

Holy Cross College, Agartala
Department of Botany

Internship Report on
Synthesis of Carbon Nanoparticles from Neem Extract

Student Name: Ms. Neha Sinha

Program: B.Sc. Botany (6th Semester)

Department: Botany, Holy Cross College, Agartala

Internship Venue: Department of Chemistry, NIT Agartala

Project Duration: 29th April to 10th May, 2024

Project Title: “Synthesis of Carbon Nanoparticles from Neem Extract”

Supervisor: Prof. (Dr.) Mitali Salha, Head of Department, Department of Chemistry, NIT Agartala.

Ms. Neha Sinha, a Department of Botany, Holy Cross College student, undertook a 12-day internship project at the Department of Chemistry, NIT Agartala, from 29th April to 10th May, 2024. The project aimed to explore the Synthesis of Carbon Nanoparticles (CNPs) from Neem Extract using a green synthesis approach. The green synthesis of nanoparticles is gaining significant attention due to its environmentally friendly and sustainable methodology, particularly in biological and medicinal research.

Objectives of the Project:

The primary objectives of the internship project were:

1. To synthesize carbon nanoparticles using neem extract through a green chemistry approach.
2. To understand the theoretical concepts and techniques involved in nanoparticle synthesis.
3. To characterize the synthesized nanoparticles using modern analytical tools, such as UV-Vis spectroscopy and Particle Size Analyzer.

Methodology:

(A) Synthesis of Carbon Nanoparticles

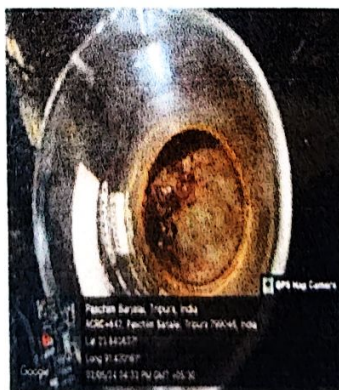
Ms. Sinha conducted the synthesis of carbon nanoparticles using neem extract as the reducing agent. The procedure involved:

1. Preparation of Neem Extract: Fresh neem leaves were collected, washed and boiled to obtain the extract.
2. Green Synthesis Process: The neem extract was mixed with carbon precursor under controlled conditions to initiate nanoparticle formation.
3. Purification: The synthesized nanoparticles were purified through centrifugation and filtration processes.

(B) Characterization Techniques

The synthesized nanoparticles were characterized using two key analytical techniques:

1. UV-Vis Spectroscopy: This technique was used to determine the optical properties of the synthesized carbon nanoparticles, confirming the presence of nanoparticles by analyzing their absorbance patterns.
2. Particle Size Analyzer: The size distribution and average particle size of the carbon nanoparticles were measured using a Particle Size Analyzer to evaluate the efficiency of the synthesis process.



Pictures taken during the Internship

Results and Observations

The green synthesis approach successfully produced carbon nanoparticles from neem extract. The UV-Vis spectroscopy analysis revealed characteristic absorbance peaks, indicating the formation of nanoparticles. The Particle Size Analyzer demonstrated that the nanoparticles ranged in size from 10 to 50 nm, which is consistent with the desired nanoparticle dimensions for various biomedical and environmental applications.

Overall Outcome:

The internship provided Ms. Sinha with a valuable hands-on learning experience in the field of green nanotechnology. She successfully synthesized carbon nanoparticles using an eco-friendly approach and learned how to apply various characterization techniques. The project not only strengthened her theoretical knowledge but also provided practical insights into modern scientific methodologies.

Report Prepared By:

S Kar
20/5/24

Dr. Somnath Kar
Assistant Professor
Department of Botany
Holy Cross College, Agartala

Debasree Lodh
20/05/2024

Dr. Debasree Lodh
HoD, Department of Botany
Holy Cross College, Agartala

HEAD
Department of Botany,
HOLY CROSS COLLEGE, AGARTALA



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To
The HoD
Department of Chemistry
NIT, Agartala, Tripura (W)

Sub: Seeking approval for some project work in the Department of Chemistry.

Respected Madam,

With humble regards, I would like to inform you that Ms. Neha Sinha, a 3rd-year student of the Department of Botany, Holy Cross College, Agartala, intends to do her 6th-semester project work under your kind supervision in the Department of Head of Chemistry, National Institute of Technology, Agartala, Tripura. Her proposed project is "Is carbon nano particle synthesized from *Azadirachta indica* leaf possess antimicrobial activities?" In connection with this, she will do research work in your esteemed department. Therefore, we are seeking your kind permission so that she can do her project work in the department as a part of our "Students Internship Program" for 15 days, from the 3rd week of April 2024.

I hope you will grant this application to do the same. Your kind cooperation and needful action are highly appreciated.

Yours Truly,

Somnath Kar
27/3/24

Dr. Somnath Kar
Assistant Professor
Department of Botany
Holy Cross College, Agartala

Forwarded By:

Benny K. John

Dr. Fr. Benny K. John, CSC
Principal

Holy Cross College, Agartala

PRINCIPAL
HOLY CROSS COLLEGE
AGARTALA



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Date: 09.05.2024

To
The Principal
Holy Cross College
Agartala, Tripura (W)

Sub: Seeking approval for Summer Internship at NIT, Agartala.

Respected Father,

With humble regards, I would like to inform you that Ms. Neha Sinha, a 3rd-year student of the Department of Botany, Holy Cross College, Agartala, intends to do Summer Internship at NIT Agartala in the Department of Bio-engineering, as a part of 6th-semester project work on Microbial Techniques. Therefore, we are seeking your kind permission to do her project work in the aforesaid place as a part of our "Students Internship Program" for 15 days, from 24th May, 2024. Here, I am enclosing application letter from the concerned students and the screenshot of the email conversation with the guide from NIT, Agartala.

I hope you will grant this application to do the same. Your kind cooperation and needful action are highly appreciated.

Yours Truly,


09/05/2024

Dr. Debasree Lodh
HoD, Botany
Holy Cross College, Agartala

HEAD
Department of Botany,
HOLY CROSS COLLEGE, AGARTALA

Approved By:


13/05/2024

Dr. Fr. Benny K. John, CSC
Principal
Holy Cross College, Agartala
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AGARTALA



Department of Chemistry

राष्ट्रीय प्रौद्योगिकी संस्थान अगरतला

National Institute of Technology, Agartala

Agartala, Tripura, India, Pin -799046

17.05.2024

CERTIFICATE

It is to certify that Ms. Neha Sinha of BSc 6th semester of Department of Botany, Holy Cross College did a project work on the topic, entitled “ Synthesis of Carbon Nanoparticles from Neem Extract”, at the Department of Chemistry, NIT Agartala, Tripura from 29th April to 10th May 2024. She has carried out the synthesis of carbon nanoparticles using green synthesis approach and also characterized the nanoparticles by UV-Vis spectroscopy and Particle size Analyzer under my guidance and supervision.

I am satisfied with her initiative and sincere efforts for the completion of the project as a part of her course curriculum.

Date: 17-05-2024

Place: NIT, Agartala

Mitali Saha
17/05/2024

Prof. (Dr.) Mitali Saha

Professor and HOD

Department of Chemistry

NIT, Agartala

Prof. (Dr.) Mitali Saha
Professor
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