

## Brief Bio-data

**1. Name:** Pallabi Das

**2. Date of Birth:** 06/07/1990

**3. Current Position and Address (Include Email ID and Contact Number) :**

Scientist, Water Resource Management Research Group

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**4. Educational qualifications: (Graduation and above)**

Sl. No.	Degree	Year of Passing	University/Institute	Subject
1.	PhD	2022	Indian Institute of Technology-Indian School of Mines (IIT-ISM)- Dhanbad	Chemical Engineering
2.	M.Tech	2015 ( M.tech topper Gold medallist )	National Institute of Technology (NIT), Durgapur	Chemical Engineering
3.	B.Tech	2013	West Bengal University of Technology	Chemical Engineering

**5. Work experience:**

Designation	Institute/company	From	To	Nature of Work
Scientist C	CSIR-CIMFR, Dhanbad	11/04/2016	Till present date	Research and Development in the domain of wastewater treatment and novel separation technology

**6. Work Area(s)/ Specialization:** Wastewater treatment, novel separation processes, water quality assessment plant design , waste valorization

**7. Major contributions: (Max. 100 words):**

- i) Development of integrated forward osmosis system for energy efficient industrial effluent treatment: New improved feed spacer design, contacting patterns with design modifications for minimization of concentration polarization.
- ii) Development of Standalone, zero energy forward osmosis for water purification. A design copyright has been granted. The device is being scaled up with the support of DST.
- iii) Development of treatment technology for conversion of acid mine water into drinking water: Research towards pilot demonstration plant with a capacity of 250 lit/hr for field implementation in Shillong towards mitigation of acid mine drainage in an area with acute water shortage.
- iv) Development of cost-effective, energy efficient membrane integrated crystallization technology: Membrane integrated antisolvent crystallization which has demonstrated energy efficiency and reduction of crystallization time with a narrow crystal size distribution and controlled attainment of supersaturation and crystal growth rates. Currently a design copyright has been filed for the design of a novel membrane crystallizer.
- v) Valorisation of waste : waste to wealth : Technology development towards recovery of silica from steel slag, utilization of steel slag for wastewater treatment for effluent management from steel plants.

8. No. of Research Publications:

- **Papers in Journals: 8 SCI publications**
- **In conference proceedings: 6**
- **Invited lectures delivered: 4**
  - Delivered an invited lecture at CSIR-CGCRI Kolkata titled “Technologies & Equipment for treatment & recycling of Industrial & Municipal Waste Water in India” in a seminar on “Innovative Technologies & Equipment for treatment & recycling of Industrial & Municipal Waste Water in India”
  - Delivered invited lecture at Federation House, FICCI, New Delhi seminar entitled “Promoting Awareness & Usage of Iron & Steel Slag Ushering a New Era” in New Delhi jointly organized by Federation of Indian Chambers of Commerce & Industry in association with Ministry of Steel, held on August 27,2019
  - Delivered invited lecture at CSIR-CIMFR on “Role of science and technology in mitigating water wastage“ as a part of International water day lecture held by Institution of Engineer’s, Dhanbad Chapter
  - Delivered invited lecture at CSIR-CIMFR on “Sustainable Water Treatment Technology : Innovation To Mitigate The Challenges “ as a part of National Science Day lecture held in CSIR-CIMFR
- **List of best 05 publications :**

Sl. No	Authors	Title of the Article	Year of Pubn	Name of Journal	Vol No. Issue, Pages	DOI
1.	<b>P.Das, S. Upadhyaya, S. Dubey, KKK Singh</b>	Waste to wealth: Recovery of value-added products from steel slag	2021	Journal of Environmental Chemical Engineering <b>I.F. : 5.909</b>	9,4 , 105640	<a href="https://doi.org/10.1016/j.jece.2021.105640">https://doi.org/10.1016/j.jece.2021.105640</a>
2.	<b>P.Das, KKK Singh</b>	Broad-spectrum contaminant removal from water using sustainable pressure assisted osmosis	2021	Journal of Environmental Chemical Engineering <b>I.F. : 5.909</b>	9,1104594	<a href="https://doi.org/10.1016/j.jece.2020.104594">https://doi.org/10.1016/j.jece.2020.104594</a>
3.	<b>P.Das, S.Dutta, KKK Singh,</b>	Insights into membrane crystallization: A sustainable tool for value added product recovery from effluent streams	2021	Separation and purification Technology <b>I.F. : 7.312</b>	257,11766 6	<a href="https://doi.org/10.1016/j.seppur.2020.117666">https://doi.org/10.1016/j.seppur.2020.117666</a>
4.	<b>P.Das, KKK Singh, S.Dutta</b>	Insight into emerging applications of forward osmosis systems	2019	Journal of Industrial and Engineering Chemistry <b>I.F: 6.064</b>	72, 1-17	<a href="https://doi.org/10.1016/j.jiec.2018.12.021">https://doi.org/10.1016/j.jiec.2018.12.021</a>
5.	<b>P.Das, KKK Singh, S.Dutta</b>	Energy saving integrated membrane crystallization: A sustainable technology solution	2019	Separation and purification Technology <b>I.F. : 7.312</b>	228	<a href="https://doi.org/10.1016/j.seppur.2019.115722">https://doi.org/10.1016/j.seppur.2019.115722</a>

• **Books/Chapters authored/edited**

- 1) **P. Das**, KKK Singh, S Dutta , Forward osmosis membranes for water purification (2020), 159-169, Synthetic Polymeric Membranes for Advanced Water Treatment, Gas Separation, and Energy Sustainability, Elsevier
- 2) **P.Das**, AK Singh, KKK Singh, Sustainable technologies for value added product recovery from wastewater, (2022); Accepted for publication in the book entitled “Environmental Degradation: Challenges and Strategies for Mitigation”, Publisher: Springer –Nature
- 3) **P.Das**, KKK Singh, Wastewater Remediation: Emerging Technologies and Future Prospects. (2022); Accepted for publication in the book entitled “Environmental Degradation: Challenges and Strategies for Mitigation”, Publisher: Springer –Nature

**9. List of 5 Major Contract R&D Projects:**

	<b>Title of Project</b>	<b>Funding , Agency</b>	<b>Role</b>
<b>1</b>	Integrated Cost-effective Technology for Attaining Zero Liquid Discharge in Steel Plants with Emphasis on Steel Slag Utilization	GAP, Ministry of Steel	Principal Investigator
<b>2</b>	Standalone forward osmosis for cost-effective industrial effluent treatment	GAP, Department of Science and Technology (DST)	Principal Investigator
<b>3</b>	Technology development for the treatment of acid mine water for its reuse and safe disposal	NGT- Meghalaya State Pollution Control Board (MSPCB).	Principal Investigator
<b>4</b>	EIA study and preparation of EMP of jitpur colliery for grant of Environmental Clearance from MoEF&CC	Steel Authority of India Limited SAIL	Team Member
<b>5</b>	Baseline Data Generation and Preparation of EIA/EMP of Surkha (N) Lignite Mine Village Surkha, Taluka Ghogha, Dist - Bhavnagar(Gujrat)	Gujarat Mineral Development Cooperation ( GMDC )	Team Member

10. (a) Name of Patents/Copyrights applied /granted/commercialized:

**Patent**

Sl. No.	Name(s)	Patent title	Application number	Grant/ Registration Number
1	<b>P.Das</b> , S.K. Kashyap, G.C.Mondal, KKK Singh, PK Singh	Novel portable device for providing hydration in remote areas	16/04/2018  Application number :201811014399	Under evaluation in Indian patent office

## Design Copyrights

Sl. No.	Name(s)	Title of the Copyright	CR number	Grant/ Registration Number
1.	P.Das, KKK Singh, PK Singh	Mechanically powered self-sliding portable forward osmosis assembly	Application No.: 006CR2019.	<b>Registration no: L-82982/2019 (Granted)</b>
2.	P.Das, S. Dutta , KKK Singh, PK Singh	Integrated hollow fibre FO-UF with tubular assembly in a cross flow channel	Application No.: 035CR2019	<b>Registration no: L-88587/2020 (Granted)</b>
3.	P.Das, KKK Singh, PK Singh	Integrated water absorption and dewatering assembly for preferential absorption and release	Application number : 009CR2018	Under evaluation
4.	P.Das, KKK Singh, PK Singh	Process Intensified Integrated chemical dosing filtration assembly	Granted	<b>Registration Number: L-106280/2021 (Granted)</b>
5.	P.Das, R. Rangari, G.C. Mondal, KKK Singh, PK Singh	Process design for remediation technology for acid mine water treatment.	Filed in 2021	Under evaluation

### (b) Technologies/Products /knowhow/Services developed:

- ❖ Forward osmosis assembly for energy efficient water treatment: laboratory scale
- ❖ Sustainable membrane crystallizer for value added product recovery from effluent streams : laboratory scale
- ❖ AMD water treatment technology : Pilot plant to be set up in Shillong, Meghalaya

### 11. Honors/Awards/Recognitions/Fellowships/Scholarships/Professional Memberships received:

- ❖ Recipient of best oral presentation award under waste to wealth technologies in young scientist conclave of Indian International Science Festival, New Delhi 2016
- ❖ Recipient of DST International Travel support for attending 36<sup>th</sup> European Membrane Summer School: “Membranes for a sustainable future” held in University of Edinburgh, UK in June, 2019
- ❖ Recipient of Institute GOLD MEDAL NIT Durgapur, for topping the M.tech Course in Chemical Engineering (2013-2015)
- ❖ Recipient of Dr. K. N. Sinha Award : second prize for Highest Impact factor of papers published in SCI Journals by scientific staff members in CSIR-CIMFR –2018-2019
- ❖ NABET accreditation in the field of Risk Hazard Analysis
- ❖ Guinness World Record coordinator for IISF 2020

### Professional Memberships

- ❖ Life member Indian Science Congress Association
- ❖ Member European Membrane Society
- ❖ Life Member Mining Engineers Association, India
- ❖ Life member Vigyan Bharati

## 12. Societal Contributions

- Work on mitigation of acid mine drainage to meet the water scarcity pockets of Shillong
- As the CSIR-Jigyasa program Nodal from CSIR-CIMFR ; responsible for coordination of the student scientist connect programs, student visits to the laboratory, virtual laboratory development for school students and other allied outreach programs under the guidance of Head HRD, CSIR-CIMFR