



केन्द्रीय नमक व समुद्री रसायन अनुसंधान संस्थान  
(वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद, भारत)  
गिजूभाई बधेका मार्ग, भावनगर 364002 (गुजरात)  
**CSIR- Central Salt & Marine Chemicals Research Institute**  
(Council of Scientific & Industrial Research, India)  
Gijubhai Badheka Marg, Bhavnagar – 364 002 (Gujarat)

[www.csmcri.res.in](http://www.csmcri.res.in)



CSIR Integrated Skill Initiative

**CSIR INTEGRATED SKILL INITIATIVE TRAINING PROGRAM  
ON  
“MICROALGAL DIVERSITY AND THEIR  
BIOTECHNOLOGICAL POTENTIALS”**

**DATE: 22 – 24 JANUARY, 2025**

**Faculty / Experts**



Dr. S. Bhattacharya,  
CSIR-CSMCRI



Dr. D Ramalingam,  
CSIR-CSMCRI



Dr. (Mrs.) Moutusi Manna  
CSIR-CSMCRI



Dr. Avinash Mishra,  
CSIR-CSMCRI



Dr. Arup Ghosh,  
CSIR-CSMCRI



Dr. S. K. Mandal,  
CSIR-CSMCRI

**Venue :**

**CSIR-Central Salt & Marine Chemicals Research Institute  
Bhavnagar, Gujarat**

## **PREFACE**

Microalgae are tiny single / multicellular photosynthetic cells that can increase rapidly and generate colossal biomass. They are classified based on their various sizes, structures and forms. Microalgae, in general, consist of several essential metabolites, such as sugars, protein, lipids, bio-silica etc. Microalgae have gradually drawn the attention of scientists and entrepreneurs for their high-value products, feed supplements for humans and animals, transport fuels, industrial chemicals, pharmaceuticals etc. The past decades have witnessed continued and substantial progress to establish microalgae as a unique source of high-value compounds and therapeutic substances as a promising biofuel feed stock in response to the uprising energy crisis, climate change and depletion of natural sources.

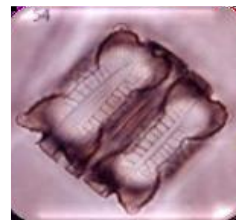
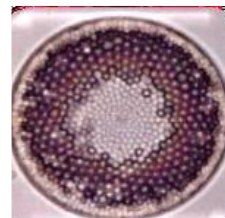
Microalgae being an excellent source of various pigments like carotenoids and phycobiliproteins, proteins, vitamins, enzymes, minerals, amino acids, lipids,  $\gamma$ -linolenic acid and biopolymer have received attention in the integrated processes for industrial applications including food, feed, fuel and pharmaceuticals, considering its unique chemical composition, if exploited efficiently through optimized upstream and downstream processing. Due to their potential high-value applications, these intracellular and extracellular compounds are a pure culture of a possible strain required to develop to produce large-scale biomass. Downstream processes for extracting valuable products also need skills to handle such microorganisms for large-scale biotechnological applications. Through digital and practical demonstrations, this program will generate awareness of the importance of microalgae, the downstream and upstream processes, and the products. This program will generate awareness towards the importance of microalgae, downstream and upstream process and the products through digital and practical demonstrations.

## **PROGRAM DETAILS**

- Avenues of Products from Microalgae
- Morphology and Diversity of Microalgae
- Mass cultivation techniques of Microalgae
- Downstream processing of Microalgae

## Experts:

- Dr. Subir Kumar Mandal, Senior Scientist, working on microalgae diversity, harmful algal blooms (HABs) formation and mitigation and high-value products from marine microalgae, primarily diatoms through the bio-refinery approach.
- Dr. Avinash Mishra works as Principal Scientist in CSIR-CSMCRI, Bhavnagar, Gujarat, India. He has expertise in plant molecular biology and also seaweed metabolomics. He is also working on Molecular Systematics and Molecular Phylogeny.
- Dr. Sourish Bhattacharya is working as a Senior Scientist at CSIR-CSMCRI, Bhavnagar, Gujarat, India. He has strong background in microalgal biotechnology, micro algal biofuel, bio polymers and nutraceuticals for therapeutic applications.
- Dr. Dineshkumar R. is working as a Senior Scientist in CSIR–CSMCRI, Bhavnagar, India. His work focuses on designing and optimizing upstream and downstream processes for improved bio-products manufacturing that benefits society in the healthcare, energy and environment sectors.
- Dr. Arup Ghosh is working as a Senior Principal Scientist and Co-Chair of DAPB in CSIR–CSMCRI, Bhavnagar, India. He has vast experience in microalgal aspects including cultivation and stress tolerance. He also has expertise in the value addition of microalgae for biofuel, fertilizer and environmental remediation applications.
- Dr. Moutusi Manna, Senior Scientist working in the field of “Theoretical and computational Biophysical Chemistry”. Her major research interest is centred on understanding the structure, dynamics and function of biological membranes, membrane proteins and a large variety of bio-macromolecules using state-of-the-art computational approaches such as molecular dynamics simulation, multi scale modelling and enhanced sampling techniques.





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CSIR Integrated Skill Initiative

TRAINEE ENROLLMENT FORM

TITLE OF SKILL DEVELOPMENT PROGRAM	:	INTEGRATED SKILL INITIATIVE (PHASE-II)
DATE(S), TIME AND VENUE	:	<b>22 – 24 January, 2024</b> Venue : CSIR- Central Salt & Marine Chemicals Research Institute, Gijubhai Badheka Marg, Bhavnagar – 364 002 (Gujarat)
FULL NAME OF TRAINEE	:	
FATHER'S / HUSBAND'S NAME	:	
DATE OF BIRTH (DD/MM/YYYY)	:	
GENDER (MALE / FEMALE / OTHERS)	:	
CATEGORY (SC / ST / OBC / EWS / GENERAL)	:	
PHYSICALLY DISABLED (YES / NO)	:	
CURRENT STATUS (working/ entrepreneur/ student/ unemployed/ school dropout)	:	
QUALIFICATIONS	:	
PHOTO ID NUMBER (Aadhaar/ PAN/ Voter ID/ Passport)	:	
MOBILE NUMBER	:	
ALTERNATE MOBILE NUMBER	:	
EMAIL ADDRESS	:	
TRAINEE'S DOMICILE (RURAL / URBAN)	:	
FEE PAYMENT DETAILS	:	
DATE:		
SIGNATURE OF APPLICANT		

Kindly submit the completed form on or before **31st December 2024** to  
**Dr. Subir Kumar Mandal** at email : [skmandal@csmcri.res.in](mailto:skmandal@csmcri.res.in), +91-9426284820



## Training Program Fee

₹ 1000/- + ₹ 180/- GST = ₹ 1180/-	Category I : Self- sponsored [Students, Individual (other than student) and Entrepreneur (as an individual)]
₹ 5000/- + ₹ 900/-GST = ₹ 5900/-	Category II: Any sponsored candidate (Government, Industry and sponsored by Entrepreneur)

**DIGITAL PAYMENT ONLY WILL BE ACCEPTED and NO CASH TRANSACTION.**

### Details of Fee Deposit

(Payment through RTGS/ NEFT only)

Amount (₹)	:	
Bank Name	:	
Branch Name	:	
Account No.	:	
Transaction ID and Date	:	
Signature of Depositor/ Candidate Name: _____		

Kindly submit the completed form on or before **31<sup>st</sup> December 2024** to **Dr. Subir Kumar Mandal** at email : [skmandal@csmcni.res.in](mailto:skmandal@csmcni.res.in), +91-9426284820

**NOTE:** Candidates with all required information and fees deposited through digital mode only will be accepted and selected based on their CV in the said training program. During the application itself, please submit a printed copy of the fee receipt and a Xerox copy of the AADHAR Card.

**Accommodation for staying has to be arranged by Candidates only. The Institute will not provide any accommodation.**

## Bank details of CSIR-CSMCRI for Trainee Program Fee



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गिजुभाई बधेका मार्ग, भावनगर- ३६४ ००२

CSIR-CSMCRI CSIR-CENTRAL SALT & MARINE CHEMICALS RESEARCH INSTITUTE

Gijubhai Badheka Marg, Bhavnagar 364 002, Gujarat, India

Phone No. (O) 0278, 2471792 E-mail: [fao@csmcri.org](mailto:fao@csmcri.org)

### Electronic Fund Transfer Account Details

1	Name of account holder	DIRECTOR, C.S.M.C.R.I.
2	Address	GIJUBHAI BADHEKA MARG, BHAVNAGAR 364002
3	e-mail address	<a href="mailto:fao@csmcri.org">fao@csmcri.org</a>
4	Phone No./Mobile No.	0278-2471792
5	Fax No.	0278-2567562
6	Permanent Account Number (PAN)	AACCC1313P
7	Particulars of Bank Account	
	A. Name of the Bank	STATE BANK OF INDIA
	B. Name of the Branch	WAGHAWADI ROAD BRANCH
	C. Branch Code	10863
	D. Address	Shubham Shop No.G2/3, Plot No.2569 E1/2, Waghawadi Road Opp. Gulista Ground, Bhavnagar-364002 e-mail: <a href="mailto:sbi.10863@sbi.co.in">sbi.10863@sbi.co.in</a>
	E. Telephone No	0278- 2569884
	F. Account No.	30267310153
	G. Type of Account	SAVINGS BANK ACCOUNT
	H. IFSC Code ( RTGS/NEFT)	SBIN0010863
	I. MICR code	364002023