College, Aluva, Kerala.

The papers published in this book are the individual research and opinion of the authors and the Department of Psychology or the editors are not responsible for any misinterpretation.

Cover Design: Mr. Crismon Thomas

Cover image: Ms. Fareeda Ismail

Printed at: Rajsree Industrial Printer, Aluva

**Price: Rs. 300/-**

## MENTAL HEALTH STATUS OF STAFF NURSES AND HEALTH INSPECTORS DURING COVID 19

Aparna Thampi, M.Sc. Psychology, Union Christian College, Aluva, Kerala

Vidhya Ravindranadan, Assistant Professor of Psychology, Union Christian College, Aluva, Kerala

*Mental health refers to the emotional and psychological well-being. Having good mental health helps to lead a happy and healthy life. Good mental health means being generally able to think, feel and react in the ways that you need and want to live your life especially when faced with adversity like Covid19 pandemic to overcome emotions such as anxiety, stress. The aim of the present study was to see if there is any significant difference between staff nurses and health inspectors on mental health aspects like emotional self-efficacy, depression, anxiety, stress and psychological wellbeing, as well as to understand the relationship between these study variables during Covid19 pandemic. Participants (N=90) were chosen at random from different government hospital in Kerala, including 45 staff nurses and 45 health inspectors in the age group of 25-45yrs. The emotional self-efficacy scale, depression anxiety stress scale- 21 and psychological wellbeing scale were used to collect data via a Google form. The data were analyzed using independent sample t test and Karl Pearson correlation. According to the findings, there is no significant difference between staff nurses and health inspectors on mental health correlates. Psychological wellbeing found to have negative correlation with depression, anxiety and stress among the study groups. It can be seen that further intervention is required to enhance their mental health correlates during Covid19 pandemic.*

*Key words: Emotional self-efficacy, depression, anxiety, stress, psychological wellbeing, staff nurses, health inspectors.*

Mental health is a state of well-being in which an individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and is able to make a contribution to his or her community (WHO, 2001). Mental health of a person can be affected by conditions such as depression, anxiety and stress. Those conditions were able to disrupt a person's daily routine, relationships and occupation. The concepts of mental health includes perceived self-efficacy and psychological wellbeing. Emotional self-efficacy is an individual's ability to understand and regulate emotion of self and other. People with high emotional self-efficacy often show a tendency to use



# TRUE to self WITH WORK AND LIFE

*Proceedings of*

**Dr. V. K. Alexander Memorial National Seminar**

11 February 2022



*Organized by*

RESEARCH AND POST GRADUATE  
DEPARTMENT OF PSYCHOLOGY  
UNION CHRISTIAN COLLEGE, ALUVA, KERALA

Dr. Malini R.  
Dr. Marikutty P. J. (*Eds.*)



## **TRUE TO SELF WITH WORK AND LIFE**

Proceedings of

**Dr. V. K. Alexander Memorial National Seminar**

Organized by Research and Post Graduate Department of Psychology,  
Union Christian College, Aluva, Kerala held on 11<sup>th</sup> February 2022.

Edited by **Dr. Malini R. and Dr. Marikutty P. J.**

Copyright © 2023 by Research and Post Graduate Department of Psychology,  
Union Christian College, Aluva, Kerala.

Publishers: **Union Christian College, Aluva 683102**  
[www.uccollege.edu.in](http://www.uccollege.edu.in)

**ISBN: 978-81-960457-2-2**

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recoding or otherwise, without written permission from the Research and Post Graduate Department of Psychology, Union Christian College, Aluva, Kerala.

The papers published in this book are the individual research and opinion of the authors and the Department of Psychology or the editors are not responsible for any misinterpretation.

Cover Design: Mr. Crismon Thomas

Cover image: Ms. Fareeda Ismail

Printed at: Rajsree Industrial Printer, Aluva

**Price: Rs. 300/-**

## EMOTIONAL COMPETENCE AND STUDY SKILLS OF ELITE AND NON-ELITE ATHLETES

Devika Santhosh Kumar, B.Sc. Psychology, Union Christian College, Kerala,  
[devikasanthosh2000@gmail.com](mailto:devikasanthosh2000@gmail.com)

Dr. Vidhya Ravindranadan, Asst. Professor, Union Christian College, Kerala,  
[vidhyaravindranadan@ucccollege.edu.in](mailto:vidhyaravindranadan@ucccollege.edu.in)

### Abstract

*Emotional competence is one's ability to identify, understand, express and release their emotions constructively (Mehta & Sharma, 2020). Study skills are the skills needed to enable one to read and learn efficiently (Nuthana & Yenagi, 2009). Success in sports requires a variety of physical and mental skills that many athletes strive to attain. Elite athletes are often defined as academy or university competitors at national or international level competitor's/medal winners, Olympians, professionals or semi-professionals, world class, athletes having world records, training frequently or exceeding training norms, measured physiological variables (e.g., Running economy, anaerobic threshold, VO<sub>2</sub>max). Elite athletes always test higher than non-elite athletes in the above said factors. Non-elite athletes are athletes who are casually engaging in sports and the performance level which is local club level, school / college / district level etc. The present study is aimed to investigate and compare the Emotional Competence and Study Skills of Elite and Non-elite athletes of different sports fields in Kerala. Participants in the study consists of 36 elite athletes and 33 non-elite athletes of age 17-20 years. The instruments used are Emotional Competence Scale by Sarita Dahiya & Sonia Gahlawat (2018) and Study Skills Inventory Scale by Dennis H Congos (2011). Independent sample t-test and Pearson's correlation were used to analyse data. The results show that there is significant difference between elite and non-elite athletes in overall emotional competence and study skills. There is significant positive relationship between emotional competence and study skills among elite athletes and among non-elite athletes.*

**KEY WORDS:** Emotional Competence, Study Skills, Elite Athletes and Non-elite Athletes

Emotional competence (EC) is defined as a set of generic skills that can be used to perform a variety of emotion-related tasks. The ability to recognise and discriminate between different emotions is particularly significant in the development of children. Emotional intelligence (EI) is the ability to understand and manage emotions of themselves and the people around them. The term 'emotional intelligence' became popular in 1990s by psychologist and behavioural science journalist Goleman.

# TRUE to self WITH WORK AND LIFE



*Proceedings of*  
**Dr. V. K. Alexander Memorial National Seminar**  
11 February 2022



*Organized by*

**RESEARCH AND POST GRADUATE  
DEPARTMENT OF PSYCHOLOGY  
UNION CHRISTIAN COLLEGE, ALUVA, KERALA**

**Dr. Malini R.  
Dr. Marikutty P. J. (Eds.)**



## **TRUE TO SELF WITH WORK AND LIFE**

Proceedings of  
**Dr. V. K. Alexander Memorial National Seminar**  
Organized by Research and Post Graduate Department of Psychology,  
Union Christian College, Aluva, Kerala held on 11<sup>th</sup> February 2022.

Edited by **Dr. Malini R. and Dr. Marikutty P. J.**

Copyright © 2023 by Research and Post Graduate Department of Psychology,  
Union Christian College, Aluva, Kerala.

Publishers: **Union Christian College, Aluva 683102**  
[www.uccollege.edu.in](http://www.uccollege.edu.in)

**ISBN: 978-81-960457-2-2**

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recoding or otherwise, without written permission from the Research and Post Graduate Department of Psychology, Union Christian College, Aluva, Kerala.

The papers published in this book are the individual research and opinion of the authors and the Department of Psychology or the editors are not responsible for any misinterpretation.

Cover Design: Mr. Crismon Thomas

Cover image: Ms. Fareeda Ismail

Printed at: Rajsree Industrial Printer, Aluva

**Price: Rs. 300/-**

## Instagram Use and its Effects on Self-esteem and Competence

Elizabeth Jaimon, Undergraduate student, Department of Psychology, Union Christian College, Aluva

Seena Mathai, Assistant Professor, Department of Psychology, Union Christian College, Aluva

### Abstract

*Instagram has become an integral part of every individual's life and its constant use may affect one's Self-esteem and Emotional competence. The aim of the study was to compare the use of Instagram and its effects on self-esteem and emotional competence on a sample consisted of 60 participants out of which 30 participants used Instagram for less than 1 hour and 30 participants used Instagram for more than 1 hour belonging to different age groups. The data was collected using Rosenberg's Self-esteem Scale-RSES (Rosenberg, 1965) and the Emotional competence Scale-ECS developed by Dahiya and Gahlawat (2018). Data analysis was done using t-test. The results revealed that there was no significant difference in Self-esteem and Emotional competence in those who use Instagram for more than and less than 1 hour. However, there was significant difference in the dimension Social skills and Total Emotional competency between the age groups of 15 to 24 and 25 to 35.*

*Keywords: Instagram, Self-esteem, Emotional competence*

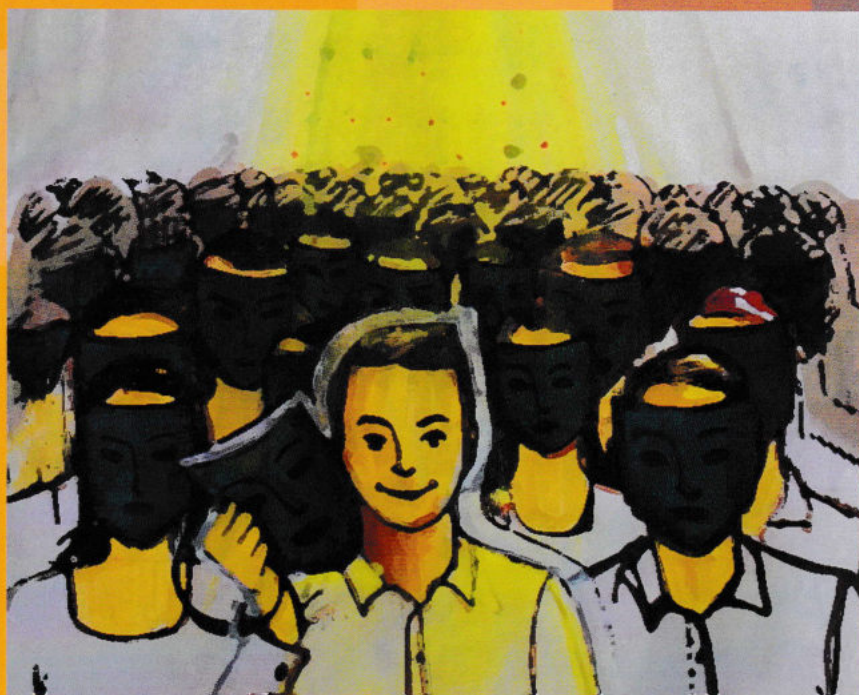
Development in information technology took place after the introduction of the Internet, forming a new generation that communicated through an online platform called Social media. As the number of users and the time spent on Social media platforms are on the rise, the degree of Social comparison which might also be on the rise especially by using popular platforms such as Instagram. Social comparison theory proposes that individuals have an innate drive to compare oneself with others through which they make evaluations of themselves. Upward social comparison lead to envy, low-self-esteem, body dissatisfaction (de Vries & Kühne, 2015; Liu et al., 2017), eating disorders, life dissatisfaction and depression (Feinstein et al., 2013).



# TRUE to self WITH WORK AND LIFE



*Proceedings of*  
**Dr. V. K. Alexander Memorial National Seminar**  
11 February 2022



*Organized by*

**RESEARCH AND POST GRADUATE  
DEPARTMENT OF PSYCHOLOGY  
UNION CHRISTIAN COLLEGE, ALUVA, KERALA**

**Dr. Malini R.  
Dr. Marikutty P. J. (Eds.)**



## **TRUE TO SELF WITH WORK AND LIFE**

Proceedings of

**Dr. V. K. Alexander Memorial National Seminar**

Organized by Research and Post Graduate Department of Psychology,  
Union Christian College, Aluva, Kerala held on 11<sup>th</sup> February 2022.

Edited by **Dr. Malini R. and Dr. Marikutty P. J.**

Copyright © 2023 by Research and Post Graduate Department of Psychology,  
Union Christian College, Aluva, Kerala.

Publishers: **Union Christian College, Aluva 683102**  
[www.uccollege.edu.in](http://www.uccollege.edu.in)

**ISBN: 978-81-960457-2-2**

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recoding or otherwise, without written permission from the Research and Post Graduate Department of Psychology, Union Christian College, Aluva, Kerala.

The papers published in this book are the individual research and opinion of the authors and the Department of Psychology or the editors are not responsible for any misinterpretation.

Cover Design: Mr. Crismon Thomas

Cover image: Ms. Fareeda Ismail

Printed at: Rajsree Industrial Printer, Aluva

**Price: Rs. 300/-**

## EMOTIONAL INTELLIGENCE, LEARNING STYLES AND ACADEMIC ACHIEVEMENT AMONG COLLEGE STUDENTS

Faseeha K Nasarudeen, MA Psychology, Central University of Punjab

Email: faseeha1702@gmail.com

Marikutty P J, Assistant Professor, Union Christian College,

### Abstract

*Emotional intelligence activates one's potential values and motivates him or her to pursue their goals and aspirations. Emotional intelligence enables people to learn to acknowledge and understand their own feelings and also of others and to respond to them appropriately and effectively for the better functioning of life. Many students are not aware about their preferred learning style. Similarly, emotional intelligence is an important factor in determining success of people, students have many opportunities to acquire it. The objective of the study was to find out whether there is any significant relationship between Emotional Intelligence, Learning Styles and Academic Achievement among undergraduate students. The sample consisted of 61 undergraduate students from different colleges. The data collection was conducted using personal data schedule Emotional Intelligence Scale developed by Hyde, Pethe and Dhar (2002) and Learning Style Inventory developed by Misra (2012). Method of data analysis was Pearson's correlation coefficient. The results revealed that there was no significant relationship between emotional intelligence and academic achievement and learning style and academic achievement in undergraduate college students. The study also found significant relationship between emotional intelligence and learning style.*

**KEY WORDS:** *Emotional Intelligence, Learning Styles, Academic Achievement*

Academic achievement in educational psychology is a level of proficiency in scholastic work in general or in a specific skill, such as arithmetic or reading (APA).

Several factors such as intelligence, personality, self-efficacy, attitudes and study habits, academic skills, anxiety, language abilities, achievement motivation, emotional intelligence, student-teacher relationships, peer relationships, parental influence, etc. may influence academic achievement of students. However the impact of these factors on academic achievement varies across individuals. A detailed description of the psychological constructs examined in the present study is given below:



# TRUE to self WITH WORK AND LIFE

*Proceedings of*

**Dr. V. K. Alexander Memorial National Seminar**

11 February 2022



*Organized by*

RESEARCH AND POST GRADUATE  
DEPARTMENT OF PSYCHOLOGY  
UNION CHRISTIAN COLLEGE, ALUVA, KERALA

Dr. Malini R.  
Dr. Marikutty P. J. (*Eds.*)



## **TRUE TO SELF WITH WORK AND LIFE**

Proceedings of

**Dr. V. K. Alexander Memorial National Seminar**

Organized by Research and Post Graduate Department of Psychology,  
Union Christian College, Aluva, Kerala held on 11<sup>th</sup> February 2022.

Edited by **Dr. Malini R. and Dr. Marikutty P. J.**

Copyright © 2023 by Research and Post Graduate Department of Psychology,  
Union Christian College, Aluva, Kerala.

Publishers: **Union Christian College, Aluva 683102**  
[www.uccollege.edu.in](http://www.uccollege.edu.in)

**ISBN: 978-81-960457-2-2**

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recoding or otherwise, without written permission from the Research and Post Graduate Department of Psychology, Union Christian College, Aluva, Kerala.

The papers published in this book are the individual research and opinion of the authors and the Department of Psychology or the editors are not responsible for any misinterpretation.

Cover Design: Mr. Crismon Thomas

Cover image: Ms. Fareeda Ismail

Printed at: Rajsree Industrial Printer, Aluva

**Price: Rs. 300/-**

## Mental Health of Public and Private Sector Employees

Keziah Sarah Thomas, MSc Psychology, Union Christian College, Aluva  
Email: keziahthomas137@gmail.com

Syna Soosan Abraham, Assistant Professor, Union Christian College, Aluva  
Email: synasoosanabraham@uccollege.edu.in

### Abstract

Mental health is defined as the presence of general emotional, psychological, and social well-being which considers both hedonic and eudaimonic approaches. The aim of the study was to compare the mental health of public and private sector employees. Personal factors that affect work performance like; employee's age, years of work experience, sector of job, marital status and number of children with mental health were considered. The sample consisted of 60 employees wherein 30 employees were from public sector and 30 employees from private sector belonging to different organizations in India. The data collection was conducted using personal data sheet for personal details essential for the study and Positive Mental Health Inventory - PMHI (2002) developed by Agashe and Helode to measure mental health which include dimensions such as self-acceptance, ego-strength and philosophies of life. Methods used for data analysis were t-test and ANOVA. The results revealed that there is no significant difference between employees from public and private sector job, between married and unmarried employees, between employees above and below 5 years of work experience on mental health, employees with different number of children in mental health but it was found that there is significant difference in mental health between employees of above and below 30 years of age.

Keywords: Mental health, private sector - public sector employee

Mental health is a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully and is able to make a contribution to his or her community (World Health Organization, WHO). Sound mental health includes effective functioning in different aspects of life such as physical, mental, emotional and spiritual. Having a sound mental health not only helps in effective functioning but also in prevention of mental disorders. When there is an issue in mental health of an individual it can lead to several mental illnesses. Mental illness refers to a group of disorders that affect the behaviour, thinking, perceptions and mood.



# TRUE to self WITH WORK AND LIFE

*Proceedings of*

**Dr. V. K. Alexander Memorial National Seminar**

11 February 2022



*Organized by*

RESEARCH AND POST GRADUATE  
DEPARTMENT OF PSYCHOLOGY  
UNION CHRISTIAN COLLEGE, ALUVA, KERALA

Dr. Malini R.  
Dr. Marikutty P. J. (*Eds.*)



## **TRUE TO SELF WITH WORK AND LIFE**

Proceedings of

**Dr. V. K. Alexander Memorial National Seminar**

Organized by Research and Post Graduate Department of Psychology,  
Union Christian College, Aluva, Kerala held on 11<sup>th</sup> February 2022.

Edited by **Dr. Malini R. and Dr. Marikutty P. J.**

Copyright © 2023 by Research and Post Graduate Department of Psychology,  
Union Christian College, Aluva, Kerala.

Publishers: **Union Christian College, Aluva 683102**  
[www.uccollege.edu.in](http://www.uccollege.edu.in)

**ISBN: 978-81-960457-2-2**

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recoding or otherwise, without written permission from the Research and Post Graduate Department of Psychology, Union Christian College, Aluva, Kerala.

The papers published in this book are the individual research and opinion of the authors and the Department of Psychology or the editors are not responsible for any misinterpretation.

Cover Design: Mr. Crismon Thomas

Cover image: Ms. Fareeda Ismail

Printed at: Rajsree Industrial Printer, Aluva

**Price: Rs. 300/-**



## Emotional Maturity and Psychological Hardiness among Adolescents

Nicole James, Asst. Professor, Dept. of Psychology, LISSAH College, Kozhikode, Kerala

Email: nicolejames@lissah.com

Neelima Ranjith, Asst. Professor, Dept. of Psychology, Union Christian College, Aluva, Kerala. Email: neelimiranjith@uccollege.edu.in

### Abstract

*Adolescents go through drastic biological, cognitive and emotional changes requiring them to cope on multiple levels. The outbreak of the Covid 19 pandemic has caused considerable havoc in their everyday lives. The survival of the individual in the current situation depends upon how emotionally the situation is being coped up and also on how hardy the individuals are. Also one's gender does bring along with it certain roles and expectations and ultimately has the power to influence one's personality and coping. Objective: The purpose of the present study was to compare adolescent males and females on emotional maturity and psychological hardiness. Method: (a) Participants: Data was collected from a total of 263 participants from various districts of Kerala. (b) Materials: The measures used are the Emotional Maturity Scale (Yashvir Singh and Mahesh Bhargava, 2012) and the Singh's Psychological Hardiness Scale (Arun Kumar Singh, 2008). (c) Analysis: Analysis was done using Mann-Whitney U test and Spearman rank order correlation coefficient. (d) Results: There was significant difference in emotional maturity on the basis of gender. Correlation was also seen between emotional maturity and psychological hardiness based on gender. Conclusion: Gender had an impact on emotional maturity. Keywords: Emotional Maturity, Psychological Hardiness, Gender, Adolescents*

The outbreak of the Covid 19 pandemic has caused considerable havoc in the everyday lives, especially the social aspects of all people. One among the most severely affected group is the adolescents as one of their most important primary needs is social interaction. Affiliation has become restricted to an online platform from a one to one personal level. According to Jobson (2020), the survival of the individual in the current situation depends upon how emotionally the situation is being coped up. Hence emotional maturity plays a major role in building the capacity to make effective



# TRUE to self WITH WORK AND LIFE

*Proceedings of*

**Dr. V. K. Alexander Memorial National Seminar**

11 February 2022



*Organized by*

RESEARCH AND POST GRADUATE  
DEPARTMENT OF PSYCHOLOGY  
UNION CHRISTIAN COLLEGE, ALUVA, KERALA

Dr. Malini R.  
Dr. Marikutty P. J. (*Eds.*)



## **TRUE TO SELF WITH WORK AND LIFE**

Proceedings of

**Dr. V. K. Alexander Memorial National Seminar**

Organized by Research and Post Graduate Department of Psychology,  
Union Christian College, Aluva, Kerala held on 11<sup>th</sup> February 2022.

Edited by **Dr. Malini R. and Dr. Marikutty P. J.**

Copyright © 2023 by Research and Post Graduate Department of Psychology,  
Union Christian College, Aluva, Kerala.

Publishers: **Union Christian College, Aluva 683102**  
[www.uccollege.edu.in](http://www.uccollege.edu.in)

**ISBN: 978-81-960457-2-2**

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recoding or otherwise, without written permission from the Research and Post Graduate Department of Psychology, Union Christian College, Aluva, Kerala.

The papers published in this book are the individual research and opinion of the authors and the Department of Psychology or the editors are not responsible for any misinterpretation.

Cover Design: Mr. Crismon Thomas

Cover image: Ms. Fareeda Ismail

Printed at: Rajsree Industrial Printer, Aluva

**Price: Rs. 300/-**

## SELF-ESTEEM, ACHIEVEMENT MOTIVATION AND ACADEMIC PERFORMANCE AMONG COLLEGE STUDENTS

Sarah Maria Saroop, Dr. Marikutty P.J

Student, MSc. Psychology, Assistant Professor

[sarahsaroop20@gmail.com](mailto:sarahsaroop20@gmail.com), [marykuttypj@yahoo.com](mailto:marykuttypj@yahoo.com)

Department of Psychology,

Union Christian College, Aluva, Kerala, India

### ABSTRACT

*Students working along with their studies have also started to be a trend in today's world. Academic performance or achievement indicates the extent to which a person has accomplished a specific goal in their educational field. Many factors may contribute to a students' academic performance such as family environment, intellectual capacity, age, gender, achievement motivation, self-esteem, etc. The present study is conducted to understand self-esteem, achievement motivation, and academic performance among college students. It is also aimed to examine the relationship among these variables. The participants consist of 80 college students within the age range of 17 years to 22 years. It includes both undergraduate and post-graduate students studying in various colleges in the Ernakulum district. The Rosenberg's Self-esteem scale, Achievement motive test, the participants GPA score, and Personal data sheet were used for data collection. The collected data were analyzed in SPSS 20 version using statistical procedures like Mean, Standard deviation, 't' test and Pearson correlation. The results show a significant difference in academic performance between working and nonworking college students and a significant gender difference in achievement motivation among college students. Male students are seen to have significantly higher achievement motivation than female students whereas female students perform better academically than male students. There is also a significant positive correlation between achievement motivation and self-esteem and a negative correlation between students' age and their academic performance. Second-born students are seen to have significantly lower self-esteem than first and third-born students.*

Key Words: Self-Esteem, Achievement Motivation, Academic performance, College students

The unending rise in living costs has led to unprecedented difficulties for the common man in maintaining their standard of living. Citizens, especially those in the younger age bracket, have had to find new and innovative ways to support their families and improve their living conditions. In the present scenario, the importance of higher education and qualification cannot be overemphasized. With each passing generation,



# TRUE to self WITH WORK AND LIFE

*Proceedings of*

**Dr. V. K. Alexander Memorial National Seminar**

11 February 2022



*Organized by*

RESEARCH AND POST GRADUATE  
DEPARTMENT OF PSYCHOLOGY  
UNION CHRISTIAN COLLEGE, ALUVA, KERALA

Dr. Malini R.  
Dr. Marikutty P. J. (*Eds.*)



## **TRUE TO SELF WITH WORK AND LIFE**

Proceedings of

**Dr. V. K. Alexander Memorial National Seminar**

Organized by Research and Post Graduate Department of Psychology,  
Union Christian College, Aluva, Kerala held on 11<sup>th</sup> February 2022.

Edited by **Dr. Malini R. and Dr. Marikutty P. J.**

Copyright © 2023 by Research and Post Graduate Department of Psychology,  
Union Christian College, Aluva, Kerala.

Publishers: **Union Christian College, Aluva 683102**

[www.uccollege.edu.in](http://www.uccollege.edu.in)

**ISBN: 978-81-960457-2-2**

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recoding or otherwise, without written permission from the Research and Post Graduate Department of Psychology, Union Christian College, Aluva, Kerala.

The papers published in this book are the individual research and opinion of the authors and the Department of Psychology or the editors are not responsible for any misinterpretation.

Cover Design: Mr. Crismon Thomas

Cover image: Ms. Fareeda Ismail

Printed at: Rajsree Industrial Printer, Aluva

**Price: Rs. 300/-**

## Physical Effects Experienced by College and School Students Due to Online Classes during Covid-19 Pandemic

Divyala Fathima P A, Post graduate student, Department of Psychology, Union Christian College, Aluva

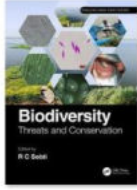
Syana Soosan Abraham, Assistant Professor, Department of Psychology, Union Christian College, Aluva

### Abstract

Due to the outbreak of covid-19 pandemic, online classes became the only viable mode of learning. But prolonged duration of online classes caused various physical effects in students. The aim of the study was to find out physical effects experienced by college and school students due to online classes during covid-19 pandemic. Major objectives of the study were to find out gender differences in various aspects of physical distress and to compare school and college students in physical problems. Physical effects of online classes included headache, eye pain, eye strain, pain on neck and shoulder, feeling sleepy and tiredness etc. The 450 participants of this study consisted of school students, undergraduate students and postgraduate students from all over the world. Out of 150 school students in this study, 62 were males and 88 were females. Out of 150 undergraduate students 37 were males and 113 were females. Out of 150 postgraduate students 22 were males and 128 were females. The self-prepared survey schedule was used to collect data. Data schedule contains 4 personal questions and 10 questions related to physical effects of online classes. Descriptive statistics and means were used to analyse the data. The results revealed that there were gender differences in various aspects of physical effects during online classes among college and school students.

*Keywords:* Physical effects, online classes, covid-19, school and college students.

The first case of Covid-19 first reported on 31 December 2019 in Wuhan, China. It is suddenly declared as a pandemic as it spread around the world rapidly within a month (Khalil, 2020). Government announced lockdown in order to maintain social distancing. Pandemic affected all areas of life including education. As the situation worsened, the lockdown resulted in closing down of educational institutions. The outbreak of the dangerous virus across the globe has forced educational institutions to shut down to control the spread of this virus.



Book

# Biodiversity

## Threats and Conservation

Edited By *R C Sobti*

Edition	1st Edition
First Published	2023
eBook Published	2 January 2023
Pub. Location	Boca Raton
Imprint	CRC Press
DOI	<a href="https://doi.org/10.1201/9781003220398">https://doi.org/10.1201/9781003220398</a>
Pages	512
eBook ISBN	9781003220398
Subjects	Bioscience, Environment & Agriculture



Share



Citation

You do not have access to this content currently. Please click 'Get Access' button to see if you or your institution have access to this content.

GET ACCESS

PREVIEW PDF

To purchase a print version of this book for personal use or request an inspection copy >>

GO TO ROUTLEDGE.COM

### ABSTRACT

The term "biodiversity" or "biological diversity" describes the variety of living beings on Earth encompassing microorganisms, plants, animals, and ecosystems, such as coral reefs, forests, and deserts. In fact, it also represents a wealth of biological resources available to us.

Today, instead of exploring and preserving its unmapped biodiversity, mankind has gone away from mother nature, conquering the domain through relentless exploitation. This has resulted in an ecological imbalance and thereby has posed serious threat to biodiversity.

Declining biodiversity is, therefore, a concern for countless reasons. Biodiversity's wealth of genetic information can be conserved by storing biological material from endangered species. Cell lines, gametes, and embryos are preserved so that in case a species becomes extinct or there is a need to increase the population of the species, then cloning and artificial reproductive techniques can be used to revive and reproduce the said species.

The present volume discusses the biodiversity of specific animal groups, such as cnidarians and fish, as well as potential risks to and methods for conserving some of them.

The following important aspects are addressed:

1. The importance of biodiversity in maintaining ecosystem balance for sustainability
2. The emerging role of biodiversity as a source of important materials, pharmaceuticals, food, and so on as such or through genetic manipulation to meet the contemporary and future challenges
3. The impact of environment degradation on biodiversity and conservation in a changing environment
4. Conventional and emerging biotechnological techniques to conserve biodiversity

The book is intended for academics, scientists, and naturalists working in the fields of biology, biochemistry, biophysics, and biomedical sciences.

### TABLE OF CONTENTS

Chapter 1 | 14 pages

**Biodiversity: Threats and Conservation Strategies**

By *Ranbir Chander Sobti, Manish Thakur, Tejinder Kaur, Suman Mishra*

GET ACCESS

Chapter 2 | 8 pages

**Resilience Strategies for Biodiversity Conservation**

By *Anu Priya Minhas, Sanjeev Puri, Ranbir Chander Sobti*

GET ACCESS

Chapter 3 | 17 pages

**Biodiversity Resources and Ecosystem Services in the Context of the Industrialized World**

By *Pardeep Kumar, Abhishek Kumar, Meenu Patil, Sabir Hussain, Sheenu Sharma, Siril Singh, Rajni Yadav, Diksha Tokas, Anand Narain Singh*

GET ACCESS

### RELATED BOOKS



Book

#### Inland Fisheries

By *Satish Chander Agarwal*



Book

#### Gender, Development, and the State in India

By *Carole Spary*



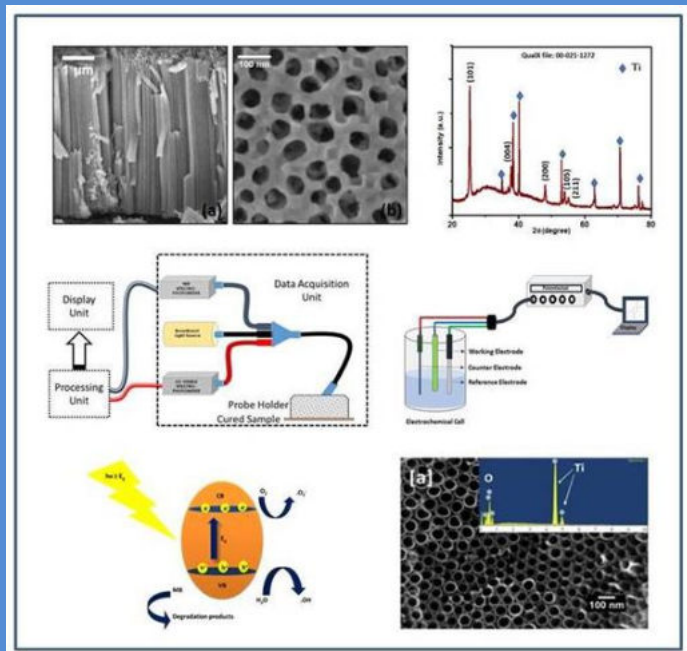
Book

#### Women, Health and Public Services in India

By *Dipa Sinha*



# Insightful Investigations: Exploring Material Properties through Characterization Techniques



Department of Physics  
Union Christian College, Aluva-2

# **Insightful Investigations: Exploring Material Properties through Characterization Techniques**

Copyright © 2023

Editors:

Dr Shinoj V K

Department of Physics, Union Christian College Aluva 683102.

Dr Saritha K Nair

Department of Physics, Mar Athanasius College (Autonomous),  
Kothamangalam 686666.

Publishers:

Union Christian College Aluva 683102

ISBN: 978-81-960457-1-5

All rights reserved.

No part of this publication may be reproduced or distributed in any form or by any means, or stored in a database or retrieval system, without the prior written permission of the author.

Cover Design: Dr Shinoj V K

Printing: SN Press, Aluva.

Price: Rs 200/-

# Synthesis and Characterization of Dye-Based Phantom Tissue Samples with Tailored Visible-NIR Optical Properties

D. Raveenadeth<sup>1</sup>, Shinto Babu<sup>1</sup>, Saritha K Nair<sup>2</sup> and V. K. Shinoj<sup>1\*</sup>

<sup>1</sup>*Optics and Spectroscopy Laboratory, Department of Physics, Union Christian College, Aluva*

<sup>2</sup>*Mar Athanasius College (Autonomous) Kothamangalam, Kerala-686666*  
*\*shinojvk@uccollege.edu.in*

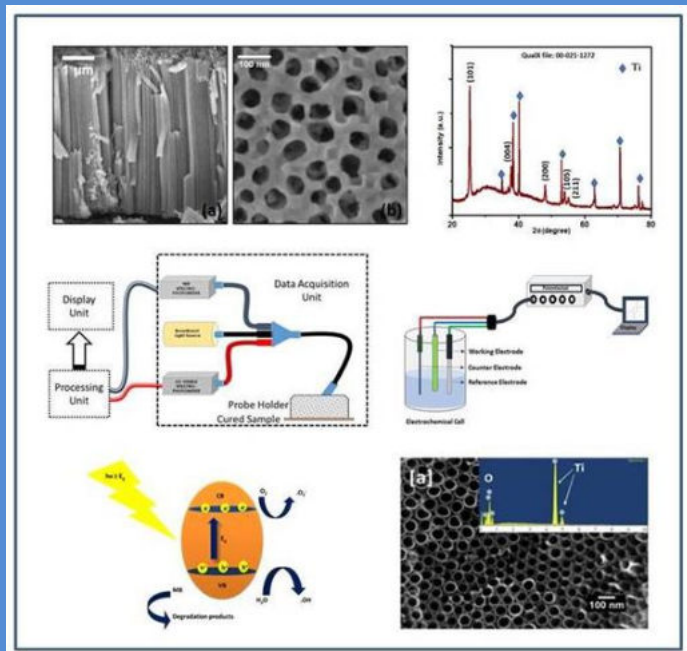
**Abstract.** Extraction of diagnosable information from tissue-pathologies, using *in-vivo* spectroscopic techniques, by analyzing diffuse reflectance, absorption and fluorescence is widely recognized for its potential. Primary challenge in utilizing this potential is the fabrication and optical characterization of phantom tissues, mimicking the optical properties of dermatological samples. Wide range of applications for phantom tissues, ranges from preliminary clinical studies to development of database for the standardization and calibration of *in-vivo* spectroscopic instruments. We addressed the fundamental challenge by fabricating thin, solid, tissue-simulating polydimethylsiloxane (PDMS) phantoms with tailored absorption properties and endogenous fluorescent properties, using bio-compatible dyes such as methylene blue, indocyanine green and sodium fluorescein. We also validated and evaluated the performance of the phantom tissues using diffuse reflectance and fluorescence studies to substantiate its use in clinical studies.

**Keywords:** Phantom, Diffuse Reflectance Spectroscopy, Probe, Fluorescence, Biomedical Optics.

## 1 Introduction

Clinical dermatological research and development for non-invasive, *in-vivo* diagnostic tool, requires standardization and calibration of biomedical imaging systems [1-3]. This is usually achieved by phantom tissue samples, mimicking the optical properties such as absorption, scattering and cellular autofluorescence of human skin [4-8]. When light is transported within skin, by means of broadband light source and probe arrangement, scattering, absorption and auto fluorescence [9-12] occurs due to the inhomogeneous distribution of chromophores, blood and pigments [13]. Scattering is caused

# Insightful Investigations: Exploring Material Properties through Characterization Techniques



Department of Physics  
Union Christian College, Aluva-2

# **Insightful Investigations: Exploring Material Properties through Characterization Techniques**

Copyright © 2023

Editors:

Dr Shinoj V K

Department of Physics, Union Christian College Aluva 683102.

Dr Saritha K Nair

Department of Physics, Mar Athanasius College (Autonomous),  
Kothamangalam 686666.

Publishers:

Union Christian College Aluva 683102

ISBN: 978-81-960457-1-5

All rights reserved.

No part of this publication may be reproduced or distributed in any form or by any means, or stored in a database or retrieval system, without the prior written permission of the author.

Cover Design: Dr Shinoj V K

Printing: SN Press, Aluva.

Price: Rs 200/-

# Green synthesis of Cerium oxide nanoparticles using Aloe vera extract

Aleena Norbert<sup>1</sup>, Sainadh C U<sup>1</sup>, Rachel Reena Philip<sup>1</sup>

<sup>1</sup>*Thin Film Research Lab, Department of Physics, Union Christian College, Aluva, Kerala -683102*

*\*reenatara@gmail.com*

**Abstract.** Green nanotechnology is an emerging field of nanoscience, which has received much attention in recent years for the synthesis of nanomaterials through environment friendly routes. This work focuses on the synthesis of cerium oxide nanoparticles using this simple, cost effective and environment friendly green method. Here, aloe vera leaf extract is used as the reducing and stabilizing agent in order to control size and morphology. The structure and morphology of the nanoparticles are investigated using X-ray diffraction spectroscopy and Field emission scanning electron microscopy. The XRD confirms the formation of cubic fluorite structure of CeO<sub>2</sub> nanoparticles and FESEM shows a homogeneous grain structure with smooth-edges. The optical characterizations are carried out using UV-Visible DRS and Photoluminescence spectral analysis. A direct band gap of 3.3eV is detected from the former and the peaks in PL spectra suggests the presence of defect centers localized between the Ce 4f and O 2p levels. Further, the FTIR spectral analysis reveals the Ce-O and O-H stretching vibrations.

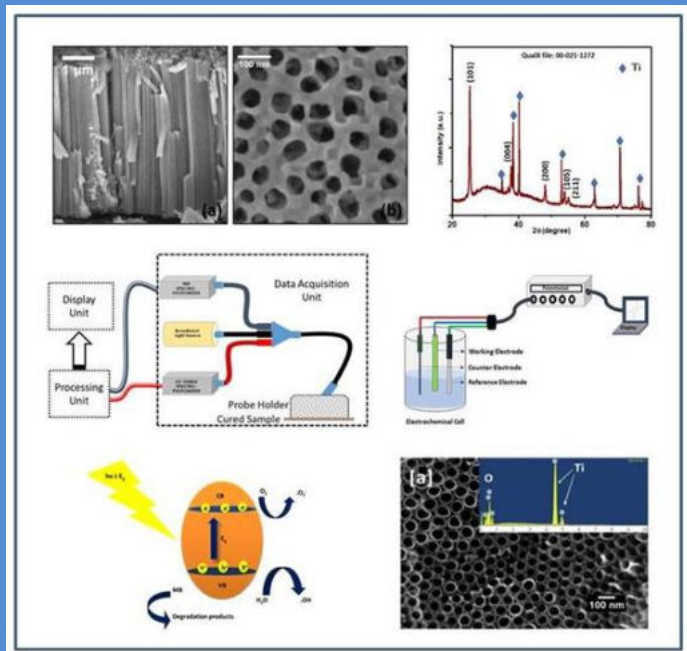
**Keywords:** Phytosynthesis, Cerium oxide, Aloe-vera extract.

## 1 Introduction

Green nanotechnology is an emerging field of nanoscience, that has earned much attention in recent years for developing the synthesis processes of nanomaterials through green synthetic and environmental friendly routes. In green synthesis, extracts from fungi, algae, bacteria, and plants that provide metabolites to act as reducing agents are commonly used.

Research to date indicates that nanoparticles synthesized from plant extracts hold great potential for use in photonics, electronics, medicine and waste treatment due to its environmental friendliness and unique single-step synthesis involving reduction followed by stabilization and capping of nanoparticles. They create innovative opportunity to design and develop novel

# Insightful Investigations: Exploring Material Properties through Characterization Techniques



Department of Physics  
Union Christian College, Aluva-2

# **Insightful Investigations: Exploring Material Properties through Characterization Techniques**

Copyright © 2023

Editors:

Dr Shinoj V K

Department of Physics, Union Christian College Aluva 683102.

Dr Saritha K Nair

Department of Physics, Mar Athanasius College (Autonomous),  
Kothamangalam 686666.

Publishers:

Union Christian College Aluva 683102

ISBN: 978-81-960457-1-5

All rights reserved.

No part of this publication may be reproduced or distributed in any form or by any means, or stored in a database or retrieval system, without the prior written permission of the author.

Cover Design: Dr Shinoj V K

Printing: SN Press, Aluva.

Price: Rs 200/-



# Cyclic Voltametric (CV) studies of solvothermally synthesized CsTiBr<sub>3</sub>/rGO composite for supercapacitor applications

K A Benazeera Beegum<sup>1</sup>, Christeena Thomas<sup>1</sup>, Saranya Sasi<sup>1</sup>, Suvarna Ganesh<sup>1</sup>, Alex Mathew<sup>1</sup>, R Reshmi<sup>1\*</sup>

<sup>1</sup>*Optoelectronic and Nanomaterials Research Laboratory, Department of Physics, Union Christian College, Aluva, Kerala, India—683102*

*\*rreshmi@gmail.com*

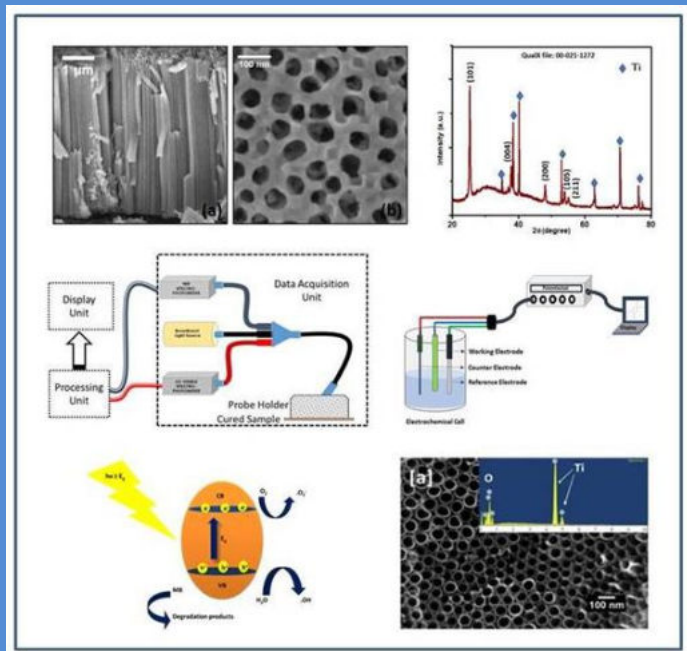
**Abstract.** Inorganic halide perovskites (IHP), ABX<sub>3</sub> (A and B are inorganic cations and X is halide anion), are emerging materials with excellent optoelectronic properties. A lead free IHP of CsTiBr<sub>3</sub> and its composite with reduced graphene oxide (rGO) is synthesized by solvothermal process. The structural analysis by XRD and Raman spectrum could confirm the composite formation of CsTiBr<sub>3</sub> with rGO. The pure CsTiBr<sub>3</sub> is composed of clusters of nanorods having different length and cross-sectional area. The incorporation of rGO into the CsTiBr<sub>3</sub> crystal caused morphological modification. The two-dimensional sheets of rGO becomes a mattress in which the nanorods can lie. The band gap of CsTiBr<sub>3</sub> nanorods reduced from 3.05eV to 2.96eV by the incorporation of 1% rGO. The structural modification and bandgap tuning by the CsTiBr<sub>3</sub>/rGO composite resulted in drastic decrease in impedance. The specific capacitance, areal capacitance and double layer capacitance shows multifold increase due to the impedance variation.

**Keywords:** Inorganic halide perovskites, Specific capacitance, Areal capacitance, Double layer capacitance.

## 1 Introduction

Halide perovskites (HP) are emerging materials in the field of energy storage applications because of its promising ion diffusion properties [1-3]. Supercapacitors and batteries are the two remarkable energy storage devices. Efforts are ongoing to find out the reason for the increased mobility of ion in lithium ion battery to a large extent through halide perovskite incorporation [4]. Unlike batteries, supercapacitors possess long cycle stability, higher reversibility, fast charging/discharging and power performance [5,6]. The electronic and ionic conduction nature of HPs are utilised in superconductors

# Insightful Investigations: Exploring Material Properties through Characterization Techniques



Department of Physics  
Union Christian College, Aluva-2

# **Insightful Investigations: Exploring Material Properties through Characterization Techniques**

Copyright © 2023

Editors:

Dr Shinoj V K

Department of Physics, Union Christian College Aluva 683102.

Dr Saritha K Nair

Department of Physics, Mar Athanasius College (Autonomous),  
Kothamangalam 686666.

Publishers:

Union Christian College Aluva 683102

ISBN: 978-81-960457-1-5

All rights reserved.

No part of this publication may be reproduced or distributed in any form or by any means, or stored in a database or retrieval system, without the prior written permission of the author.

Cover Design: Dr Shinoj V K

Printing: SN Press, Aluva.

Price: Rs 200/-

# Photocatalytic Degradation of Methyl Orange by Electrochemically Synthesized TiO<sub>2</sub> Nanotubes

Hiba Rahman<sup>1,2</sup>, Rachel Reena Philip<sup>1\*</sup>

<sup>1</sup>*Thin Film Research Lab, Department of Physics, Union Christian College, Aluva, Kerala, India*

<sup>1</sup>*Department of Physics, Al Ameen College, Edathala, Aluva, India*  
*\*reenatara@gmail.com*

**Abstract.** Titanium dioxide is being extensively used in many environmental applications due to its antibacterial properties and high performance in degradation of various dyes. In this study we report the synthesis and photocatalytic activity of anatase TiO<sub>2</sub> nanotubes prepared by electrochemical anodization. The prepared samples exhibit a band gap of 3.0eV. The compositional analysis using EDAX confirms the formation of anatase TiO<sub>2</sub>. The structural and morphological characterizations are done using X-ray Diffraction, Field Emission Scanning Microscopy and Atomic Force Microscopy. The FESEM and AFM analyses confirm the formation of well aligned array of TiO<sub>2</sub> nanotubes which are appreciably interconnected. These interconnected array of nanotubes increase the surface area and provide more adsorption sites that contribute to the high dye degradation rates in comparison with the TiO<sub>2</sub> nanostructures in literature. The prepared samples are able to degrade 82.2% of methyl orange in 180 minutes under solar radiation.

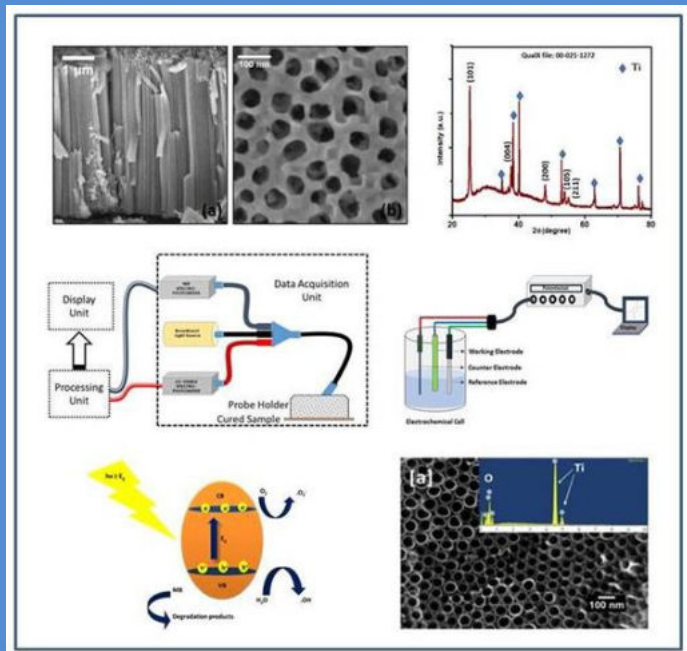
**Keywords:** TiO<sub>2</sub>, electrochemical anodization, photocatalysis.

## 1 Introduction

In recent years, water pollution caused by various industries has become a serious threat to human as well as aquatic life. TiO<sub>2</sub> has attracted researchers over decades due to its low cost, chemical stability and effectiveness in environmental remediation [1–4]. TiO<sub>2</sub> exists in three different crystalline phases as anatase, brookite and rutile. Among these anatase phase is extensively investigated due to its excellent photocatalytic activity [5–7].

Generally, electron-hole pairs are generated when TiO<sub>2</sub> is exposed to a radiation of energy higher than its band gap. The valence band holes and

# Insightful Investigations: Exploring Material Properties through Characterization Techniques



Department of Physics  
Union Christian College, Aluva-2

# **Insightful Investigations: Exploring Material Properties through Characterization Techniques**

Copyright © 2023

Editors:

Dr Shinoj V K

Department of Physics, Union Christian College Aluva 683102.

Dr Saritha K Nair

Department of Physics, Mar Athanasius College (Autonomous),  
Kothamangalam 686666.

Publishers:

Union Christian College Aluva 683102

ISBN: 978-81-960457-1-5

All rights reserved.

No part of this publication may be reproduced or distributed in any form or by any means, or stored in a database or retrieval system, without the prior written permission of the author.

Cover Design: Dr Shinoj V K

Printing: SN Press, Aluva.

Price: Rs 200/-

# Antibacterial property of ZnO nanostructures prepared by Anodization method

Surya Mary A<sup>1</sup>, Sareen Sarah John<sup>2</sup>, Rachel Reena Philip<sup>1\*</sup>

<sup>1</sup> Thin Film Research Lab, Department of Physics, Union Christian College, Aluva, Kerala, India, PIN-683102

<sup>2</sup> Department of Biosciences, Union Christian College, Aluva, Kerala, India, PIN-683102

\*[reenatara@gmail.com](mailto:reenatara@gmail.com)

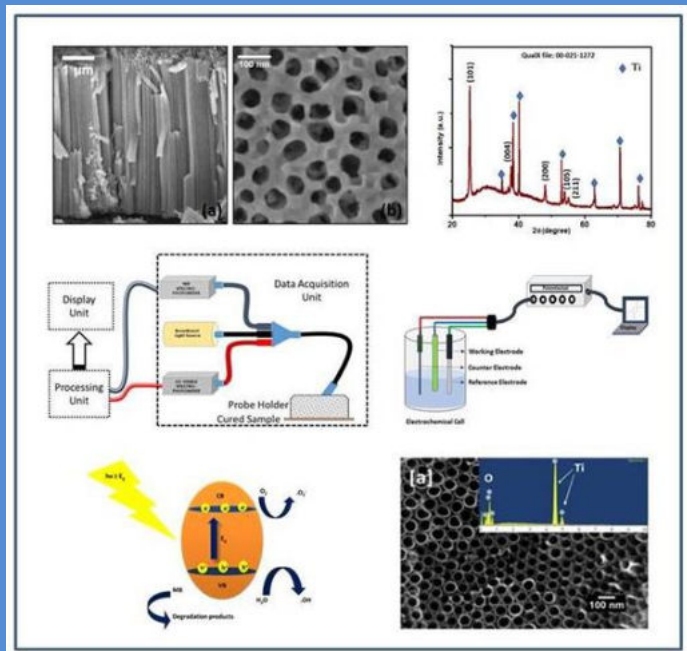
**Abstract.** Present work discusses the antibacterial activity of pristine Zinc oxide nanoparticles against gram negative and gram positive bacteria, E. Coli, Pseudomonas, Bacillus and S.aureus. Hexagonal wurtzite ZnO nanostructures are prepared by simple cost-effective electrochemical anodization method and the structure is confirmed by XRD. Using UV-vis diffuse reflectance spectroscopy, the band gap of samples is found to be ~3.12 eV. From FESEM images, formation of clusters of ZnO nanorods is observed. PL depicts the ZnO peaks. The effect of ZnO nanoparticles on the antibacterial efficacy is studied for different concentrations, by well diffusion agar method. Antibacterial results suggest that ZnO can be used as an antibacterial agent towards both gram negative as well as gram positive bacteria but, modifications are needed for better efficiency.

**Keywords:** Anodization, gram positive, gram negative.

## 1 Introduction

ZnO is a II-VI compound having a wide band gap ~3.2 eV that falls in the UV region of the solar spectrum [1]. Zinc oxide has attracted considerable attention owing to their promising applications in areas such as electronics, optoelectronics, photovoltaics and sensing. ZnO is also used in biomedical applications and to reduce environmental toxicity since it is biocompatible, decomposable, and biosafe [2]. In nanometer range, the chemical, structural, optical, morphological as well as biological properties of the material are entirely different. Nano-sized particles of ZnO have more pronounced antimicrobial activity because their high surface-to-volume ratio enable better interaction with bacteria [3,4]. Studies have indicated selective toxicity of

# Insightful Investigations: Exploring Material Properties through Characterization Techniques



Department of Physics  
Union Christian College, Aluva-2



# **Insightful Investigations: Exploring Material Properties through Characterization Techniques**

Copyright © 2023

Editors:

Dr Shinoj V K

Department of Physics, Union Christian College Aluva 683102.

Dr Saritha K Nair

Department of Physics, Mar Athanasius College (Autonomous),  
Kothamangalam 686666.

Publishers:

Union Christian College Aluva 683102

ISBN: 978-81-960457-1-5

All rights reserved.

No part of this publication may be reproduced or distributed in any form or by any means, or stored in a database or retrieval system, without the prior written permission of the author.

Cover Design: Dr Shinoj V K

Printing: SN Press, Aluva.

Price: Rs 200/-

# Hematite nanoporous material as a promising antibacterial agent

Julie Ann Joseph <sup>1\*</sup>, Bindu G Nair<sup>1,2</sup> and Rachel Reena Philip<sup>1</sup>

<sup>1</sup> Thin Film Research Lab, Department of Physics, Union Christian College, Aluva

<sup>2</sup> Government Polytechnic College, Perumbavoor

\* [julie4sunil@gmail.com](mailto:julie4sunil@gmail.com)

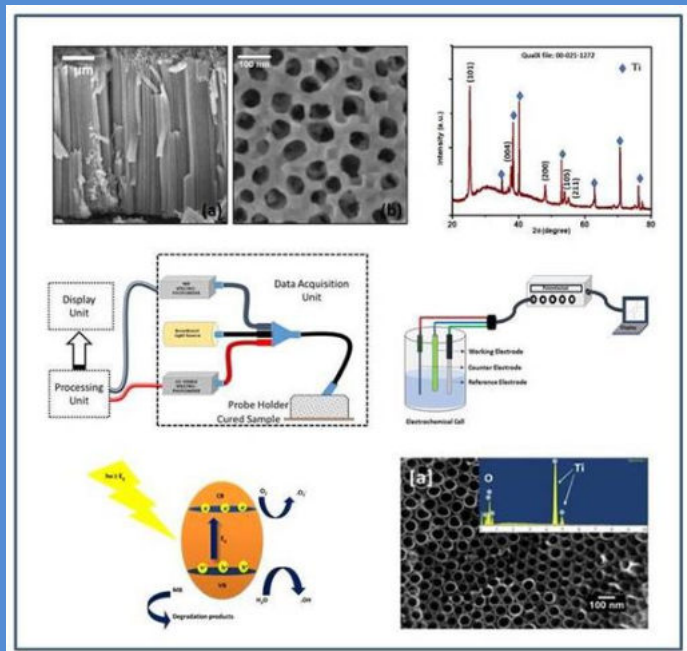
**Abstract.** In the present work, the effect of hematite nanostructures in inhibiting the growth of two different bacteria is studied. Here, the nanostructures are fabricated by the simple method of electrochemical anodization followed by annealing. The X-ray diffraction studies confirm its formation with rhombohedral structure. Formation of nanoporous structures is confirmed through FESEM images. The optical studies are carried out through diffused reflectance measurements. The XPS studies suggest the presence of iron in Fe<sup>3+</sup> state, which further confirm the formation of hematite phase. Antibacterial effect of hematite nanostructures is tested by agar well diffusion method. Three different concentrations of the hematite material are utilized and the results show increased antibacterial activity with increase in concentration of material. The results clearly indicate that hematite nanostructures prepared by the simple and cost-effective method can be considered as a promising antibacterial agent against these bacteria.

**Keywords:** Iron oxide, hematite, anodization, antibacterial agent, agar well diffusion

## 1 Introduction

Nanotechnology is attracting a wide interest nowadays as it offers a variety of structures in the nanoscale region for application in the fields of catalysis, gas sensing, energy storage, biomedicine etc. The advances in nanotechnology enable preparation of nanostructures, having suitable properties for these applications, with great precision and control. Recently, researchers in the biomedical field has shown particular interest in iron oxide nanostructures due to its unique properties such as abundance, low cost, bio compatibility, non-toxicity, high crystallinity, large surface area and physical and chemical stability [1,2]. Because of these characteristics, iron oxide nanostructures are widely used in drug delivery, magnetic resonance imaging and antibacterial applications [3,4]. The prominent phases of iron oxide such as hematite ( $\alpha$ -Fe<sub>2</sub>O<sub>3</sub>), magnetite (Fe<sub>3</sub>O<sub>4</sub>) and maghemite ( $\gamma$ -Fe<sub>2</sub>O<sub>3</sub>) find a large number of

# Insightful Investigations: Exploring Material Properties through Characterization Techniques



Department of Physics  
Union Christian College, Aluva-2

# **Insightful Investigations: Exploring Material Properties through Characterization Techniques**

Copyright © 2023

Editors:

Dr Shinoj V K

Department of Physics, Union Christian College Aluva 683102.

Dr Saritha K Nair

Department of Physics, Mar Athanasius College (Autonomous),  
Kothamangalam 686666.

Publishers:

Union Christian College Aluva 683102

ISBN: 978-81-960457-1-5

All rights reserved.

No part of this publication may be reproduced or distributed in any form or by any means, or stored in a database or retrieval system, without the prior written permission of the author.

Cover Design: Dr Shinoj V K

Printing: SN Press, Aluva.

Price: Rs 200/-

# Photocatalytic degradation of MB dye: A comparative study between flower like hierarchical structures of MoS<sub>2</sub> and the Bulk MoS<sub>2</sub>

Saranya Sasi<sup>1</sup>, Christeena Thomas<sup>1</sup>, Benazeera Beegum<sup>1</sup>, Alex Mathew<sup>1</sup>,  
Reshmi R<sup>1\*</sup>

<sup>1</sup>*Optoelectronic and Nanomaterial's Research Laboratory, Department of Physics,  
Union Christian College, Aluva, Kerala 683102, India*

*\*[rreshmi@gmail.com](mailto:rreshmi@gmail.com)*

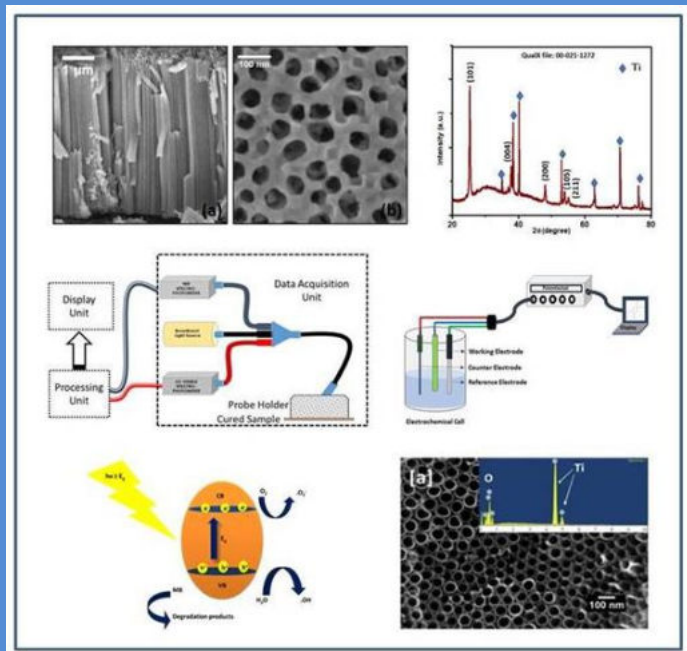
**Abstract.** In the wide library of 2D materials, transition metal dichalcogenides have gained much attention in recent years. Molybdenum disulphide (MoS<sub>2</sub>) being a prominent member of this family has been actively researched for the application of photocatalytic degradation of toxic dyes. The narrow band gap, and good optical absorption properties of MoS<sub>2</sub> make itself competent for the widely used photocatalyst Titanium dioxide (TiO<sub>2</sub>). In this study flower like nanostructures of MoS<sub>2</sub> were prepared by the versatile hydrothermal technique. The crystallinity of the prepared sample was verified using XRD and Raman. A photocatalytic comparative study was made between bulk MoS<sub>2</sub> and the flower like structures of MoS<sub>2</sub>. The flower - like hierarchical nanostructures exhibit a better degradation of Methylene blue dye compared with the flakes of bulk MoS<sub>2</sub>. This morphology dependent activity of MoS<sub>2</sub> opens new perspectives in the field of catalysis.

**Keywords:** Transition metal dichalcogenides, Molybdenum disulphide, phototocatalyst

## 1 Introduction

Two dimensional transition metal dichalcogenides (2D TMDs) comprises rich diversity of material properties [1]. They can be a substitute for the zero band gap of graphene and have the capability to go beyond the graphene. Typically, TMDs possess an intrinsic layered structure, a layer of hexagonally connected transition metal atoms are arranged between the chalcogen layers[2], [3]. This tri-layered structures are denoted by a general formula of MX<sub>2</sub>, Where M represents a transition metal and X is a chalcogen. The strong covalent bond holds the atoms within the layer whereas the weak Vander Valls force

# Insightful Investigations: Exploring Material Properties through Characterization Techniques



Department of Physics  
Union Christian College, Aluva-2

# **Insightful Investigations: Exploring Material Properties through Characterization Techniques**

Copyright © 2023

Editors:

Dr Shinoj V K

Department of Physics, Union Christian College Aluva 683102.

Dr Saritha K Nair

Department of Physics, Mar Athanasius College (Autonomous),  
Kothamangalam 686666.

Publishers:

Union Christian College Aluva 683102

ISBN: 978-81-960457-1-5

All rights reserved.

No part of this publication may be reproduced or distributed in any form or by any means, or stored in a database or retrieval system, without the prior written permission of the author.

Cover Design: Dr Shinoj V K

Printing: SN Press, Aluva.

Price: Rs 200/-

# Photocatalytic study of WO<sub>3</sub>/rGO nanocomposites on Congo red dye and Rhodamine B

Rajani S Nair<sup>1</sup>, Kala M S<sup>1</sup>, Reshmi R<sup>2\*</sup>

<sup>1</sup>*Department of Physics, St Teresa's College, Ernakulam*

<sup>2</sup>*Department of Optoelectronic and Nanomaterials Research Laboratory, Union Christian College, Aluva*

\*[rreshmi@gmail.com](mailto:rreshmi@gmail.com)

**Abstract.** In the present study tungsten trioxide based photocatalyst were synthesized by doping WO<sub>3</sub> with Ag and WO<sub>3</sub> with rGO using the hydrothermal method. The ternary compound Ag-WO<sub>3</sub>-rGO was synthesized using a two-step hydrothermal method. The characterisation of the samples were done using XRD, SEM, EDX and Raman spectroscopy. The XRD peaks of the samples were in agreement with the monoclinic structure of WO<sub>3</sub> as per the standard JCPDS file. Pure WO<sub>3</sub> has shown less degradation when exposed to visible light for 60 min. In the further study with Ag-WO<sub>3</sub> and rGO-WO<sub>3</sub>, the silver doped WO<sub>3</sub> has shown higher degradation compared with rGO doped WO<sub>3</sub> when exposed to visible light for 60 min. The experiment was repeated with ternary Ag-WO<sub>3</sub>-rGO also. The results shows that Ag-WO<sub>3</sub> and ternary nanocomposite have excellent photocatalytic activity on Congo red dye and Rhodamine B. The degradation efficiency was observed more in the case of Congo red dye within a given time interval compared with Rhodamine B. The enhanced photocatalytic activity can be due to the increased adsorption of dye molecules, the enhanced light absorption and the increased band gap after doping.

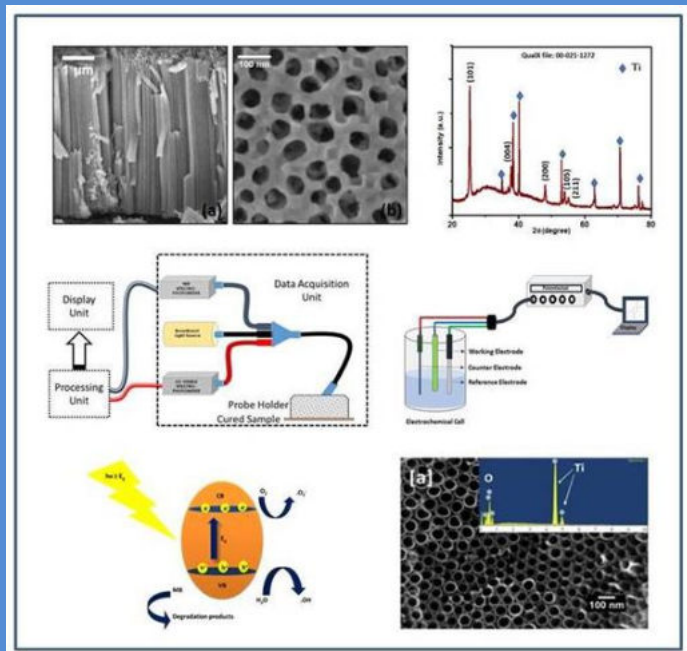
**Keywords:** Photocatalysis, Tungsten trioxide, Congored, Rhodamine-B

## 1 Introduction

Photocatalysis has gained considerable attention over the years due to its applications in various fields for waste water treatment and antibacterial applications. The unusual properties of metal oxide nanoparticles have attracted the attention of researchers in the present time. Due to large surface area they are more sensitive to external stimuli like light. Tungsten trioxide (WO<sub>3</sub>), a transition metal oxide is an oxygen deficient n type wide band gap semiconductor material with band gap of 2.6 eV – 3.5 eV and can be activated



# Insightful Investigations: Exploring Material Properties through Characterization Techniques



Department of Physics  
Union Christian College, Aluva-2

# **Insightful Investigations: Exploring Material Properties through Characterization Techniques**

Copyright © 2023

Editors:

Dr Shinoj V K

Department of Physics, Union Christian College Aluva 683102.

Dr Saritha K Nair

Department of Physics, Mar Athanasius College (Autonomous),  
Kothamangalam 686666.

Publishers:

Union Christian College Aluva 683102

ISBN: 978-81-960457-1-5

All rights reserved.

No part of this publication may be reproduced or distributed in any form or by any means, or stored in a database or retrieval system, without the prior written permission of the author.

Cover Design: Dr Shinoj V K

Printing: SN Press, Aluva.

Price: Rs 200/-

# Biosensors Based On Novel 2D Nanomaterials: A Short Review

Christeena Thomas<sup>1</sup>, Reshmi R<sup>1\*</sup>

<sup>1</sup>*Optoelectronic and Nanomaterial's Research Laboratory, Department of Physics,  
Union Christian College, Aluva, Kerala 683102, India*

\*[rreshmi@gmail.com](mailto:rreshmi@gmail.com)

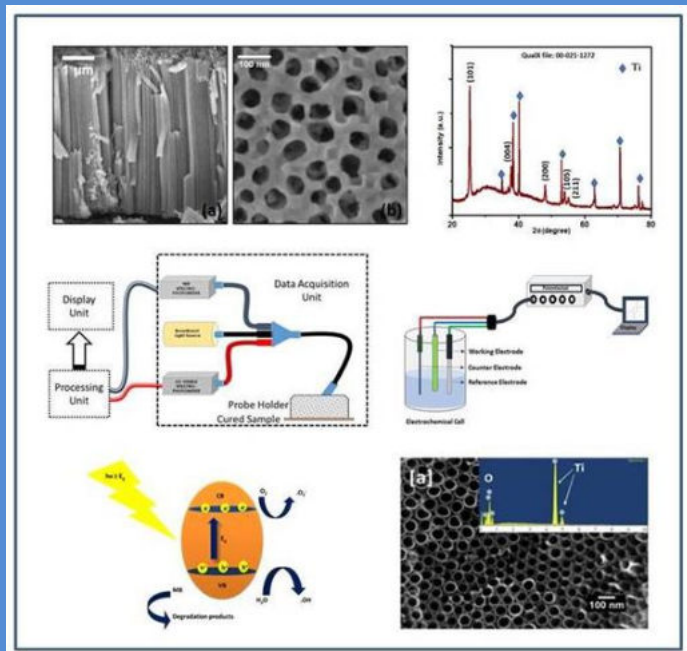
**Abstract.** Biosensors are analytical devices that can ensure specific, sensitive, and fast responses by quantifying biological, physical, or chemical events. Biosensors have a wide spectrum of applications in industry, agriculture, healthcare monitoring, defense, security, etc. In recent years researchers have witnessed the capability of novel nanomaterials to revolutionize the potential of biosensors. The unique physiochemical and mechanical properties of nanomaterials can offer very fast, robust, real-time, and stable detection of events without compromising their selectivity and sensitivity. Among different nanomaterials, two- Dimensional(2D) nanomaterials hold high surface-to-volume ratios with excellent electrical, optical, and catalytic properties. This review focuses on the role of 2D nanomaterials in advanced biosensors giving more importance to electrochemical biosensors

**Keywords:** Biosensor, electrochemical analysis.

## 1 Introduction

Nanotechnology has the ability to engineer the materials precisely at the nanometre scale and these new unique materials can exhibit different characteristics and properties from bulk material. Nanotechnology offers a broad range of applications from electronics, Optical communication, and biological systems. It impacts biomedical research and technology for studying the fundamental interactions and dynamics at the single cell/molecule level [1,2]. In the current scenario of biomedical research, accurate and early detection of various diseases at the early stages of disease development has significant importance. There is a need to enhance the capability of sensor technology for health, environmental monitoring, and biological analysis. The main area of concern is new strains of microbial organisms and the spread of infectious diseases that require rapid detection and identification. Progress in nanotechnology resulted in the fabrication of highly selective biosensors with ultrasensitivity and selectivity [3].

# Insightful Investigations: Exploring Material Properties through Characterization Techniques



Department of Physics  
Union Christian College, Aluva-2

# **Insightful Investigations: Exploring Material Properties through Characterization Techniques**

Copyright © 2023

Editors:

Dr Shinoj V K

Department of Physics, Union Christian College Aluva 683102.

Dr Saritha K Nair

Department of Physics, Mar Athanasius College (Autonomous),  
Kothamangalam 686666.

Publishers:

Union Christian College Aluva 683102

ISBN: 978-81-960457-1-5

All rights reserved.

No part of this publication may be reproduced or distributed in any form or by any means, or stored in a database or retrieval system, without the prior written permission of the author.

Cover Design: Dr Shinoj V K

Printing: SN Press, Aluva.

Price: Rs 200/-

# Effect of Annealing temperature on the formation of crystalline Titanium dioxide nanotubes

Alex J Thachil<sup>1</sup>, Aijo John K<sup>1\*</sup>

<sup>1</sup>*Thin Film Research Lab, Department of Physics, Union Christian College, Aluva-683102*

\*aiojohn1@gmail.com

**Abstract.** Vertically aligned titanium dioxide nanotubes are fabricated by anodization of titanium plates. The anodization is carried out with ammonium fluoride in ethylene glycol as the electrolyte. The surface morphology of the as-formed nanotubes was analyzed by using Scanning Electron Microscope. The as fabricated nanotubes are of amorphous form, it is then converted to crystalline nature by the process of Thermal Annealing. The effect of annealing temperature on the crystalline nature and type of polymorph present is also analysed.

**Keywords:** TiO<sub>2</sub> nanotubes, Thermal annealing.

## 1 Introduction

The wide band gap with suitable band edge positions, exceptional biocompatibility, unique ionic and electronic properties, etc., make titanium dioxide one of the most investigated metal oxides. The specific surface area of TiO<sub>2</sub> is significantly enhanced in the nanostructured forms such as, nanotubes, nanoparticles, nanorods, etc., which is crucial in determining its maximum overall performance in respective applications.

Fabrication and applications of TiO<sub>2</sub> nanotubes (TONT) are widely investigated due to their properties such as unique architecture, high surface-to-volume ratios, excellent electron percolation pathways and size dependent properties. These facts make TONT subject of considerable scientific interest as well as potential candidate for a number of practical applications [1]. Outstanding charge transport and carrier life time properties enable TONT for a variety of applications such as sensors [2], dye sensitized solar cells [3], water photoelectrolysis, photocatalytic reduction of carbon dioxide under sunlight [4], and supercapacitors [5]. In addition, nanotube arrays are used in

# Identification of Tuberculosis Bacilli from Bright Field Microscopic Sputum Smear Images using U-Net and Random Forest Classification Algorithm

Greeshma K. \*<sup>†‡</sup>, Vishnukumar S. \*<sup>‡</sup>

\*Department of Computer Applications,  
Cochin University of Science and Technology, Kochi, Kerala, India

<sup>†</sup>Department of Computer Science  
Union Christian College, Aluva,  
Kochi, Kerala, India

<sup>‡</sup>Email: greeshmavarier@gmail.com, vks@cusat.ac.in

**Abstract**—Tuberculosis (TB) is an infectious illness that may be severe and primarily impacts the lungs. Examining sputum smears under bright field microscopes is one of the simplest and most successful ways to detect TB infection in impoverished nations like India. A method for detecting tuberculosis bacteria from bright-field microscopic sputum smear images is proposed in this work. U-shaped encoder-decoder network architecture (U-Net) is used to first segment the bright field microscopic sputum smear images, and then Random Forest Classification Algorithm is used for final prediction. The detection of bacilli produced results that are comparable to other methods.

**Index Terms**—Tuberculosis, Microscopy, Bacilli, U-Net, Random Forest

## I. INTRODUCTION

The second-biggest infectious killer after COVID-19 (above HIV/AIDS), TB is ranked by the World Health Organization (WHO) as the thirteenth major cause of mortality. The ability to accurately diagnose patients and begin the most efficient treatment plan as soon as feasible depends on the microbiological diagnosis of TB. Although there are a number of methods to diagnose the disease, sputum smear microscopic examination is still relevant since it is one of the least expensive methods and is simple to repeat. To identify TB from sputum smears, two different types of microscopes are employed. Bright-field and fluorescence microscopes are the two types. Bright fields are preferred in many circumstances because they work more simply and produce results rather rapidly.

The Kinyoun method or Kinyoun stain (cold method) [1] is a technique used to stain Mycobacterium species that are acid-fast. It uses a kind of Ziehl-Neelsen [2] staining technique. Heat serves as the physical mordant and phenol serves as the chemical mordant in the Ziehl-Neelsen stain. The concentration of carbol fuchsin employed is higher since heat is not applied in Kinyoun stain. This staining produces the colours red for the TB bacteria and blue for the sputum sample's backdrop. Clinicians examine the TB bacteria manu-

ally in order to manually count the quantity of germs in each microscope field of vision.

Conventional techniques for processing images, machine learning techniques, and deep learning algorithms are mainly used for automating the detection of bacteria from typical microscopic images of sputum smears. Earlier, the TB detection from conventional microscope images is proposed in [3]. This is the first attempt for the automated detection of TB bacilli from conventional light microscopy which uses segmentation using global adaptive threshold on red minus green colour channel pictures. A sensitivity of 76.65% was reported in this work. M. Sotaquira *et.al* [4] proposed a colour space segmentation for quantifying bacilli and clusters. This method is resistant to image noise and changing lighting conditions and reported a sensitivity of 90.9%. Another color-based segmentation is used for the identification of TB cells in [5]. In this method, shape information such as axis ratio and eccentricity are also used for TB identification. In [6], a proximity algorithm and bacteria's distinctive trait of beadedness are taken into consideration for the evaluation of the TB infection's severity. The Mahalanobis distance is used for the pixel classification in HSI colour space. R. Khutlang *et.al* [7] proposed a two-step process for identifying bacteria. The first stage makes use of colour information and intensity values as characteristics. Shape information was employed for classification in the second stage. Tuberculosis is identified by segmenting with various classifiers, followed by feature subset selection and dimension reduction. Using ensemble approaches, final classification is also completed. For the purpose of TB identification, a two-step segmentation technique based on both the HSV and CIE L\*a\*b\* colour spaces is also employed [8]. The H and L components were split and separate thresholds were determined and fine segmentation is done by performing AND operation on both components. A decision tree based algorithm which uses area, compactness and roughness is used for the identification of TB.

In research based on deep learning, Costa [9] described an automated classification method for bright field smear mi-

# **Psychological Skills Acquisition Proceedings of International Conference**

**3<sup>rd</sup> and 4<sup>th</sup> March, 2023**



*Organized by*

**Post Graduate Department of Psychology  
Kuriakose Elias College, Mannanam,  
College Development Council, M. G. University, Kottayam  
and  
IQAC, Kuriakose Elias College, Mannanam**

*Editors*

**Fr. Johnson Joseph CST  
Ms. Chinchu Rani Vincent  
Ms. Karthika Elizabeth**





*Editors*

**Fr. Johnson Joseph CST  
Ms. Chinchu Rani Vincent  
Ms. Karthika Elizabeth**

**June 2023**

**Copyright @ Kuriakose Elias College, Mannanam  
Publisher: Kuriakose Elias College,  
Mannanam**

All rights reserved. No part of this book may be produced or transmitted in any form or by any means, electric or mechanical, including photocopying, recording or by any information retrieval system without written permission of the publisher.

**ISBN: 978-81-960709-2-2**



**9 788196 070922**

**Price: ₹ 500/-**

## Childhood Trauma among Victims of Intimate Partner Violence

Keziah Sarah Thomas<sup>1</sup>, Syna Soosan Abraham<sup>2</sup>

<sup>1</sup>Assistant Professor, <sup>1</sup>CSI College for Advanced Studies, Punnakkad, Pathanamthitta, Kerala

<sup>2</sup>Assistant Professor, <sup>2</sup>Union Christian College, Aluva, Ernakulam, Kerala  
e-mail: keziahthomas137@gmail.com, synasoosanabraham@uccollege.edu.in

### Abstract

*Intimate partner violence, which encompasses sexual, physical, emotional, psychological, and controlling behaviours by an intimate partner, is one of the most frequent types of violence against women. Childhood trauma is the experiencing of a traumatic event by a child, which frequently has long-lasting psychological and physical impacts. The aim of the study was to find out the relationship between Childhood Trauma (CT) and Intimate Partner Violence (IPV) and influence of socio-demographic factors on IPV. The sample consists of 58 women who are IPV victims. The measures used for data collection include Childhood Trauma Questionnaire (CTQ; Bernstein, D.P and Fink, L., 1994) to examine traumatic experiences during childhood which include physical abuse, sexual abuse, emotional abuse, physical neglect, and emotional neglect; Composite Abuse Scale (CAS; Hegarty, Sheehan and Schonfeld,. 1999) to examine IPV, it consists of four subscales (severe combined abuse, emotional abuse, physical abuse, and harassment). Spearman Rank correlation test and Mann-Whitney U test were used for data analysis. It was found that as the CT increase susceptibility to the IPV increase and as age and duration of relationship increase, Harassment in IPV decrease. Moreover, women in urban area experienced more emotional abuse than rural area, and no significant difference on other socio-demographic factors. The conclusion was that psychological factors than socio-demographic factors have more influence on IPV victims.*

**Keywords:** Intimate Partner Violence, childhood trauma.

### Introduction

According to World Health Organization, “Intimate Partner Violence (IPV) is considered as one of the most common causes of violence against women which includes sexual, physical, emotional, psychological, and controlling behaviors by an intimate partner”. “Childhood Trauma is the experience of an event by a child that is emotionally painful and distressful” (National Institute of Mental Health). 52% of women and 42% of men who participated in the National Family Health Survey (NFHS-4), 2015-2016, thought that it is acceptable for a husband to physically abuse

# **Psychological Skills Acquisition Proceedings of International Conference**

**3<sup>rd</sup> and 4<sup>th</sup> March, 2023**



*Organized by*

**Post Graduate Department of Psychology  
Kuriakose Elias College, Mannanam,  
College Development Council, M. G. University, Kottayam  
and  
IQAC, Kuriakose Elias College, Mannanam**

*Editors*

**Fr. Johnson Joseph CST  
Ms. Chinchu Rani Vincent  
Ms. Karthika Elizabeth**



*Editors*

**Fr. Johnson Joseph CST  
Ms. Chinchu Rani Vincent  
Ms. Karthika Elizabeth**

**June 2023**

**Copyright @ Kuriakose Elias College, Mannanam  
Publisher: Kuriakose Elias College,  
Mannanam**

All rights reserved. No part of this book may be produced or transmitted in any form or by any means, electric or mechanical, including photocopying, recording or by any information retrieval system without written permission of the publisher.

**ISBN: 978-81-960709-2-2**



**Price: ₹ 500/-**

## **Resilience in Relation to the Psychological Adjustment among Disaster Victims**

**Kavitha M Nair<sup>1</sup>, Dr. Seena M Mathai<sup>2</sup>**

*Post Graduate Department of Psychology, Union Christian College, Aluva,  
Ernakulum, Kerala 683101*

*e-mail: kavithakoyickal18@gmail.com*

### **Abstract**

*In August 2018, a severe flood affected the South Indian state of Kerala. The level of psychological problems in victims will be inversely proportional to the factors like resilience, adjustment, optimism etc. of the individual. The present study was carried out with the objective to explore the relationship between resilience and adjustment among disaster victims. The study was conducted on 120 flood victims from Pathanamthitta district in Kerala; in the age range 18-25 years. Tools used for data collection were Brief Resilience Scale and Adjustment Inventory. The data was analyzed using t-test and correlation. The results revealed that there is a significant positive correlation between resilience and adjustment among flood victims, males are found to be more resilient than females, there is a significant difference in the levels of resilience and health adjustment among males and females, and secondary disaster victims have high social adjustment than other two groups. Providing a good support system in school and home, and inculcating a positive self-image in children help them to adjust well to their life and adversities that may unexpectedly occur in their life.*

**Keywords:** *resilience, adjustment, flood victim*

### **Introduction**

Emergencies and disasters are fundamental reflections of normal life. A disaster is a serious disruption of the functioning of a society, causing widespread human, material or environmental losses, which exceed the ability of affected society to cope using only its own resources (Gaur, 2008). One of the leading causes of natural disaster deaths worldwide is flood. Beginning on 15 August 2018, due to unusually high rainfall during the monsoon season, severe floods affected Kerala, the South Indian state. It was the worst flooding in Kerala in nearly a century. Over 483 people died, 15 are missing and at least a million people were evacuated. The Indian government had declared it as a "calamity of a severe nature" or a Level 3 Calamity.

Sharp increases in the prevalence of mental health symptoms have been reported following various disasters. One of the important intrinsic factors that helps a person get through or return to normal functioning after being exposed to any adversity such as a natural disaster is resilience. Resilience following natural disasters occurs at multiple levels. It involves the individual, the family, the community and the city at

# **Psychological Skills Acquisition Proceedings of International Conference**

**3<sup>rd</sup> and 4<sup>th</sup> March, 2023**



*Organized by*

**Post Graduate Department of Psychology  
Kuriakose Elias College, Mannanam,  
College Development Council, M. G. University, Kottayam  
and  
IQAC, Kuriakose Elias College, Mannanam**

*Editors*

**Fr. Johnson Joseph CST  
Ms. Chinchu Rani Vincent  
Ms. Karthika Elizabeth**



*Editors*

**Fr. Johnson Joseph CST  
Ms. Chinchu Rani Vincent  
Ms. Karthika Elizabeth**

**June 2023**

**Copyright @ Kuriakose Elias College, Mannanam  
Publisher: Kuriakose Elias College,  
Mannanam**

All rights reserved. No part of this book may be produced or transmitted in any form or by any means, electric or mechanical, including photocopying, recording or by any information retrieval system without written permission of the publisher.

**ISBN: 978-81-960709-2-2**



**9 788196 070922**

**Price: ₹ 500/-**

## **Organizational Climate and Commitment among Public and Private Sector Employees of Kerala**

**Nimmy Johns<sup>1</sup> & Dr. Seena M. Mathai<sup>2</sup>**

<sup>1</sup>*Research Scholar, Union Christian College, Aluva, Kerala*

<sup>2</sup>*Asst. Professor, Department of Psychology,  
Union Christian College, Aluva, Kerala*

e-mail Id: nimmyjohns10@gmail.com, seenammathai@uccollege.edu.in

### **Abstract**

*The study aimed to examine differences between public and private sector employees in organizational climate and organizational commitment and also to examine relationship between organizational climate and organizational commitment. The sample consisted of 90 employees from Kerala, with 45 employees each from public and private sectors. The tools used were organizational climate scale by Pethe, Dhar and Chaudhari (2001) and organizational commitment scale by Hyde and Roy (2006). It was also found that there is significant difference between public and private sector employees in the factor organizational process at 0.01 level. It was also found that there is no significant difference between employees of public and private sector in organizational commitment. Total commitment was found to be correlated to contentment and empowerment at 0.05 level and to affection and total organizational commitment at 0.01 level. The study implies that being of a specific gender does not influence an employee's level of commitment to their organization and perception of organizational climate. Positive perception of organizational climate is seen as higher for private sector employees, however the level of organizational commitment is same for both, this implies that a provision of better organizational climate for public sector employees may make them more committed to their organization than employees of private sector.*

**Keywords:** *Organizational climate, organizational commitment. Public sector, private sector*

### **Introduction**

By eighteenth and nineteenth century, most of the world countries adopted the policy of laissez faire where the Governments followed a policy of non-interference in economic activity by the State. Which in turn led to a huge expansion of private sector in almost all the countries of the world. However, in a developing country like India, with the continuous expansion of the public sector, the productive areas open for the private sector was less. And it was only during the post-1991 period of economic liberalisation, more and more areas were made open for the private sector. And the industrial activities in private sector increased through both the participation of domestic and foreign, private companies. (Department of Public Enterprises, 2008)



# **Psychological Skills Acquisition Proceedings of International Conference**

**3<sup>rd</sup> and 4<sup>th</sup> March, 2023**



*Organized by*

**Post Graduate Department of Psychology  
Kuriakose Elias College, Mannanam,  
College Development Council, M. G. University, Kottayam  
and  
IQAC, Kuriakose Elias College, Mannanam**

*Editors*

**Fr. Johnson Joseph CST  
Ms. Chinchu Rani Vincent  
Ms. Karthika Elizabeth**



*Editors*

**Fr. Johnson Joseph CST  
Ms. Chinchu Rani Vincent  
Ms. Karthika Elizabeth**

**June 2023**

**Copyright @ Kuriakose Elias College, Mannanam  
Publisher: Kuriakose Elias College,  
Mannanam**

All rights reserved. No part of this book may be produced or transmitted in any form or by any means, electric or mechanical, including photocopying, recording or by any information retrieval system without written permission of the publisher.

**ISBN: 978-81-960709-2-2**



**Price: ₹ 500/-**

## **Cognitive Flexibility and Occupational Stress among Police Officers**

**Shaino Mariam Philip<sup>1</sup>, Dr. Marikutty P.J.<sup>2</sup>**

<sup>1</sup>*Guest Lecturer, VMCON, Kottayam,*

<sup>2</sup>*Assistant Professor, Union Christian College, Aluva*

E-mail: shainomariam@gmail.com, marykuttypj@yahoo.com

### **Abstract**

*In addition to their usual responsibilities, demands placed on Police officers during post Covid period was quite high. Occupational stress is a mental and physical reaction to situations at workplace that can be harmful to health and overall well-being and in life. The capacity of a person to adjust to environments that are constantly changing in an effective manner is called Cognitive flexibility and this may be helpful in dealing with occupational stress. The study aimed to examine cognitive flexibility and occupational stress and its relationship with each other among police officers. It also studied the gender difference in cognitive flexibility and occupational stress amongst police officers. The study was carried out on 130 police officers, 98 males and 32 females, of different occupational ranks using Cognitive Flexibility Inventory (CFI) (Dennis & Vander Wal, 2009) and Occupational Stress Index (OSI) (Srivastava & Singh, 1984). Data was analyzed using methods like ANOVA, 't' test and Pearson product moment correlation. Results obtained emphasized the need to develop cognitive flexibility among police officers to reduce occupational stress. It also showed that women police officers have significantly higher cognitive flexibility, lesser role ambiguity and higher stress from experiencing low status at work place than male police officers.*

**Keywords:** Cognitive Flexibility, Occupational Stress, Police Officers

### **Introduction**

The pandemic Covid had profound psychological effects on the entire world population. In addition to their usual responsibilities, demands placed on Police officers during post Covid period was quite high leading to increased job stress. Occupational stress is a mental and physical reaction to situations at workplace that can be harmful to health and overall well-being and in life. The capacity of a person to adjust to environments that are constantly changing in an effective manner is called Cognitive flexibility and this may be helpful in dealing with occupational stress. As police officers are under constant pressure to do multiple activities, it is important for the police officers to have adequate cognitive flexibility.

# **Psychological Skills Acquisition Proceedings of International Conference**

**3<sup>rd</sup> and 4<sup>th</sup> March, 2023**



*Organized by*

**Post Graduate Department of Psychology  
Kuriakose Elias College, Mannanam,  
College Development Council, M. G. University, Kottayam  
and  
IQAC, Kuriakose Elias College, Mannanam**

*Editors*

**Fr. Johnson Joseph CST  
Ms. Chinchu Rani Vincent  
Ms. Karthika Elizabeth**



*Editors*

**Fr. Johnson Joseph CST  
Ms. Chinchu Rani Vincent  
Ms. Karthika Elizabeth**

**June 2023**

**Copyright @ Kuriakose Elias College, Mannanam  
Publisher: Kuriakose Elias College,  
Mannanam**

All rights reserved. No part of this book may be produced or transmitted in any form or by any means, electric or mechanical, including photocopying, recording or by any information retrieval system without written permission of the publisher.

**ISBN: 978-81-960709-2-2**



**Price: ₹ 500/-**

## **Role of Perceived Parenting on Impulsiveness of Adolescents**

**Fr. Johnson Joseph<sup>1</sup> Dr. Vidhya Ravindranadan<sup>2</sup>**

<sup>1</sup>*Assistant Professor, Dept. Of Psychology, K. E. College Mannanam*

<sup>2</sup>*Assistant Professor & Research Supervisor, Dept. of Psychology,  
U.C College Aluva*

### ***Abstract***

*This research article aims to explore the relationship between perceived parenting styles and the impulsiveness of adolescents. Impulsiveness plays a crucial role in shaping an individual's behavior, decision-making, and overall well-being. Understanding how perceived parenting influences adolescent impulsiveness can provide valuable insights for parents, educators, and mental health professionals. A descriptive quantitative research design was adopted for the study and the population of the study was young adolescents. A simple random sampling method was adopted for the data collection. The Sample size of the study was two hundred students that consist of both males and females. Measurements used for the study are the perceived parenting scale by R.L. Bharadwaj, Sharma and Garg, and the Impulsiveness scale by SN Rai. Major findings of the study state that there is significant difference in perceived fathering of male and female adolescents and there is no significant relationship between perceived parenting and impulsive behaviour among adolescents*

***Keywords:*** *Perceived Parenting, Impulsiveness, Social Competence*

### **Introduction**

It's a wellknown fact that adolescence is a critical period marked by heightened impulsiveness, as individuals strive for autonomy and navigate various challenges. The perceived parenting style during this time can significantly shape adolescents' impulsivity levels, influencing their overall well-being and future outcomes. During this phase, the influence of parenting on various aspects of adolescent behavior and adjustment becomes particularly crucial. (Jaworska & MacQueen 2015.) One key aspect of parenting that has gained considerable attention in the literature is perceived parenting, which refers to how adolescents perceive their parents' behaviors, attitudes, and interactions with them. Perceived parenting styles are believed to shape adolescents' psychological and social development, including their levels of impulsiveness and social competence. (Salavera, Usán and Quilez-Robres, 2022).

Impulsiveness, characterized by acting without forethought or consideration of consequences, is a common trait observed among adolescents. It plays a vital role in decision-making, risk-taking behaviors, and self-regulation processes. Impulsiveness

# **Psychological Skills Acquisition Proceedings of International Conference**

**3<sup>rd</sup> and 4<sup>th</sup> March, 2023**



*Organized by*

**Post Graduate Department of Psychology  
Kuriakose Elias College, Mannanam,  
College Development Council, M. G. University, Kottayam  
and  
IQAC, Kuriakose Elias College, Mannanam**

*Editors*

**Fr. Johnson Joseph CST  
Ms. Chinchu Rani Vincent  
Ms. Karthika Elizabeth**



*Editors*

**Fr. Johnson Joseph CST  
Ms. Chinchu Rani Vincent  
Ms. Karthika Elizabeth**

**June 2023**

**Copyright @ Kuriakose Elias College, Mannanam  
Publisher: Kuriakose Elias College,  
Mannanam**

All rights reserved. No part of this book may be produced or transmitted in any form or by any means, electric or mechanical, including photocopying, recording or by any information retrieval system without written permission of the publisher.

**ISBN: 978-81-960709-2-2**



**Price: ₹ 500/-**



## **Screen Time, Sleep Quality and Life Satisfaction among Young Adults**

**Devipriya K S<sup>1</sup>, Ashly Paul<sup>2</sup>, Malini R<sup>3</sup>**

<sup>1</sup> MSc Psychology, Department of Psychology, University College, Thiruvananthapuram, Kerala

<sup>2</sup> MA Psychology, Department of Psychology, Central University of Punjab, Punjab

<sup>3</sup> Assistant Professor, Post Graduate and Research Department of Psychology Union Christian College, Aluva, Kerala

e-mail: devipriyadevutty09052019@gmail.com, ashlypaul135@gmail.com, malinir@uccollege.edu.in

### ***Abstract***

*The purpose of the present study was to understand whether there exist any difference in sleep quality and life satisfaction among young adults with low, moderate and high screen time. The participants of the study consist of 182 college students of which 84 were boys and 98 were girls. They belonged to the age range of 18-23 years. Measures used for data collection in the study are The Brief Multidimensional Students Life Satisfaction Scale - College Version, The Pittsburgh Sleep Quality Index (PSQ) and Personal Data Schedule. Each measure was administered to participants through Google form with appropriate instructions. Data analysis was done using the methods such as One-way ANOVA, Pearson's Correlation Method and Students t test. The results indicated that there is significant difference in sleep quality and life satisfaction among low, moderate and high screen users, there is significant relationship between the sleep quality and life satisfaction among young adults and there is no significant difference between male and female young adults in their sleep quality and life satisfaction. The study contributes to a better understanding of how screen usage affects individuals sleep quality and life satisfaction.*

**Keywords:** Sleep quality, life satisfaction, young adults, screen time

# **Psychological Skills Acquisition Proceedings of International Conference**

**3<sup>rd</sup> and 4<sup>th</sup> March, 2023**



*Organized by*

**Post Graduate Department of Psychology  
Kuriakose Elias College, Mannanam,  
College Development Council, M. G. University, Kottayam  
and  
IQAC, Kuriakose Elias College, Mannanam**

*Editors*

**Fr. Johnson Joseph CST  
Ms. Chinchu Rani Vincent  
Ms. Karthika Elizabeth**



*Editors*

**Fr. Johnson Joseph CST  
Ms. Chinchu Rani Vincent  
Ms. Karthika Elizabeth**

**June 2023**

**Copyright @ Kuriakose Elias College, Mannanam  
Publisher: Kuriakose Elias College,  
Mannanam**

All rights reserved. No part of this book may be produced or transmitted in any form or by any means, electric or mechanical, including photocopying, recording or by any information retrieval system without written permission of the publisher.

**ISBN: 978-81-960709-2-2**



**9 788196 070922**

**Price: ₹ 500/-**

## **COVID anxiety in Relation to Personality and Social Support**

**Chinnu Bose<sup>1</sup>, and Dr. Malini R<sup>2</sup>**

<sup>2</sup> *Assistant Professor, Research and Post Graduate Department of Psychology, Union Christian College, Aluva, Kerala,  
e-mail - chinnubose99@gmail.com, malinir@uccollege.edu.in*

### **Abstract**

*The COVID-19 pandemic has affected the entire universe since 2019 and there have been drastic changes in every individual's life. The current study explores the nature of the relationship, if any, among the variables, viz., COVID anxiety, personality, and social support, and also to find out if there exists any gender difference or age-wise difference in the experience of COVID anxiety and social support. The study also tried to understand whether there is any difference between those whom were COVID infected and not the experience of COVID anxiety and social support. The participants were a total of 133 individuals of the age group 18-59 years. Data was collected using online Google Forms. The study's findings reveal no significant relationship between the experience of COVID anxiety, personality, and social support. No significant gender difference was found in COVID anxiety and social support. Elderly people were found to experience more COVID anxiety, however, no significant difference was found between different age groups in social support. There was no difference in the experience of COVID anxiety between people previously infected and not infected with Coronavirus, however, COVID-infected people were found to experience more social support. The study contributes to a better understanding of the importance of social support in reducing considerable anxiety related to the pandemic.*

**Keywords:** *COVID anxiety, Personality factors, and Social support*

The entire universe was under an epidemic called COVID-19 which started affecting the entire world around March 2019. Although many countries proposed mass quarantines and searched for a vaccine against Covid-19, the number of deaths did not decrease much during this period. However, most people have gone through severe mental problems. On a day when many countries around the world began large-scale lockdowns, researchers were back to investigate whether the anxiety experienced during COVID-19 has brought about any significant changes in personality factors and whether the social support surrounding people has any benefit to their overall physical well-being. And prosperity on the psychological side.

Covid anxiety is defined as a situation where a person cannot leave their home due to fear of contracting Covid-19, even if they are not in a high risk situation (Kimberly



# FLOWERING PLANTS OF UCC CAMPUS

FLOWERING PLANTS OF UCC



Published by  
**Union Christian College, Aluva**

**JUSTIN K NAYAGAM**

# FLOWERING PLANTS OF UCC CAMPUS

By **Dr. Justin R Nayagam**

Copyright©2023 by Post Graduate and Research  
Department of Botany, Union Christian College,  
Aluva, Kerala, India.

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without written permission from the Post graduate and Research Department of Botany, Union Christian College, Aluva, Kerala.

Published by:

**Union Christian College**

Aluva - 683102, Kerala, India

Email: [justinr@uccollege.edu.in](mailto:justinr@uccollege.edu.in)

**ISBN: 78-81-960457-5-3**

**HERBARIUM BASED TOUR GUIDE FOR  
PLANT COLLECTION**

For Undergraduates, Postgraduates and Researchers



**BY**

**Dr. JUSTIN R NAYAGAM**

**DEPARTMENT OF BOTANY  
UNION CHRISTIAN COLLEGE, ALWAYE – 2  
KERALA, INDIA 683102**

**ISBN: 978-81-960457-8-4**

# HERBARIUM BASED TOUR GUIDE FOR PLANT COLLECTION

By **Dr. Justin R. Nayagam**

Copyright©2023 by Post Graduate and Research  
Department of Botany, Union Christian College,  
Aluva, Kerala, India.

Publisher: Union Christian College, Aluva- 683102

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without written permission from the Post graduate and Research Department of Botany, Union Christian College, Aluva, Kerala.

Published by  
**Union Christian College**  
Aluva - 683102, Kerala, India  
Email: [justinr@uccollege.edu.in](mailto:justinr@uccollege.edu.in)

**ISBN: 978-81-960457-8-4**



# **INTERNATIONAL STUDENT EXCHANGE SERVICE LEARNING**

For Domestic and International Service-Learning



**BY**

**AKHILA NARAYANAN**

**MALINI R**

**JUSTIN R NAYAGAM**

**SERVICE-LEARNING CENTRE,  
UNION CHRISTIAN COLLEGE, ALWAYE – 2  
KERALA, INDIA 683102**

**ISBN: 978-81-960457-9-1**

**INTERNATIONAL STUDENT EXCHANGE  
SERVICE LEARNING**

**Service Learning Centre, Union Christian College,  
Aluva, Kerala, India**

Authors:

**Akhila Narayanan**

**Malini R.**

**Justin R. Nayagam**

Copyright©2023 by Service Learning, Centre,  
Union Christian College, Aluva, Kerala, India.

Publisher: Union Christian College, Aluva- 683102

ISBN: 978-81-960457-9-1

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without written permission from the Service Learning Centre, Union Christian College, Aluva, Kerala.

**Union Christian College**

Aluva - 683102, Kerala, India

Email: [justinr@uccollege.edu.in](mailto:justinr@uccollege.edu.in)

**EYE OPENERS - A SERVICE LEARNING  
INITIATIVE WITH THE BLIND**

For Domestic and International Service-Learning



**BY**

**Dr. JUSTIN R NAYAGAM**

**SERVICE-LEARNING CENTRE,  
UNION CHRISTIAN COLLEGE, ALWAYE – 2  
KERALA, INDIA 683102**

**ISBN: 978-81-960457-4-6**

# **EYE OPENERS - A SERVICE LEARNING INITIATIVE WITH THE BLIND**

**By Dr. Justin R Nayagam**

Copyright©2023 by Service Learning, Centre,  
Union Christian College, Aluva, Kerala, India.

Publisher: Union Christian College, Aluva- 683102

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without written permission from the Service Learning Centre, Union Christian College, Aluva, Kerala.

**Union Christian College**  
Aluva – 683102, Kerala, India  
Email: [justinr@uccollege.edu.in](mailto:justinr@uccollege.edu.in)

ISBN: 978-81-960457-4-6



डॉ. रूबी एलसा जेकब

शिक्षा : एम. ए., पी-एच. डी. हिंदी  
कोच्चि विज्ञान व प्रौद्योगिकी  
विश्वविद्यालय कोचीन,  
केरल

प्रकाशन:राष्ट्रीय एवं राज्य स्तरीय  
पत्रिकाओं में लेख प्रकाशित,  
अंतर्राष्ट्रीय एवं राष्ट्रीय  
संगोष्ठियों में प्रपत्र प्रस्तुति  
प्रकाशन तथा सक्रिय  
सहभार।

विश्वविद्यालय अनुदान  
आयोग की लघु शोध  
परियोजना के अंतर्गत  
'भारतीय उपमहाद्वीप  
विभाजन के दौरान स्त्री की  
व्यथा कथा : हिंदी और  
अंग्रेजी विभाजन साहित्य के  
परिप्रेक्ष्य में शीर्षक पर शोध  
कार्य जारी।

पुस्तक : समकालीन हिंदी उपन्यासों में  
विस्थापन

पुरस्कार: 'भारत पत्रिका' त्रिभाषी शोध  
पत्रिका द्वारा 'सर्वश्रेष्ठ  
शोध-प्रबंध' पुरस्कार से  
सम्मानित।

संप्रति: असिस्टेंट, प्रोफेसर, हिंदी  
विभाग, यूनिवर्सिटी ऑफ़ कर्नाटक,  
कोल्लेज, अलुवा, केरल



सम्पादिका : डॉ. रूबी एलसा जेकब

# हिन्दी का प्रवासी साहित्य

हिन्दी का प्रवासी साहित्य • डॉ. रूबी एलसा जेकब



ISBN 978-93-91335-68-7

₹ 550/-



E-mail : vidyaprakashan.knp@gmail.com  
Website : www.vidyaprakashan.kanpur.com

**ISBN : 978-93-91335-68-7**

- पुस्तक : हिंदी का प्रवासी साहित्य  
लेखिका : डॉ. रूबी जैकब  
प्रकाशक : **विद्या प्रकाशन**  
सी-449, गुजैनी, कानपुर-22  
दूरभाष : (0512) 2285003  
मो० : 09415133173  
Website: [www.vidyaprakashankanpur.com](http://www.vidyaprakashankanpur.com)  
E-mail : [vidyaprakashan.knp@gmail.com](mailto:vidyaprakashan.knp@gmail.com)  
संस्करण : प्रथम 2023  
मूल्य : ₹ 550/-  
शब्द सज्जा : शिखा ग्राफिक्स, कानपुर  
मुद्रक : अनिका डिजिटल, कानपुर

---

**HINDI KA PRAVASHI SAHITYA**

**By : Dr. Ruby Jacob**

*Price : Five Hundred Fifty Only.*

## नानी : “ ए ग्लोरिफाइड नैनी ”

डॉ.रूबी एलसा जेकब

शताब्दियों से भारत के निवासी जीविकोपार्जन के निमित्त तथा व्यापार – वाणिज्य के लिए साहस करके अपनी मातृभूमि छोड़कर अन्य देशों में जाया करते थे। अपने घर – परिवार छोड़कर नई परिस्थिति में चले जाने से उनकी मान्यताएँ बदलने लग जाती हैं। युगिन यथार्थ के समस्त पक्षों को पर्द – पर्द – पर्द खोलते हुए प्रत्येक प्रवासी संदर्भों को वास्तविकता से प्रस्तुत करने में समकालीन उपन्यासकार सफल हुए। इसके साथ, वे प्रत्येक वैदेशिक यथार्थों से भी अवगत कराते हैं जहाँ हर रिश्ता क्षणिक, अनाम, अर्थहीन एवं हर संबंध अजनबीपन से ग्रसित हैं। प्रवासी भारतीयों पर आधारित उपन्यासों में विदेश में गए भारतीयों के विविध अनुभव – उनके संघर्ष, आजीविका की तलाश में निहित भागमभाग व तनाव – जैसे तत्व शामिल हैं। इन उपन्यासों में विदेशों में पनपे अपने समाज की बुनाहत है, क्षय होते रिश्ते हैं, बच्चों का विद्रोह है, टूटती – बिखरती जिंदगी की तीखी अनुभूतियों के साथ संबंधों के विच्छेदन से उत्पन्न मानसिक पीड़ा है।

भारतीय और पाश्चात्य संस्कारों से उत्पन्न अंतर्द्वन्द्व से ग्रस्त सामान्य व्यक्ति तिल – तिल टूटने लगता है। भौतिकता की अंधी बदहवास दौड़ में व्यक्ति का मनुष्यत्व कहीं खो जाता है। जो लोग बेहतर भौतिक जीवन की आस में विदेशों में जी रहे हैं वे कामयाबी के मधुर स्वप्नों में खोकर अपने पारिवारिक रिश्ते – नाते तक भूल जाते हैं। भारतीय समाज में कुछ ऐसे पारिवारिक रिश्ते हैं जिनका सम्मान हम सदियों से करते आये हैं। वास्तव में ये संबंध ही परिवार की एकता और विश्वास का आधार है। लेकिन विदेश जाते ही अधिकांश लोग अपने इन पवित्र रिश्तों के ढाँचों से बाहर निकल जाते हैं और सभी रिश्ते – नाते को केवल लाभ की दृष्टि से देखना शुरू करते हैं।

अपने नाती – नातिन की देखभाल करने के लिए अमेरिका गये एक नाना – नानी पर केन्द्रित द्रोणवीर कोहली कृत ‘ नानी ‘ उपन्यास में रिश्ते – नाते में आयी शिथिलता का मार्मिक वर्णन है। सभी संबंधों को अपनी सुविधा के लिए इस्तेमाल करनेवाले और रिश्तों की शिथिलता से परेशान पात्रों से इस उपन्यास के द्वारा हमारा साक्षात्कार होता है। ‘ नानी ‘, दुनियावी जंजाल में उलझे मानव – जीवन की तहक्रीकात या तफ़तीश की जीवंत रचना है। विदेश में जाकर बसे भारतीय दंपतियाँ अपने कामधधे में इतने डूब जाते हैं कि अपने स्वदेश – स्वजनों से भी विमुख – से रहते हैं। धनार्जन की अतीव इच्छा में रहनेवाले इन लोगों को जब संतानें होती हैं तब उन्हें स्वजनों की चिंता सताने लगते हैं। अपने नवजात शिशु को किसी ‘ नैनी ‘ या ‘ डे – केयर ‘ में छोड़ने के अलावा और



Maryann C. Wythers  
EDITOR

ADVANCES IN

# Materials Science Research

VOLUME

# 59

NOVA

Complimentary Copy



## **Copyright © 2023 by Nova Science Publishers, Inc.**

**All rights reserved.** No part of this book may be reproduced, stored in a retrieval system or transmitted in any form or by any means: electronic, electrostatic, magnetic, tape, mechanical photocopying, recording or otherwise without the written permission of the Publisher.

We have partnered with Copyright Clearance Center to make it easy for you to obtain permissions to reuse content from this publication. Simply navigate to this publication's page on Nova's website and locate the "Get Permission" button below the title description. This button is linked directly to the title's permission page on copyright.com. Alternatively, you can visit copyright.com and search by title, ISBN, or ISSN.

For further questions about using the service on copyright.com, please contact:

Copyright Clearance Center

Phone: +1-(978) 750-8400

Fax: +1-(978) 750-4470

E-mail: [info@copyright.com](mailto:info@copyright.com).

### **NOTICE TO THE READER**

The Publisher has taken reasonable care in the preparation of this book, but makes no expressed or implied warranty of any kind and assumes no responsibility for any errors or omissions. No liability is assumed for incidental or consequential damages in connection with or arising out of information contained in this book. The Publisher shall not be liable for any special, consequential, or exemplary damages resulting, in whole or in part, from the readers' use of, or reliance upon, this material. Any parts of this book based on government reports are so indicated and copyright is claimed for those parts to the extent applicable to compilations of such works.

Independent verification should be sought for any data, advice or recommendations contained in this book. In addition, no responsibility is assumed by the Publisher for any injury and/or damage to persons or property arising from any methods, products, instructions, ideas or otherwise contained in this publication.

This publication is designed to provide accurate and authoritative information with regard to the subject matter covered herein. It is sold with the clear understanding that the Publisher is not engaged in rendering legal or any other professional services. If legal or any other expert assistance is required, the services of a competent person should be sought. FROM A DECLARATION OF PARTICIPANTS JOINTLY ADOPTED BY A COMMITTEE OF THE AMERICAN BAR ASSOCIATION AND A COMMITTEE OF PUBLISHERS.

Additional color graphics may be available in the e-book version of this book.

## **Library of Congress Cataloging-in-Publication Data**

ISBN:

## Chapter 1

# Investigation of Structural, Optical and Electronic Properties of the Delafossite $\text{CuInO}_2$ for Transparent Electronic Applications

**Bindu G. Nair<sup>1</sup>, Aijo John K.<sup>2</sup>  
and Rachel Reena Philip<sup>2,\*</sup>**

<sup>1</sup> Government Polytechnic College, Perumbavoor, Kerala, India

<sup>2</sup> Thin Film Research Lab, Union Christian College, Aluva, Kerala, India

### Abstract

This chapter comprises a quick review on the recent progress in development of transparent diodes using the technologically important transparent conducting delafossite metal oxide copper indium oxide ( $\text{CuInO}_2$ ). Delafossite compounds in general are I-III-VI compounds with  $\text{ABO}_2$  structure belonging to  $P63/mmc$  space group symmetry or  $\bar{R}3m$  space group symmetry depending on the stacking of O-A-O dumbbells and  $\text{BO}_6$  octahedra forming hexagonal 2H and rhombohedral 3R poly types respectively. The peculiar layered structure with O-A-O along c-axis and  $\text{BO}_6$  perpendicular to it provides two separate pathways for electrons and holes enabling ease in induction of bipolarity. The superior characteristics like high optical transparency, wide bandgap and good electrical conductivity of delafossite compounds mark them as potential candidates for transparent or invisible electronic industry. Among the delafossite metal oxides,  $\text{CuInO}_2$  is peculiar owing to the ease in inducing bipolarity in them by compositional variations, that makes possible fabrication of transparent homojunctions. A study on the

---

\* Corresponding Author's Email: reenatarata@gm ail.com.

In: Advances in Materials Science Research. Volume 59

Editor: Maryann C. Wythers

ISBN: 979-8-88697-559-8

© 2023 Nova Science Publishers, Inc.

**Complimentary Copy**

**SELECTED STUDIES ON SECONDARY METABOLITES  
INTERACTION IN HUMAN HEALTH, WELFARE AND  
CULTIVATION**

**SELECTED STUDIES ON SECONDARY METABOLITES  
INTERACTION IN HUMAN HEALTH, WELFARE AND  
CULTIVATION**

**EDITORS**

**Dr. Manju M. George  
Dr. M. Anilkumar  
Dr. Justin R. Nayagam**



**Published by**

**Union Christian College, Aluva**

**SELECTED STUDIES ON SECONDARY  
METABOLITE INTERACTION IN HUMAN  
HEALTH, WELFARE AND CULTIVATION**

**Edited By:**  
**Dr. Manju M. George,**  
**Dr. M. Anilkumar**  
**Dr. Justin R. Nayagam**

Copyright©2023 by Research and Post Graduate Department  
of Botany, Union Christian College, Aluva, Kerala, India.

**ISBN: 978-81-964183-1-1**

All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means, electronic, mechanical, recording or any information storage and retrieval system without prior permission in writing to the publisher.

**Published by:**

**Union Christian College**  
Aluva - 683102, Kerala, India  
Email: [justinr@uccollege.edu.in](mailto:justinr@uccollege.edu.in)

**Chapter 1**  
**PLANT ALLELOCHEMICALS**  
**AND THEIR ROLE IN THE**  
**CROP INDUSTRY**

**Reshmi G R**

Department of Botany, Union  
Christian College, Aluva, Kerala,  
India

**ABSTRACT**

Allelopathy is identified as the “Obstructive growth of one type of plant by chemicals produced by other types.” The term ‘Allelopathy’ is detected from the Greek-derived compounds ‘allelo’ and ‘pathy’ meaning mutual harm or suffering. In this phenomenon, one organism produces certain types of specific biochemicals, which affect the germination, growth, survival, and reproduction of neighboring organisms. Thus, it seems like “biochemical plants” work to generate adverse environments for neighboring plants by declining seed germination and growth of biochemical plant initiators, which are known as natural inhibitors.

All living things need certain resources to live and grow and plants need sunlight, nutrients, water, and air. The roots transport nutrients and soil water for the plants and the leaves absorb energy from sunlight. If too many ~~other plants~~ are growing

**SELECTED STUDIES ON SECONDARY METABOLITES  
INTERACTION IN HUMAN HEALTH, WELFARE AND  
CULTIVATION**

**SELECTED STUDIES ON SECONDARY METABOLITES  
INTERACTION IN HUMAN HEALTH, WELFARE AND  
CULTIVATION**

**EDITORS**

**Dr. Manju M. George  
Dr. M. Anilkumar  
Dr. Justin R. Nayagam**



**Published by**

**Union Christian College, Aluva**

**SELECTED STUDIES ON SECONDARY  
METABOLITE INTERACTION IN HUMAN  
HEALTH, WELFARE AND CULTIVATION**

**Edited By:  
Dr. Manju M. George,  
Dr. M. Anilkumar  
Dr. Justin R. Nayagam**

**Copyright©2023 by Research and Post Graduate Department  
of Botany, Union Christian College, Aluva, Kerala, India.**

**ISBN: 978-81-964183-1-1**

All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means, electronic, mechanical, recording or any information storage and retrieval system without prior permission in writing to the publisher.

**Published by:**

**Union Christian College  
Aluva - 683102, Kerala, India  
Email: [justinr@uccollege.edu.in](mailto:justinr@uccollege.edu.in)**

## Chapter 4

### ANTINUTRIENT CRYSTALS IN PLANT KINGDOM

**Renu Rajan<sup>1</sup> and Justin R Nayagam<sup>2\*</sup>**

Department of Botany, Union Christian College, Aluva,  
Ernakulam, Kerala State, India

Ergastic crystals are products of biomineralization in plants of various chemical origin ranging from calcium oxalate, calcium phosphate, calcium carbonate and calcium sulphate. They occur in more than 215 families of plants in all parts of the plants such as roots, stem, leaves, flowers, fruits and seeds. Ergastic crystals have been reported in algae, fungi, bryophytes, pteridophytes and gymnosperms. Ergastic crystals of calcium oxalate origin is the most commonly found ones in plants. About 1- 90% dry weight can be contributed by calcium oxalate (Braissant et al., 2004). Calcium oxalate crystals are of utmost importance as they have the potential to act as antinutrients in animals and human beings. The shape and positioning of crystals are strictly genetically controlled and hence can serve as a tool in species level taxonomic



**SELECTED STUDIES ON SECONDARY METABOLITES  
INTERACTION IN HUMAN HEALTH, WELFARE AND  
CULTIVATION**

**SELECTED STUDIES ON SECONDARY METABOLITES  
INTERACTION IN HUMAN HEALTH, WELFARE AND  
CULTIVATION**

**EDITORS**

**Dr. Manju M. George  
Dr. M. Anilkumar  
Dr. Justin R. Nayagam**



**Published by**

**Union Christian College, Aluva**

**SELECTED STUDIES ON SECONDARY  
METABOLITE INTERACTION IN HUMAN  
HEALTH, WELFARE AND CULTIVATION**

**Edited By:**  
**Dr. Manju M. George,**  
**Dr. M. Anilkumar**  
**Dr. Justin R. Nayagam**

Copyright©2023 by Research and Post Graduate Department  
of Botany, Union Christian College, Aluva, Kerala, India.

**ISBN: 978-81-964183-1-1**

All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means, electronic, mechanical, recording or any information storage and retrieval system without prior permission in writing to the publisher.

**Published by:**

**Union Christian College**  
Aluva - 683102, Kerala, India  
Email: [justinr@uccollege.edu.in](mailto:justinr@uccollege.edu.in)

## **Chapter 3**

### **“*IN VITRO* REGENERATION AND TRANSFORMATION STUDIES ON *COLEUS FORSKOHLII* - AN IMPORTANT MEDICINAL AND AROMATIC PLANT”**

**Dr. Manju M. George**

*Associate Professor, Department of  
Botany*

Union Christian College, Aluva,  
Ernakulam Dt. Kerala – 683 102

#### **INTRODUCTION**

Plant tissue culture has emerged as a potential tool and forms the backbone of plant biotechnology. The science of plant tissue culture is really not more than five decades old. It was conceived and enunciated by Haberlandt in 1902. He visualized the idea of growing plant cells in artificial media in the hope of rejuvenating a quiescent cell and triggering it into division and growth, to form a tissue

**SELECTED STUDIES ON SECONDARY METABOLITES  
INTERACTION IN HUMAN HEALTH, WELFARE AND  
CULTIVATION**

**SELECTED STUDIES ON SECONDARY METABOLITES  
INTERACTION IN HUMAN HEALTH, WELFARE AND  
CULTIVATION**

**EDITORS**

**Dr. Manju M. George  
Dr. M. Anilkumar  
Dr. Justin R. Nayagam**



**Published by**

**Union Christian College, Aluva**

**SELECTED STUDIES ON SECONDARY  
METABOLITE INTERACTION IN HUMAN  
HEALTH, WELFARE AND CULTIVATION**

**Edited By:**  
**Dr. Manju M. George,**  
**Dr. M. Anilkumar**  
**Dr. Justin R. Nayagam**

Copyright©2023 by Research and Post Graduate Department  
of Botany, Union Christian College, Aluva, Kerala, India.

**ISBN: 978-81-964183-1-1**

All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means, electronic, mechanical, recording or any information storage and retrieval system without prior permission in writing to the publisher.

**Published by:**

**Union Christian College**  
Aluva - 683102, Kerala, India  
Email: [justinr@uccollege.edu.in](mailto:justinr@uccollege.edu.in)

## Chapter 2

### A REVIEW ON HERBAL SHAMPOO FORMULATIONS

Jaya Kuruvilla<sup>1</sup> and Anilkumar  
M<sup>2\*</sup>

Department of Botany, St.Xavier's  
College, Aluva, Ernakulam, Kerala  
State, India

Department of Botany, Union  
Christian College, Aluva, Ernakulam,  
Kerala State, India

### ABSTRACT

It has been a traditional practice to use shampoos made of natural herbals by the women folk of Kerala. These shampoos not only make the hair healthy and attractive but also prevent scalp infections. All the herbals that have been used in shampoo formulations are made from medicinally important plants that possess antimicrobial properties and also promote hair growth, thickness, strength etc. In most of the formulations the main ingredients include *Emblica officinalis*, *Centella asiatica*, *Eclipta alba*, *Hibiscus rosa*