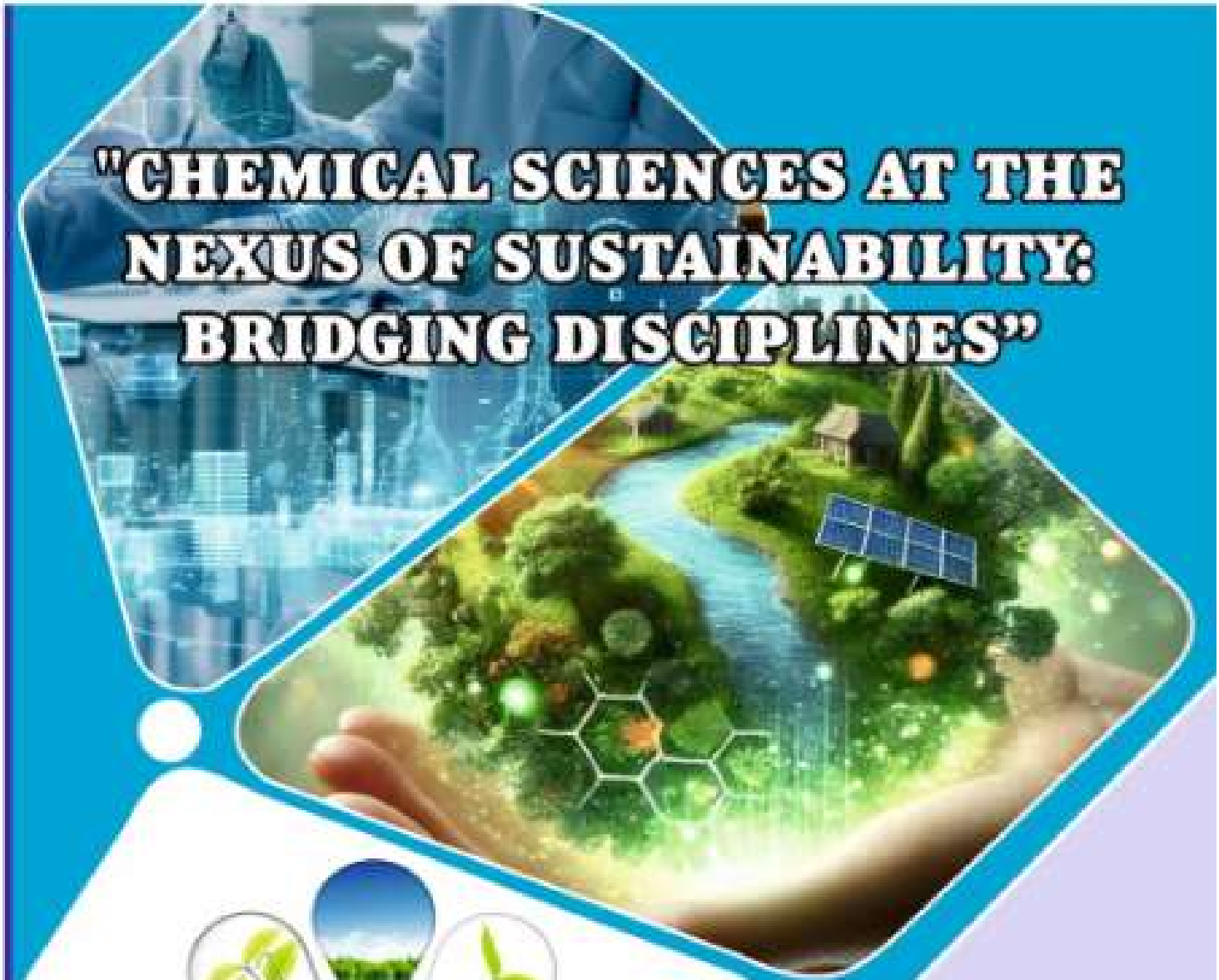
"CHEMICAL SCIENCES AT THE NEXUS OF SUSTAINABILITY: BRIDGING DISCIPLINES"



EDITORS:
NEHA AGARWAL
MAMTA VERMA
CHANDAN MAURYA

Editors:

Dr. Neha Agarwal is Assistant Professor in the Department of Chemistry at Navyug Kanya Mahavidyalaya, University of Lucknow. She earned her Ph.D. in Chemistry from the University of Lucknow and qualified UGC-CSIR NET and GATE in Chemical Sciences.

Her research focuses on nanotechnology, environmental chemistry, wastewater treatment, photocatalysis, and sustainable development. She has published extensively in reputed international journals and has authored and edited scholarly books with leading publishers such as Springer Nature, CRC Press, and Wiley. She also holds multiple patents in nanocomposites, healthcare devices, and environmental technologies.

Dr. Agarwal actively organizes conferences, seminars, and invited lectures at national and international platforms and has received awards including Best Researcher Award, Best Paper Award, and Research Excellence Award.

Dr. Mamta Verma has been serving as Assistant Professor in the Department of Chemistry, Navyug Kanya Mahavidyalaya since 29 December 2010. She earned her Ph.D. in Chemistry in 2004 from Veer Bahadur Singh Purvanchal University, Jaunpur, India. With over a decade of teaching experience, she is a dedicated faculty member committed to teaching, student mentoring, and academic development. She actively participates in departmental responsibilities, institutional growth, and co-curricular activities. Dr. Verma has also contributed to research through publications in peer-reviewed journals, with research interests including nano natural products, environmental sustainability, medicinal plants, and herbal formulations. Her sincerity, discipline, and cooperative nature make her an integral part of the institution.

Dr. Chandan Maurya is Assistant Professor in the Department of Chemistry at Navyug Kanya Mahavidyalaya, Lucknow. She holds a Ph.D. in Applied Chemistry from Amity University, along with an M.Sc. in Chemistry, B.Ed., and has qualified CSIR-UGC NET-JRF in Chemical Sciences. She previously served as Lecturer in Chemistry at Government Girls Inter College from 2010 to 2019.

With over a decade of teaching and research experience, her specialization is in the design, synthesis, and applications of organotellurium compounds. Her work includes the synthesis and characterization of novel organotellurium compounds with significant antibacterial and antifungal activities. She has published research papers in reputed journals, contributed book chapters, and authored a practical book for undergraduate students based on NEP guidelines. Her research interests also include climate change and sustainable development.

Available at: Flipkart & www.anubooks.com

ANU BOOKS
International Publishers & Distributors

H.O. : 101, Navkar Kunj, Saket, Meerut,
+91 121 7964594, 8800688996
Branch : Green Park Extension, New Delhi-110016
9997847837
Glasgow (UK)+447586513591
E-mail : info@anubooks.com

ISBN: 978-93-78471-50-6
2026

Proceedings of the ANRF-Funded International Conference on

"BRIDGING DISCIPLINES THROUGH CHEMICAL SCIENCES FOR A SUSTAINABLE FUTURE"

held on

13–14 FEBRUARY 2026

Organized by

DEPARTMENT OF CHEMISTRY
NAVYUG KANYA MAHAVIDYALAYA
LUCKNOW

in association with

IQAC, R&D Cell

and

Association of Chemistry Teachers

Chemical Sciences at the Nexus of Sustainability: Bridging Disciplines

Chemical Sciences at the Nexus of Sustainability: Bridging Disciplines

Editors:

Neha Agarwal
Assistant Professor, Department of Chemistry
Navyug Kanya Mahavidyalaya,
University of Lucknow, Lucknow, U.P.

Mamta Verma
Assistant Professor, Department of Chemistry
Navyug Kanya Mahavidyalaya,
University of Lucknow, Lucknow, U.P.

Chandan Maurya
Assistant Professor, Department of Chemistry
Navyug Kanya Mahavidyalaya,
University of Lucknow, Lucknow, U.P.

Published By:

Anu Books

Delhi Meerut Glasgow (U.K.)

www.anubooks.com

Chemical Sciences at the Nexus of Sustainability: Bridging Disciplines

First Published: February 2026
ISBN: 978-93-7847-150-6
Book Code: AB360-A26
Price: 895/-

Published by:
Mr Vishal Mithal
Anu Books
Publishers & Distributors
GF-01, Navkar Kunj, Saket, Meerut. U.P. 0121 7964594, 8800688996
Branch: Green Park Extension, New Delhi-110016, 9997847837
Glasgow (UK) +447586513591
E-mail: infoanubooks@gmail.com
Printed, Design & Published in India

PREFACE

This edited volume brings together a diverse collection of scholarly contributions addressing some of the most pressing challenges at the intersection of environmental science, chemistry, health, and sustainability. The chapters in this book reflect a multidisciplinary approach, highlighting recent advancements, innovative methodologies, and practical solutions that aim to build a more sustainable and resilient future.

The book begins with discussions on air pollution, climate change, and their far-reaching impacts on human health and ecological systems. It further explores critical topics such as water quality assessment, climate change effects on aquatic life, and the transmission dynamics of infectious diseases. These contributions highlight the importance of integrated frameworks and global collaboration.

A significant portion of the volume is dedicated to advancements in green chemistry, sustainable materials, nanotechnology, and catalysis, showcasing their potential in addressing environmental and industrial challenges. The role of phytochemicals, bioactive compounds, and natural resources in improving health and sustainability is also thoroughly examined.

In addition, the book covers emerging research in waste management, circular economy approaches, environmental monitoring, and ecological restoration, including coral reef conservation and sustainable water resource management. The inclusion of chapters on advanced

materials, pharmacological compounds, and computational studies further broadens the scientific scope of this volume.

The editors sincerely acknowledge the valuable contributions of all authors whose efforts have made this compilation possible. It is hoped that this book will serve as a useful resource for researchers, academicians, and students, inspiring further research and innovation in the pursuit of sustainable development.

ACKNOWLEDGEMENT

The editors express their sincere gratitude to all the authors for their valuable contributions and for sharing their research work in this volume, which forms a part of the conference proceedings of the *International Conference on Bridging Disciplines through Chemical Sciences for a Sustainable Future;* Organized by Department of Chemistry, Navyug Kanya Mahavidyalaya, Rajendra Nagar, Lucknow in association with IQAC, Research & Development Cell, and Association of Chemistry Teacher, India. Their efforts and commitment have made this compilation meaningful and impactful.

We gratefully acknowledge the support of Anusandhan National Research Foundation (DST-SERB), ACT, and other generous funding agencies whose assistance has played a significant role in facilitating this work. Their continued support for research and innovation is deeply appreciated.

We also extend our appreciation to all individuals and institutions who provided support and encouragement during the organization of the conference and the preparation of this book. Their cooperation has been instrumental in bringing this work to completion.

Finally, we express our sincere gratitude to the Honourable Manager and Principal for their constant guidance, encouragement, and unwavering support throughout this endeavour.

CONTENTS

Pyrazolone Derivatives: A Comprehensive Review of Pharmacological Evaluations as Potent Anti-Inflammatory Agents

9

Bashir Ali Modu
Dr. Farhat Aisha Ansari

Abstract

Pyrazolone, a key pyrazole derivative, has attracted significant attention from medicinal chemists for decades owing to its strong anti-inflammatory properties, serving as a foundational scaffold for novel drug development. This review traces the progression of pyrazolone-based research, emphasizing its incorporation into bioactive hybrids aimed at enhancing therapeutic efficacy beyond that of traditional non-steroidal anti-inflammatory drugs (NSAIDs). Global studies underscore pyrazolone's effectiveness in managing inflammation associated with autoimmune diseases, arthritis, and pain, especially in cases where standard treatments are limited by adverse effects such as gastrointestinal toxicity and cardiovascular risks. Green synthetic methodologies, including microwave- and ultrasound-assisted techniques, have streamlined the production of pyrazolone derivatives, generating diverse compound libraries with improved pharmacokinetic profiles. Emerging research trends focus on pyrazolone hybrids combined with flavonoids, sulfonamides, and metal chelators, which hold promise for expanded clinical applications.

Keywords: *Pyrazolone, anti-inflammatory agents, pyrazole scaffold, green synthesis, drug hybrids.*

1. Introduction

An essential component of the body's defensive mechanism, inflammation promotes tissue regeneration and the immune system's ability to identify and eliminate undesirable or harmful substances. The body's defensive reaction to stimuli

Bashir Ali Modu
Department of Chemistry, Integral University, Kursi Rd, Dashauli, U.P.
Dr. Farhat Aisha Ansari
Department of Chemistry, Integral University, Kursi Rd, Dashauli, U.P.
Publisher: Anu Books
Book Name : Chemical Sciences at the Nexus of Sustainability: Bridging Disciplines