

DEPARTMENT OF METALLURGICAL & MATERIALS ENGINEERING
NATIONAL INSTITUTE OF TECHNOLOGY KARNATAKA, SURATHKAL

Date: 17/09/2024

Advertisement for Student Internship

Applications are invited for the position of internship in a research and development project (SERB-CRG) with the following details:

Title of the project:

“Prawn shell derived natural protein based highly efficient UV protection coating for drug products”

Principal Investigator:

Dr. Saumen Mandal,

Associate Professor,

Department of Metallurgical & Materials Engineering,

National Institute of Technology Karnataka, Surathkal, Mangalore -575025,

Ph.: 7899493903

Email: smandal@nitk.edu.in

Co-Principal Investigator:

Dr. Saikat Dutta,

Associate Professor,

Department of Chemistry,

National Institute of Technology Karnataka, Surathkal, Mangalore -575025,

Ph.: 7899495023

Name of the position: Student Internship

No. of position/Vacancies: One

Essential Qualifications: Candidate studying in the final year of B.E./B.Tech in Metallurgical & Materials Engineering or other allied disciplines with a minimum of 60% aggregate score (6.5/10 CGPA).

Desired Skills: Basic exposure to thin film processing and characterization

Basic knowledge of Materials characterizations such as XRD, FESEM, UV absorption etc.

Age Limit: 25 years (Preferable)

Salary: **Rs. 5000/month**

Duration: 02 Months

Deadline: 26th September 2024.

How to apply: Interested candidates must apply with the following documents (1) a Cover letter, (2) Bio-data with a passport-sized photograph, (3) Scanned copies of educational certificates and mark sheets from class X onwards

Abstract

Ultraviolet (UV) protective coating from marine food bio-waste materials is demonstrated and developed. The process includes cleaning prawn shells and then sun-drying the cleaned prawn shells till all moisture contents are removed, subjecting the sun-dried prawn shells to a chemical treatment to extract the UV-absorbing amino acids. The process further includes dissolving calcium carbonate (i.e., demineralization) by continuous stirring in 6 N HCl at room temperature. The residue obtained in the demineralization process was transferred to a fresh batch of 6 N HCl to obtain a heterogeneous mixture. The process further includes refluxing the heterogeneous mixture at a predefined temperature for a predefined time to hydrolyze the protein into its constituent amino acids. The UV absorbing amino acids are separated from a residue obtained after distillation, using ethyl acetate as an extractant. The resulting mixture along with suitable host material is then used to make a coating onto glass using either dip, spin, spray, or brush coating techniques resulting in the UV protective coating. In-depth characterization of the coating such as XRD, FTIR, Raman, FESEM, DSC, TGA along with UV-Visible spectroscopy need to be performed.