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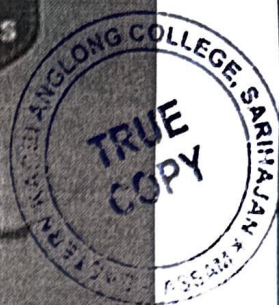
3.2- Research Publication and Awards

Metric No. 3.2.2

Number of books and chapters in edited volumes/books published and papers published in national/ international conference proceedings per teacher during the year

For Four Year Undergraduate Programme (FYUGP)

As per
NEP
Syllabus

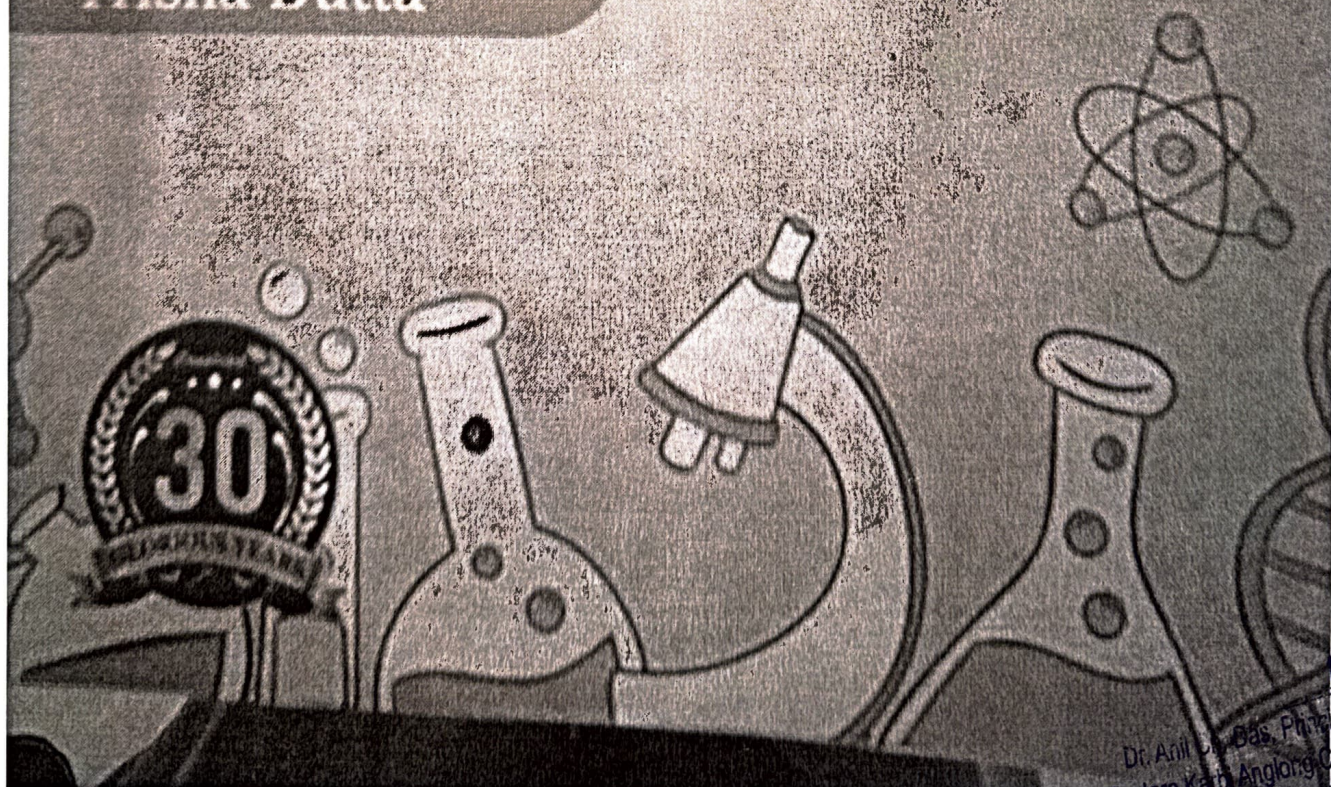


BASIC ANALYTICAL CHEMISTRY

Skill Enhancement Course

For B.Sc. First Semester Students of Gauhati, Dibrugarh
and other Universities and Autonomous Colleges of Assam

Dr. Monmi Saikia
Dr. Priyanka Barua
Trisha Dutta



Dr. Anil Choudhary, Principal
Eastern Karbi Anglong College
Sarthajan, Karbi Anglong

About the book

This book is written according to the latest NEP 2020 syllabus for FYUG (Four Year Under Graduate course) for all B.Sc. Core and for their skill enhancement course (SEC). All the topics including practicals have been portrayed very concisely and to the point. At the end of the book, sample questions are also included. The topics of the chapters incorporated in the book have been touched to the point and described in a detailed manner so that it becomes easier for the students to grab the contents of the syllabus.

Salient features of the book:

- Concise and to the point discussion
- Simple language and syllabus-oriented discussion
- Inclusion of practicals as per syllabus
- Multiple choice questions and answers
- Sample questions

About the Authors

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Designed by SONU



ASHOK PUBLICATION
Jaswanta Road, Panbazar, Guwahati-781001, Assam
Email. Id. : absguw@gmail.com

ISBN : 978-93-89491-99-9



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**Societal Challenges and Sustainability :
Socio-economic and Environmental
Perspectives**

Dr. Pankaj Kalita
Dr. Himani Medhi
Mr. Utpal Dev Sarma




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ISBN: 978-81-19281-08-4

Price: 475.00

Publishing Year 2023

Published and Printed by:
Shashwat Publication
Office Address: Ram das Nagar,
Bilaspur, Chhattisgarh – 495001
Phones: +91 9993608164 +91 9993603865
Email: contact.shashwatpublication@gmail.com
Website: www.shashwatpublication.com
Printed in India


Dr. Anil Ch. Das, Principal
Eastern Karbi Anglong College
Sarihajan, Karbi Anglong



AkiNik Publications

Printing Press License No.: F.1 (A-4) press 2016

Publication Certificate



Ref. No.: RRRP-06-1001

Date: 10-11-2023

To,
Dear Tazmin Sultana

This certificate confirms that **Tazmin Sultana** is the author of book chapter titled "**A Study of Magnetized Anisotropic THDE Cosmological Model**" of published book entitled "**Recent Review and Research in Physics (Volume - 6)**" having ISBN 978-93-5570-878-6.

Yours Sincerely,



Akhil Gupta
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1 A Comprehensive Perspective of Conventional and Biogenic Nanoparticles



Dimbeswar Das, Khushboo Verma, and Sumpam Tangjang

1.1 INTRODUCTION

The field of nanotechnology, which involves the creation, manipulation, and synthesis of materials on a scale smaller than 1 μm , has seen significant growth due to its diverse applications in various sectors of science and technology. The term *nano* originates from the Greek word for *dwarf* or *extremely small*. Nanotechnology is a multidisciplinary field that firmly refers to the atomic-, molecular-, and macromolecular-scale research and development that enable us to control the manipulation and study of minute structures and devices. The nanomaterials (NMs) possess various unique electrical, optical, and magnetic features due to their minute size. In the 21st century, nanotechnology has made significant strides in various disciplines, like medicine, genomics, robotics, and communications [1–2]. The explosive advancement of nanotechnology in the recent years has developed a new cost-effective and effortless technique for treatment of wastewater [3–4]. Nanotechnology is used to clean wastewater in a variety of ways. The size-dependent properties, like high specific surface area, high reactivity, high absorption, and fast dissolution, are used for the detection and purification of various contaminants, including heavy metal contamination [5].

As the field of nanotechnology continues to advance, a large number of NMs have been produced. They can be classified according to their characteristics, that is, their structures, shapes, sizes, and methods of chemical synthesis.

1.1.1 CARBON NANOMATERIALS

Carbon nanomaterials, such as fullerenes (0D), carbon nanotubes (CNTs) (1D), and graphene (2D), have attracted a strong study interest for almost three decades. This is mainly because of their unique optical, electrical, thermal, and chemical capabilities, which present important chances for advancing basic and applied science as well as creating novel technologies and applications. Because of this, these nanomaterials have been in the vanguard of groundbreaking discoveries and have the potential to spur revolutionary developments across a range of industries. Controlling the experimental environment provides stable operation of the size, shape, and diameter of carbon products at the nanoscale, enabling the production of a wide variety of carbon nanomaterials. Graphite and metal-graphite rods were evaporated in an electric arc to create fullerenes and multiwalled CNTs. Numerous shapes of carbon nanofibers and nanotubes were created during the catalytic thermal cracking of methane and ethylene. Other graphene forms were generated by chemically reducing graphite oxide [6]. CNTs and nanofibers (CNF) have remarkable tensile strength, electrical and thermal conductivity, elasticity, and low thermal expansion coefficient, which make them highly important in a variety of sectors. The use of these carbon nanomaterials (CNMs) to mimic biological processes, such as protein adsorption, DNA and therapeutic molecule binding, and red blood cell stabilization, is also very beneficial to the pharmaceutical and healthcare industries, particularly in the area of controlled drug administration [7].

Biogenic Nanomaterial for Health and Environment



Edited by
Rahul Badru, Yadvinder Singh,
Narinder Singh, and Deepak Dubal

For Personal Use Only



CRC Press

Taylor & Francis Group

Boca Raton London New York

CRC Press is an imprint of the
Taylor & Francis Group, an Informa business

Dr. Anil Ch. Das, Principal
Eastern Karbi Anglong College
Sarihajan, Karbi Anglong

First edition published 2024
by CRC Press
2385 NW Executive Center Drive, Suite 320, Boca Raton FL 33431

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

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

© 2024 selection and editorial matter, Rahul Badru, Yadvinder Singh, Narinder Singh and Deepak Dubal; individual chapters, the contributors

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Library of Congress Cataloging-in-Publication Data

Names: Badru, Rahul, editor. | Singh, Yadvinder, editor. | Singh, Narinder (Chemistry professor), editor. | Dubal, Deepak P., editor.

Title: Biogenic nanomaterial for health and environment / edited by Rahul Badru, Yadvinder Singh, Narinder Singh and Deepak Dubal.

Description: Boca Raton, FL : CRC Press, 2024. | Includes bibliographical references and index.

Identifiers: LCCN 2023036698 (print) | LCCN 2023036699 (ebook) | ISBN 9781032553160 (hardback) | ISBN 9781032553184 (paperback) | ISBN 9781003430087 (ebook)

Subjects: LCSH: Nanostructured materials—Industrial applications. | Biosynthesis.

Classification: LCC TA418.9.N35 B558 2024 (print) | LCC TA418.9.N35 (ebook) |

DDC 620.1/15—dc23/eng/20231024

LC record available at <https://lcn.loc.gov/2023036698>

LC ebook record available at <https://lcn.loc.gov/2023036699>

ISBN: 978-1-032-55316-0 (hbk)

ISBN: 978-1-032-55318-4 (pbk)


ISBN: 978-1-003-43008-7 (ebk)

DOI: 10.1201/9781003430087

Typeset in Times

by Apex CoVantage, LLC




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Sarighaj, Karbi Anglong

NAAC's Revised Accreditation Framework (RAF) with Special Reference to Data Validation and Verification Process




*Utpal Dev Sarma
Pranita Patowary
Pankaj Kalita*

Abstract

The Revised Assessment and Accreditation (A&A) Framework was launched in July 2017. It is an explicit ICT enabled process having a healthy objective with transparent, scalable and sound mechanism. It shifts from qualitative peer judgement to data based quantitative indicator evaluation with increased objectivity and transparency. The RAF introduces the element of third-party validation of data. The present system enhances the participation of students and alumni in the assessment process.

Data Validation and Verification (DVV) is a rigorous and time-bound process of validation and verification of quantitative data submitted/ uploaded by the HEI on the NAAC's online portal as part of submission of SSR. The DVV is initiated by NAAC for the concerned HEI by authorising/ entrusting a third party or agency which meticulously verifies and validates the genuineness or accuracy of the data submitted or uploaded. The HEI having submitted its SSR on-line, has to wait until the DVV process gets underway and must reply to all the queries of the DVV partner by timely uploading all the relevant data/ files in the clarification box failing which the HEI shall be liable for disqualification for Accreditation process. The intention behind NAAC's applying this software-based mechanism is precisely to bring in transparency, accuracy and objectivity in the accreditation process. The paper attempts to throw light on the credibility and accountability of the DVV process which is instrumental in rendering the Revised Accreditation Framework (RAF) of NAAC more reliable and hassle-free and also crucial for the final NAAC-grading.

Key Words: *RAF, Validation, Verification, Accreditation, DVV, HEI, SSR*


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Teaching-Learning Practices and Parameters of Quality Assessment in HEIs

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ISBN : 978-81-963516-0-1


First Published in 2023 by
Mangaldai College, Mangaldai, 784125
Assam, India

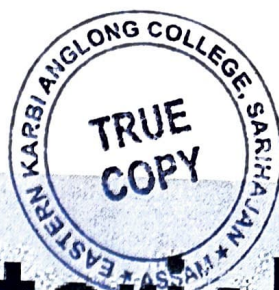
Phone No. +91 7002501577, +91 9435706077
Email : principalmangaldaicollege@gmail.com
www.mangaldaicollege.org

Price : ₹ 799

Cover page designed by : Hiren Deka

Printed in India


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Green Carbon Materials for Environmental Analysis: Emerging Research and Future Opportunities

Editor(s): Shahid ul Islam¹
and Chaudhery Mustansar Hussain²
Volume 1441

eISBN: 9780841297142
DOI: 10.1021/bk-2023-1441

Publication Date (Web): June 16, 2023
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¹ Indian Institute of Technology Delhi (IITD), Delhi, India

² New Jersey Institute of Technology, Newark, New Jersey, United States

Powerful New Tools for Environmental Analysis.

This book reviews the latest trends in advanced green carbon materials for the detection of hazardous environmental pollutants. It helps bridge the current knowledge gaps and focuses on ways to

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Future of Carbon Materials in Environmental Analysis

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The remarkable mechanical, optical, and electrochemical capabilities of green carbon-based materials have drawn considerable interest, making them excellent contenders for the forthcoming generation in environmental applications. The objective of this chapter is to focus on the syntheses and functionalization strategies of sustainable green carbon-based materials for sensing, adsorption, photocatalysis of various emerging pollutants. Recovery and recycling of the spent materials have also been covered in this chapter, along with a substantial emphasis on the reproducibility of the results. Then overviews on the challenges and way forward solutions for advancing with green carbon-based materials have been provided. It is anticipated that the chapter would open new doors towards the development of effective green carbon-based materials for environmental applications.

1. Introduction

Environmental pollutants are biological or chemical entities that harm or risk the quality of various environmental aspects, such as water, soil, or air (1–3). So, it is crucial to identify the emerging pollutants and subsequently get rid of them using adsorption, sensing, and/or photocatalysis. The most challenging work in eco-chemistry is to identify, quantify, and characterize the toxins to explore alternative treatments. Due to the presence of large amount of pollutants and toxic substances in the surrounding environment, standard physical approaches are frequently ineffective (2, 4–6). Innovative and environmentally sustainable technologies are required to meet

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