

## CHIRANJIB BANERJEE, PhD

### Correspondence Address

Assistant Professor (Visiting)

Department of Environmental Science & Engineering

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## EDUCATION & CERTIFICATION

UNIVERISTY/BOARD	EXAM PASSED	Marks (%)
Birla Institute of Technology, Mesra	PhD (Microbiology)	88
Vidyasagar University	M.Sc. Biotechnology	73
The University of Burdwan	B.Sc. Biotechnology	64
Central Board Secondary Education	Class XII	63
Central Board Secondary Education	Class X	67

## PRESENT STATUS

1. Joined as Assistant Professor (Visiting) in the Dept. of Environmental Science & Engineering, Indian Institute of Technology (ISM) Dhanbad, Jharkhand, India from **01<sup>st</sup> May, 2020** & is continuing.
2. Joined as a INSPIRE Faculty in the Dept. of Environmental Science & Engineering, Indian Institute of Technology (ISM) Dhanbad, Jharkhand, India from **01<sup>st</sup> May, 2015 to 30<sup>th</sup> April, 2020**.

## PAY SCALE

Rs. 1,33,000/- PER MONTH (Consolidate Pay)

## ACADEMIC TEACHING CREDENTIAL

Subject & Code	UG/PG
• Environmental Biotechnology/ESE 17102	UG (7 <sup>th</sup> B.Tech)
• Earth System Science /CMD 11301	UG (1 <sup>st</sup> B.Tech)
• Microbiology/ESC 14101	UG (4 <sup>th</sup> B.Tech)
• Climate change & its mitigation/ ESH 18101	UG (8 <sup>TH</sup> B.Tech)
• Instrumental Techniques/ ESE 51103	PG (1 <sup>st</sup> M.Tech)

## R & D PROJECTS

Title of ongoing projects	Funding Agency	Amount of grant & Role
1. Algal biomass harvesting through bio- polymeric approach	DST, GOI	35 Lakhs (INR) & PI
2. DST-FIST	DST, GOI	144 Lakhs & Co-Coordinator
3. Improving the quality and yield of salt produced by the marginal agarias of (Halwad Region) through scientific intervention and improving their income through value addition of bitters, halophyte plantation and potable water recovery & Arid Region Reclamation Technology with respect to Lignite Mining Areas in Kutch, Gujarat	DST,ASACODER GOI	60 LAKHS & Co-PI

## RESEARCH INTEREST

Environmental Biotechnology, Bioenergy, Plant Biotechnology (Microalgae specialization), molecular characterization & species delimitation through bioinformatics tools, Flocculation of microalgae.

## THESIS SUPERVISION

**PhD: 03 (Ongoing) and MTech: 06 (Completed)**

## EXPERTISE AREA

Bioinformatics, Phylogenetic analysis & Species delimitation, Synthesis of polymeric flocculent; CO<sub>2</sub> Sequestration, Waste Water treatment; Algal isolation and cultivation; Biofuel from microalgae.

## AWARDS

1. Appointed as **Research Advisor**, Nan Yang Academy of Sciences, Singapore, 2018.
2. Awarded with DST INSPIRE Faculty, Department of Science & Technology, Govt. of India (Session II, July, 2014)
3. **Research Fellowship** from CSIR, Govt. of India (During PhD)
4. Awarded with **Chinese Academy of Sciences-President's International Fellowship Initiative (CAS-PIFI) postdoctoral** fellowship for 2015 session at **Institute of Process Engineering, Beijing, China**
5. **Young Scientist Award (YSA)** from Association of Microbiologist of India (AMI) in Molecular Microbiology and Biotechnology section organized by Maharshi Dayanand University, Rohtak, Haryana, India from 17 -20 Nov, 2013.
6. Shortlisted for **Young Scientist Award (YSA)** in Indian Science Congress Association (ISCA) for YSA paper presentation in 2012-2013 in plant science section.
7. **Best Poster Award** in Association of Microbiologist of India (AMI)-2010

## PUBLICATIONS [Cumulative IF: 88, Citation: 360; h Index: 10]

### 2019

1. Carbon bio-fixation, effect of physicochemical factors and carbon supply strategies by *Nannochloropsis* sp. using flue gas and fertilizer  
A Banerjee, C Guria, SK Maiti, **C Banerjee\***(Corresponding author), P Shukla  
***Biomass and Bioenergy*** 125, 95-104, 2019. {**Impact Factor (IF): 3.551 & Q2**}  
**Link:** <https://www.sciencedirect.com/science/article/pii/S0961953419301175>  
**ISSN:** 0961-9534

2. A novel non-starch based cationic polymer as flocculant for harvesting microalgae  
N Kumar, **C Banerjee\***(Corresponding author), N Kumar, S Jagadevan  
*Bioresource Technology* 271, 383-390, 2019. {**IF 7.539 & Q1**}  
**Link:** <https://www.sciencedirect.com/science/article/pii/S0960852418313269>  
ISSN: 0960-8524
3. Effect of alginate concentration in wastewater nutrient removal using alginate-immobilized microalgae beads: Uptake kinetics and adsorption studies  
S Banerjee, PB Tiwade, K Sambhav, **C Banerjee**, SK Bhaumik  
*Biochemical Engineering Journal* 149, 107241, 2019. {**IF 3.475 & Q1**}  
**Link:** <https://www.sciencedirect.com/science/article/abs/pii/S1369703X19301688>  
ISSN: 1369-703X
4. Novel nanocomposite derived from ZnO/CdS QDs embedded crosslinked chitosan: An efficient photo catalyst and effective antibacterial agent  
L Midya, AS Patra, **C Banerjee**, AB Panda, S Pal  
*Journal of hazardous materials* 369, 398-407, 2019. {**IF 9.038 & Q1**}  
**Link:** <https://www.sciencedirect.com/science/article/pii/S0304389419301530>  
ISSN: 0304-3894
5. Comparative Study on Structure of Exopolysaccharide and Capsular Polysaccharide Produced by Southern Ocean Origin *Pseudoalteromonas* sp. MB-16  
S Sengupta, A Banerjee, U Halder, P Gupta, **C Banerjee**, R Bandopadhyay {**IF 0.396 & Q4**}  
*Proceedings of the National Academy of Sciences, India Section B: Biological* 89, 283–290, 2019.  
**Link:** <https://link.springer.com/article/10.1007/s40011-017-0942-0>  
ISSN: 0369-8211

## **2018**

6. Recent developments in synthetic biology and metabolic engineering in microalgae towards biofuel production.  
S Jagadevan, A Banerjee, **C Banerjee**, C Guria, R Tiwari, M Baweja, & P Shukla.  
*Biotechnology for Biofuels*, 11(1), 185, 2018. {**IF 5.452 & Q1**}  
**Link:** <https://link.springer.com/article/10.1186/s13068-018-1181-1>  
ISSN: 1754-6834
7. Improvements in algal lipid production: a systems biology and gene editing approach.  
A Banerjee, **C Banerjee** (Joint 1<sup>st</sup> author), S Negi, JS Chang & P Shukla.  
*Critical Reviews in Biotechnology*, 38(3), 369-385, 2018. {**IF 7.178 & Q1**}  
**Link:** <https://www.tandfonline.com/doi/abs/10.1080/07388551.2017.1356803>  
ISSN: 1549-7801;

## **2017**

8. Biokinetic model-based multi-objective optimization of *Dunaliella tertiolecta* cultivation using elitist non-dominated sorting genetic algorithm with inheritance.  
SK Sinha, M Kumar, C Guria, A Kumar **C Banerjee**  
*Bioresource Technology*, 242, 206-217, 2017. {**IF 7.539 & Q1**}  
**Link:** <https://www.sciencedirect.com/science/article/pii/S0960852417304273>  
ISSN: 0960-8524;

9. Metabolic pathways for lipid synthesis under nitrogen stress in *Chlamydomonas* and *Nannochloropsis*  
A Banerjee, SK Maiti, C Guria & **C Banerjee\***(Corresponding author)  
*Biotechnology Letters*, 39, 1-11, 2017. {**IF 1.977 & Q2**}  
**Link:** <https://link.springer.com/article/10.1007/s10529-016-2216-y>  
ISSN: 1573-6776
10. Cross-linked biopolymer stabilized exfoliated titanate nanosheet-supported AgNPs: a green sustainable ternary nanocomposite hydrogel for catalytic and antimicrobial activity  
AK Sarkar, A Saha, L Midya, **C Banerjee**, N Mandre, AB Panda & S Pal  
*ACS Sustainable Chemistry & Engineering*, 5(2), 1881-1891, 2017. {**IF 7.632 & Q1**}  
**Link:** <https://pubs.acs.org/doi/abs/10.1021/acssuschemeng.6b02594>  
ISSN: 2168-0485
11. Proteomic approaches in microalgae: perspectives and applications  
V Anand, PK Singh, **C Banerjee**, P Shukla  
*3Biotech*, 7(3), 197, 2017. {**IF 1.786 & Q2**}  
**Link:** <https://link.springer.com/article/10.1007/s13205-017-0831-5>  
ISSN: 2190-5738

## **2016**

12. Metabolic engineering of microalgal based biofuel production: prospects and challenges  
**C Banerjee**, KK Dubey, P Shukla  
*Frontiers in microbiology*, 7, 432, 2016. {**IF 4.076 & Q1**}  
**Link:** <https://www.frontiersin.org/articles/10.3389/fmicb.2016.00432/full>  
ISSN: 1664-302X
13. Microalgal bioengineering for sustainable energy development: recent transgenesis and metabolic engineering strategies  
**C Banerjee**, PK Singh & P Shukla  
*Biotechnology Journal*, 11(3), 303-314, 2016. {**IF 3.543 & Q1**}  
**Link:** <https://onlinelibrary.wiley.com/doi/abs/10.1002/biot.201500284>  
ISSN: 1860-6768

## **2013**

14. Isolation and characterization of probiotic microorganisms from curd and chili sauce  
S Goyal, T Raj, **C Banerjee**, J Imam & P Shukla  
*International Journal of Probiotics & Prebiotics*, 8, 91, 2013. {**IF 0.29, Q4**}  
**Link:** <https://search.proquest.com/openview/e07df35f892920479066215c162ae8c9/1?pq-origsite=gscholar&cbl=136102>  
ISSN: 1555-1431

## **2012**

15. A simple novel agar diffusion method for isolation of indigenous microalgae *Chlamydomonas* sp. CRP7 and *Chlorella* sp. CB4 from operational swampy top soil  
**C Banerjee**, R Bandopadhyay & P Shukla  
*Indian journal of microbiology*, 52, 710-712, 2012. {**IF 1.830 & Q3**}  
Link: <https://link.springer.com/article/10.1007/s12088-012-0295-6>  
ISSN: 2394-5478
16. Study of polyacrylamide grafted starch based algal flocculation towards applications in algal biomass harvesting  
**C Banerjee**, P Gupta, S Mishra, G Sen, P Shukla & R Bandopadhyay  
*International journal of biological macromolecules*, 51,456-461, 2012. {**IF 5.162 & Q1**}  
Link: <https://www.sciencedirect.com/science/article/pii/S0141813012002279>  
ISSN: 1879-0003

### BOOK CHAPTERS: 03 No's

1. **Chiranjib Banerjee**, Rajib Bandopadhyay, Puneet Kumar Singh, Harsh Kumar Agrawal and Pratyosh Shukla. (2016) INNOVATIONS IN MICROALGAL HARVESTING USING BIOPOLYMER BASED APPROACH. *Microbial Factories*; pp 127-138; Print ISBN 978-81-322-2594-2; Springer India
2. **Chiranjib Banerjee**, Harsh Kumar Agrawal, Puneet Kumar Singh, Rajib Bandopadhyay and Pratyosh Shukla. PROTEOMIC APPROACHES IN MICROALGAL RESEARCH: CHALLENGES AND OPPORTUNITIES. *Biotechnology: Progress and Applications*; ISBN 978-93-5124-729-6 (Hardbound)
3. Avik Banerjee, Sheeja Jagadevan, Pratyosh Shukla & **Chiranjib Banerjee\***. (2016) USE OF MICROALGAE FOR CO<sub>2</sub> BIO-MITIGATION. *Microalgae: Windows of Opportunity*; SBW Publishers

### CONFERENCE PROCEEDINGS: 15 No's

- Siddhartha Sengupta, Chiranjib Banerjee, Pratibha Gupta, Ramesh Chandra, Rajib Bandopadhyay. Screening and partial characterization of an exopolysaccharides produced from Antarctic marine bacteria. 55th Annual conference of Association of Microbiologists of India (AMI-2014) 12-14, November 2014, Tamil Nadu Agricultural University, Coimbatore-641003, India.
- Rajani S, Chiranjib Banerjee, Rajib Bandopadhyay, Mandira Mukherjee and Padmini Padmanabhan. Effect of cationic modifiers on the rheological behaviour of bio-flocculants. 55th Annual conference of Association of Microbiologists of India (AMI-2014) 12-14, November 2014, Tamil Nadu Agricultural University, Coimbatore641003, India.
- Chiranjib Banerjee, Pratyosh Shukla and Rajib Bandopadhyay. Study of algal biomass harvesting through cationic cassia gum, a natural plant based biopolymer. 54 th Association of Microbiologist of India (AMI-2013) 17-20, November 2013, Maharshi Dayanand University and NIFTEM, Rohtak, Haryana, India.
- Nidhi Gaur, Chiranjib Banerjee, Koel Mukherjee and RajibBandopadhyay. Comparative genomics study of *Chlamydomonas reinhardtii* and *Chloerella variabilis*. 54th Association of Microbiologist of India (AMI-2013) 17-20, November 2013, Maharshi Dayanand University and NIFTEM, Rohtak, Haryana, India.
- Dheeraj Singh, Chiranjib Banerjee, Animesh Sinha, Diwakar Prasad Nirala, Santosh Prasad Nirala, Rajib

- Bandopadhyay. 54 th Association of Microbiologist of India (AMI Analysis of Physico-Chemical Properties of Seeds of *Jatropha curcus* for Biodiesel Production-2013) 17-20, November 2013, Rohtak, Haryana, India.
- Chiranjib Banerjee, Pratyooosh Shukla & Rajib Bandopadhyay. Isolation, Characterization and Bioflocculation of Fresh Water Microalgae For Their Biological Potential. The International conference on Algal Biorefinery: A Potential source of Food, Feed, Biochemicals, Biofuels and Biofertilizers, ICAB 2013, IIT Kharagpur, January 10-12, 2013.
- Chiranjib Banerjee, Pratyooosh Shukla & Rajib Bandopadhyay. Bioharvesting of *Chlorella* Sp. CB4 Using St-gPam And Cationic Guar Gum As A Natural Flocculant. 53rd Annual conference of Association of Microbiologist of India (AMI) 2012. Nov 22-25, 2012, KIIT, Bhubaneswar, India.
- Arunabh Sarkar, Chiranjib Banerjee, Mousumi Poddar Sarkar and Rajib Bandopadhyay. Studying the Potential of An Isolated Algal Strain Of *Desmodesmus* Sp For The Production Of Biodiesel. 53rd Annual conference of Association of Microbiologist of India (AMI) 2012. Nov 22-25, 2012, KIIT, Bhubaneswar, India
- Pratibha Gupta, Chiranjib Banerjee, Rajib Bandopadhyay. Screening of Isolated Fresh And Marine Microalgae For Antibacterial Activity. 53rd Annual conference of Association of Microbiologist of India (AMI) 2012. Nov 22-25, 2012, KIIT, Bhubaneswar, India
- Pratibha Gupta, Chiranjib Banerjee, Gautam Sen, Sumit Mishra, Pratyooosh Shukla & Rajib Bandopadhyay. Biomass Collection From Microalgae Through Flocculation. 2nd International conference on Challenges In Biotechnology and Food Technology, ICBF-2012, Annamalai University, CAS in Marine Biology, Tamilnadu, India.
- Pratibha Gupta, Chiranjib Banerjee, Pratyooosh S h u k l a & R a j i b B a n d o p a d h y a y . B e n e f i c i a r y Role of Microalgae Against Arsenic Contamination. 15th All India Congress of Cytology and Genetics & Fogarty International Workshop on Arsenic Contamination in Groundwater: Health Effects, Molecular Epidemiology, Susceptibility & Mitigation, Nov 21-23, 2011.
- Chiranjib Banerjee, Pratyooosh Shukla, Rajib Bandopadhyay. It's Region Characterization of Selected Microalgae International Workshop on Algae Technology, hydrogen Production and Use of Algae Biomass, Kolkata, India, 17-18 October 2011.
- Chiranjib Banerjee, R a j i b B a n d o p a d h y a y , P r a t y o o s h S h u k l a , R a m e s h C h a n d r a . Study of Scanning Electron Microscopy and Growth of Hydrogen Producing Indigenous Green Micro Algal Species. 51st Annual conference of Association of Microbiologist of India (AMI) 2010. December 14-17, 2010, Ranchi, India December 6-9, 2013

## INVITED TALK

- Indian JSPS Alumni Association in association with Department of Physics, Visva-Bharati supported by JSPS on 3<sup>rd</sup> & 4<sup>th</sup> Sept, 2018.
- INTERNATIONAL CONFERENCE ON ALTERNATIVE ENERGY SOURCES (ICAES-2016) on 29th - 30th January, 2016 at BIT Mesra, Ranchi

- ASH UTILIZATION PROGRAMME – 2019 Mejia Thermal Power Station, Damodar Valley Corporation, Durlampur, Bankura (West Bengal) on 7th June-2019

### **Declaration**

I hereby declare that all the statements made in this application are true, complete & correct to the best of my knowledge & belief.

Chiranjib Banerjee

Scopus author's ID: 55506303400

<https://scholar.google.co.in/citations?user=kwLYLG0AAAAJ>