

**Department of Biotechnology**  
**MOTILAL NEHRU NATIONAL INSTITUTE OF TECHNOLOGY ALLAHABAD**  
**Prayagraj – 211004 (India)**

Advertisement No- /Project Staff

Dated- 25/03/2026

**Advertisement for the Post of Junior Research Fellow (On Contract)**

Applications are invited from Indian nationals for the post of Junior Research Fellow (on contract) in research project entitled “**Environmentally sustainable Quantum Containers (QCs) assisted microalgae growth for faster CO<sub>2</sub> capture and utilization with the potential recovery of the biomass for value-added products**”.

This is a research project, funded by the **Department of Biotechnology (DBT), New Delhi under BioE3 program for Carbon Capture & Utilization (CCU)**. This is a collaborative project with Dr. Somenath Garai, Assistant Professor, Department of Chemistry, B.H.U. Varanasi. .

The duly filled-in application (soft copy in any form) in prescribed format along with copies of supporting documents (scanned copy) must reach to email ID: [mprai@mnnit.ac.in](mailto:mprai@mnnit.ac.in) [**Dr. Monika Prakash Rai**] with subject of email as: “**Application for JRF position in DBT CCU project**” on or before **5:30 PM, 05 April, 2026**. The position is purely temporary and will be governed by the funding agency rules & service conditions of Office of the Dean (Research & Consultancy), MNNIT Allahabad.

**Project Description:**

CO<sub>2</sub> is the key resource for microalgae photosynthesis and carbon uptake converted to the dry matter, clearly demonstrating the CO<sub>2</sub> capture and utilization (CCU). With the increasing rate of CO<sub>2</sub> emission, an advanced process is required for faster CO<sub>2</sub> concentration, capture and utilization by microalgal system. Quantum containers (QCs) have proven chemistry for CO<sub>2</sub> adsorption due to their unique nano-capsule structure, well-defined pores and easy exchange of their interior with the surrounding at neutral pH. Association of water-soluble N- hetero carbene (NHCs) metal complexes with QCs provides a stable platform for the CO<sub>2</sub> capture and its reduction. Integrating the microalgae cultivation with QCs/NHCs in a CO<sub>2</sub> bubbling 100 L fixed-bed photobioreactor encourages the concentration of CO<sub>2</sub> in the local environment with simultaneous utilization as a novel CCU technology. The potentially recovered microalgae biomass processes for the production of valuable lipids and carotenoids for relevant applications.

**Objectives of the Project:**

The study in the project consists of objectives and tasks in the lines of above specified issues related to nanomaterials synthesis, characterization and their application on microalgae cultivation system for enhanced CO<sub>2</sub> uptake and utilization in the form of bioproducts. Some part of the study will also be carried out at Department of Chemistry, BHU, Varanasi.

- Number of Position** : 1 (One)
- Essential Qualifications** : M.Sc./M.Tech. in Biotechnology/Microbiology/Biochemical Engineering/ or any relevant field with the qualified certificate of GATE (in BT/LS)/CSIR UGC NET/DBT- BET category-II examination.
- Desirable Experience** : Research experience in related area along with relevant Publication.
- Additional Requirements** : The following additional requirements will be advantageous:
- Strong academic skills in publication of research papers in International Journals and/or previous experience in industry/laboratory on Algal cultivation, CO<sub>2</sub> sequestration and Nanobiotechnology.
- Fellowship** : ₹37,000.00 + HRA per month (as per institute norms)
- Other Benefits** : Accommodation may be available as per the availability and the Institute norms. The candidate will be encouraged to get enrolled in the PhD programme in the Department of Biotechnology, MNNIT Allahabad. The applicant must qualify for admission to this PhD Programme as per existing rules. Facility of yearly leave, carryover leave, medical benefits etc. may be available as per applicable rules of the project staff.

- Age Limit** : 28 years on the last date of application (The upper age limit is relaxable up to 5 years in the case of candidates belonging to SC/ST/OBC/PH and women candidates)
- Tenure of Appointment** : Appointment will be made on contract basis for a period of one year initially, which may be extended depending on the performance evaluation on yearly basis till the end of project.

**Note:**

1. The applicant will be responsible for the authenticity of information, other documents and photographs submitted.
2. The Institute reserves the right to accept application at any time, and consider candidates of exceptional credentials without applications. Qualification and experience may be relaxed by the Institute at any point of time for otherwise exceptional candidates.
3. Mere, possessing the prescribed qualification does not ensure that the candidate would be called for Interview. The Candidates will be shortlisted on the basis of merit and need of the project.
4. Shortlisted Candidates will be informed by e-mail about the interview date. So, the candidate must provide valid E mail IDs in their applications.
5. Shortlisted candidates have to present themselves for the interview on the interview date with updated CV and original and attested photocopies of mark sheets/ certificates in support of their academic qualifications.
6. Applicants in employment (private, government or any other organization) are required to submit a **“No Objection Certificate”** from the employer at the time of interview.
7. No TA/DA will be paid for appearing in the interview at MNNIT Allahabad

**Name of Principal Investigator**

: Dr. Monika Prakash Rai

**Designation**

: Associate Professor

**Department**

: Department of Biotechnology

**Email**

: mprai@mnnit.ac.in



OFFICE OF THE DEAN (RESEARCH AND CONSULTANCY)  
MOTILAL NEHRU NATIONAL INSTITUTE OF TECHNOLOGY  
Allahabad – 211 004 (India)  
Website: <http://www.mnnit.ac.in>

For office use only  
Application No.....

**APPLICATION FORM**

**Advt.No .**

**Dated**

**Research Project Entitled-** “Environmentally sustainable Quantum Containers (QCs) assisted microalgae growth for faster CO<sub>2</sub> capture and utilization with the potential recovery of the biomass for value-added products” DBT, New Delhi. (File Number: BT/PR59978/CCU)

**Sanction letter &Date:** BT/PR59978/CCU/173/32/2025, 05.01.2026

**Funding Agency-** Department of Biotechnology, Ministry of Science & Technology, New Delhi

**Name of P.I. - / Co-PI** Dr. Monika Prakash Rai

**Name of position-** Junior Research Fellow (on contract)

**Department/Section-** Biotechnology

Self Attested  
recent passport  
size Photograph

1.	Name of the Candidate (In Capital letter)					
2	Sex (Male/Female)					
3	Marital Status (Married/Unmarried)					
4	Date of Birth					
5	Age as on last date of application	_____ Years _____ Months _____ Days				
6	Father's/Husband's Name					
7	Present/Contact Address					
8	Permanent Address					
9	Mobile No					
10	E-mail					
11	Nationality					
12	Category	Gen/SC/ST/OBC/PH _____ (enclosed attested copy of certificate) and women				
13	GATE/NET/DBT-BET Category-II	Valid up to _____ Score/Rank _____				
14	Educational Qualification					
	<b>Qualification</b>	<b>Subject/Discipline</b>	<b>Board/Institute/Univ.</b>	<b>Year</b>	<b>% of marks</b>	<b>Div.</b>
	10th or equivalent					
	12th or equivalent					
	Diploma, if any					
	BA/B.Sc./B.E./B.Tech					
	M.A./M.Sc.					
	M.Phil./M.E./M.Tech*					

\*Title of M.Sc./M.Tech.

Thesis:.....

15	Details of Experience in chronological order. Enclose a separate sheet duly authenticated under your signature if necessary						
	Organization	Position	Salary/Emoluments	Nature of Duties	Nature of appointment	Period of Experience Year Days	Month
16	Research Publications (Attach list):-				Numbers		
	SCI Journals						
	Non SCI Journals						
	International Conference/Seminar ./ Symposium Proceeding						
	National Conference/Seminar ./Symposium Proceeding						
17	Any other information						
18	Indicated whether you propose to register for higher degree* at MNNIT, Allahabad. Yes/No (Name of degree)						

**Note:-** \*Those candidates who wish to be admitted as student for higher degree must fulfill at least the minimum eligibility for the respective admission as available on the Institute website.

### DECLARATION

I hereby declare that all the statements made in this application are true and complete and nothing has been concealed/ distorted. I am aware that, if at any time I am found to have concealed/distorted any material information, my engagement is liable to be summarily terminated without notice.

Place:

Signature of the Applicant

Date:

**Enclosure-Self attested copy of documents**

1. Proof of Date of Birth
2. Mark sheets & certificates of all the examination passed
3. Category Certificate, if applicable
4. GATE/NET/DBT-BET cat-II score card, if passed
5. Experience certificate, if any
6. Copy of the relevant publications, if any