



## **CURRICULUM VITAE**

### **BIO DATA**

**NAME:** RANJAN DEY, FRSC, FICS, MNASc.

**ACADEMIC QUALIFICATIONS:** M. Sc.; D. Phil.(Ph.D.); PGDMM (Mktg),  
Certificate Course in IPR.

**DATE OF BIRTH:** 21/06/1969

**PLACE OF BIRTH:** ALLAHABAD, U.P., INDIA.

**DESIGNATION:** PROFESSOR, CHEMISTRY, BITS PILANI ,  
K K BIRLA GOA CAMPUS  
& VISITING ASSOC. PROF. AT NTUST,  
TAIPEI, TAIWAN.

**E – MAIL:** [ranjandey@goa.bits-pilani.ac.in](mailto:ranjandey@goa.bits-pilani.ac.in) ;  
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BIRLA GOA CAMPUS, ZUARINAGAR, GOA,  
INDIA- 403726

**Ph.D.** UNIVERSITY OF ALLAHABAD (1997)

**URL :** <https://scholar.google.co.in/citations?user=aaYibisAAAAJ&hl=en>

### **RESEARCH AND TEACHING EXPERIENCE:**

- 24 PLUS YEARS OF P.G. / U.G. TEACHING & 20 YEARS OF RESEARCH (POST Ph.D.)
- TWENTY PLUS INVITED TALKS; TWO INVITED LECTURE SERIES; TWO KEYNOTES
- TAUGHT SUMMER TERM COURSE IN JUNE – JULY 2016 AT NTUST, TAIPEI, TAIWAN.
- ASSOCIATE EDITOR IN EDITORIAL BOARD OF FRONTIERS IN CHEMISTRY- PCCP.
- REVIEWER OF MORE THAN 10 INTERNATIONAL JOURNALS.
- Ph.D.: 3 AWARDED;1 SUBMITTED ; 3 Ongoing.

### **RESEARCH PUBLICATIONS:**

**PUBLISHED: 86**

**UNDER REVISION: 2**

**COMMUNICATED: 3**

## **CURRENT AREAS OF RESEARCH:**

- a) **Thermodynamic, Excess & Transport Properties of Liquid Mixtures.**
- b) **Prediction of Thermophysical and Thermoacoustical properties.**
- c) **Renewable, New and Non-Conventional Energy; WATER-ENERGY NEXUS.**

## **COLLABORATIONS:**

### **INTERNATIONAL:**

- 1) Prof. KARSTEN MULLER, Lehrstuhl für Technische Thermodynamik, Rostock University, Rostock, Germany.
- 2) PROF. J A P COUTINHO: Professor, CICECO, University of Aveiro, Portugal.
- 3) PROF. SLOBODAN GADZURIC, University of Novi Sad, Serbia.
- 4) PROF. PEDRO CARVALHO: Researcher, CICECO, Dept of Chemistry, University of Aveiro, Portugal.
- 5) PROF. MIHAIELA C. STUPARU: Assistant Professor, NTU, Singapore.

### **NATIONAL:**

- 1) PROF. SIVAKUMAR KASI: Associate Professor, SV University, Tirupati, India.
- 2) DR. TADIKONDI S KRISHNA: Associate Professor, PBS College, Vijayawada, India.
- 3) PROF. P V RAO: Associate Professor, Dept of Civil Engineering, NIT Warangal.
- 4) PROF. SNEHANSHU SAHA: Professor, Dept of CSIS, BITS Pilani Goa Campus.
- 5) DR. ANIRBAN ROY: Assistant Professor, Chemical Engg Dept, BITS Goa, India.
- 6) PROF. A P MISHRA: Professor and Head, H S Gour University, Sagar, India.
- 7) PROF. KRISHNA MISHRA: Emeritus Professor, SGPGI, Lucknow, India.
- 8) PROF. ANAGHA PATHAK, School of Energy Studies, Pune University.

## **RECENT NOTABLE ACHIEVEMENTS:**

1. PAPER PUBLISHED IN 2023 IS TOP CITED (290+) In JOURNAL OF MOLECULAR LIQUIDS.
2. S T NANDIBEWOOR AWARD 2024 FROM INDIAN COUNCIL OF CHEMISTS.
3. BEST TEACHER AWARD, BITS GOA CAMPUS, 2022.
4. TEACHING EXCELLENCE AWARD, BITS GOA CAMPUS, SEPT, 2022.
5. AWARDED OUTSTANDING REVIEWER FROM JOURNAL OF MOLECULAR LIQUIDS (I.F.- 6.6) AND INTERNATIONAL JOURNAL OF BIOLOGICAL MACROMOLECULES (I.F. – 6.95) .
6. ELECTED TO THE FARADAY COMMUNITY COUNCIL OF THE RSC- JULY 2023.
7. ELECTED AS FELLOW OF ROYAL SOCIETY OF CHEMISTRY (SINCE 2018).
8. JUDGE AND REVIEWER OF CROATIAN SCIENCE FOUNDATION(HRZZ).

9. JUDGE AND REVIEWER OF DST AWSAR AWARDS. (2020 -)
10. EDITORIAL BOARD MEMBER OF FRONTIERS IN CHEMISTRY- PHYSICAL CHEMISTRY CHEMICAL PHYSICS, FRONTIERS IN PHYSICS.
11. ELECTED CORE COMMITTEE MEMBER OF STATISTICAL MECHANICS AND THERMODYNAMICS GROUP (SMTG) OF THE ROYAL SOCIETY OF CHEMISTRY, AUGUST 2022.
12. CERTIFICATE OF REVIEWING: JOURNAL OF MOLECULAR LIQUIDS-2022, JOURNAL OF CHEMICAL THERMODYNAMICS-2022, FLUID PHASE EQUILIBRIA- 2022, CHEMICAL THERMODYNAMICS AND THERMAL ANALYSIS, TAIWAN INSTITUTE OF CHEMICAL ENGINEERS(TICE)-2022, CHEMICAL DATA COLLECTIONS- 2019, HELIYON-2020.
13. AWARDED REVEIWER RECOGNITION FROM JOURNAL OF CHEMICAL THERMODYNAMICS (*JCT*) 2022.
14. KEYNOTE AT 6<sup>th</sup> INTERNATIONAL CONFERENCE: THERMAM 2019 & 8<sup>TH</sup> ROSTOCKER INTERNATIONAL CONFERENCE, CESME, IZMIR, TURKEY, 22<sup>ND</sup> – 24<sup>TH</sup> SEPT, 2019. <https://www.thermam.org/haber—70.html://>
15. KEYNOTE ADDRESS ON “**BASIC SCIENCES**” AT SCIFFI, PANJIM, GOA IN JANUARY 2019.
16. ACADEMIC VISITOR IN SUMMER OF 2018 AT DEPARTMENT OF CHEMISTRY, CAMBRIDGE UNIVERSITY, CAMBRIDGE U.K. UNDER MENTORSHIP OF PROF. DAVID WALES.
17. BSCA MAANPATRA SAMMAN, ALLAHABAD FOR DISTINCTION IN HIGHER EDUCATION IN APRIL 2017.
18. MEMBER- BOARD OF STUDIES, H S GOUR SAGAR UNIVERISTY, SAGAR, M.P.
19. VISITING ASSOCIATE PROFESSORSHIP FROM NTUST TAIWAN JUNE-JULY 2016.
20. 2 UNDERGRADUATE STUDENTS HAVE WON THE *BITSAA RESEARCH AWARDS*.
21. ONE STUDENT HAS RECENTLY WON THE BEST PAPER AWARD IN *APOGEE 21*.

### **INTERNATIONAL KEYNOTES/ INVITED TALKS/SESSIONS CHAIRED**

1. INVITED TALK (11/07/2023) at 38<sup>th</sup> International Conference on Solution Chemistry (38<sup>th</sup> ICSC-IUPAC), held at **BELGRADE, SERBIA**, 9<sup>TH</sup> -14<sup>TH</sup> JULY, 2023.
2. SESSION CHAIR - Lavender Hall(12/07/2023) at the 38<sup>th</sup> I C S C (38<sup>th</sup> ICSC-IUPAC),

held at **BELGRADE, SERBIA**, 9<sup>TH</sup> -14<sup>TH</sup> JULY, 2023. <https://icsc2023.pmf.uns.ac.rs/>

3. SESSION CHAIR for the Statistical Mechanics and Thermodynamics Group(SMTG), Webinar Series Talk by Prof. DAVID J, WALES, FRS, ScD, FRSC, Royal Society of Chemistry, U.K, 15<sup>TH</sup> February 2023.
4. INVITED TALK AT International Conference on Advanced Materials Science & Engineering and High-Tech Devices Applications; Exhibition (**ICMATSE 2022**), October 27-29, 2022, **Ankara, TURKEY**.
5. INVITED TALK at 9<sup>th</sup> Rostocker International Conference on Thermophysical Properties, THERMAM 2020( Online), **University of Rostock, Rostock, Germany**, 15<sup>th</sup> October, 2020 .
6. **KEYNOTE at** 6<sup>th</sup> International Conference: Thermophysical and Mechanical Properties of Advanced Materials-THERMAM 2019 & 8<sup>TH</sup> Rostocker International Conference, Thermophysical Properties for Technical Thermodynamics, **Cesme, IZMIR, TURKEY**, 22<sup>ND</sup> – 24<sup>TH</sup> Sept, 2019. [https:// www.thermam.org/haber—70.html://](https://www.thermam.org/haber—70.html://).
7. Session CHAIR, Second Technical, **THERMAM 2019** , Cesme, Izmir, Turkey, 22<sup>nd</sup> Sept, 2019.
8. INVITED TALK at Department of Chemistry, **University of Cambridge, Cambridge, U.K.**, 18<sup>th</sup> June, 2018.
9. INVITED TALK at Theoretical Chemistry Group, **Heidelberg University, Heidelberg, Germany**, 13<sup>TH</sup> July, 2017.
10. INVITED TALK at Department of Chemical Engineering, **National Taiwan University of Science and Technology (NTUST) Taipei, Taiwan**, 29<sup>th</sup> June, 2016.
11. INVITED TALK at Chung Yuan Christian University ( CYCU) **Taipei, Taiwan**, 5<sup>th</sup> July , 2016.
12. INVITED TALK at Yuvabharati International School- Singapore, **Singapore** 14<sup>th</sup> July, 2016.

## **KEYNOTES IN INTERNATIONAL CONFERENCES IN INDIA**

1. **OPENING KEYNOTE ON “CUTTING EDGE RESEARCH IN BIOCHEMISTRY AND BIOMEDICAL RESEARCH”** at International Conference on Biochemistry and Biomedical Research (ICBBR-2024) organized by Association of Pharmaceutical Research (APR), 19<sup>th</sup> - 20<sup>th</sup> September, 2024, Goa, India.
2. **KEYNOTE- “MOVING TOWARDS GREENER AND SUSTAINABLE SOLUTIONS”**, at INTERNATIONAL WORKSHOP ON GREEN ENERGY AND SUSTAINABLE DEVELOPMENT (GSED), in Collaboration with STELLENBOSCH UNIVERSITY and UNIVERSITY OF CAPE TOWN, SOUTH AFRICA at BITS Pilani, Pilani Campus, 26<sup>th</sup> - 28<sup>th</sup> September, 2024 Sponsored by SPARC, Govt of India.

## PATENTS FILED / GRANTED

Application Number: **202411069613** ( 14/09/2024) : FILED

“Realtime Seawater Density Prediction Technology (RSDPT)”

## BOOKS/ BOOK CHAPTERS/ EDITOR

1. **SOLAR RENEWABLE ENERGY SYSTEMS: STUDY AND APPLICATIONS WITH PRESENT AND FUTURE POTENTIAL** , *ENERGY SOURCES: ENVIRONMENTAL AND HEALTH PROSPECTS*, SPRINGER NATURE, IN PRESS ,2025.
2. **EDITORIAL – FRONTIERS IN CHEMISTRY, PHYSICAL CHEMISTRY CHEMICAL PHYSICS: Intermolecular Interaction Studies in binary and Higher Order Liquid Mixtures, ionic Liquids and Deep Eutectic Solvents based systems**, MARCH 2025.  
<https://www.frontiersin.org/journals/chemistry/articles/10.3389/fchem.2025.1577620/full>
3. **MICROBIAL ELECTROCHEMICAL SYSTEMS: RECENT ADVANCES AND FUTURE PROSPECTS**, *BIO CLEAN ENERGY TECHNOLOGIES*-Vol. 2,Chapter 6, pp107-117, *SPRINGER NATURE*, SINGAPORE. **eBook ISBN: 978-981-16-8094-6; Print ISBN : 978-981-16-8093-9**
4. **BINARY MIXTURES AND IONIC LIQUIDS: EFFECT OF THERMODYNAMIC AND THERMOPHYSICAL FACTORS - CHAPTER 15**, pp 267-282(2023).: *IONIC LIQUIDS AND THEIR APPLICATIONS IN GREEN CHEMISTRY*: – Elsevier) **ISBN: 9780323959315**.  
<https://shop.elsevier.com/books/ionic-liquids-and-their-application-in-green-chemistry/akhter-siddique/978-0-323-95931-5>
5. **EDITOR-FRONTIERS IN CHEMISTRY: SOLVATION EFFECTS OF ORGANIC REACTIONS IN IONIC LIQUIDS, DEEP EUTECTIC SOLVENTS AND CONVENTIONAL SOLVENTS**.  
<https://www.frontiersin.org/articles/10.3389/fchem.2023.1159357> **FEBRUARY 2023**.

## POSTS HELD:

JAN 2025-	ASSOCIATE DEAN- STUDENT WELFARE DIVISION, GOA CAMPUS.
JAN- FEB 2020	ASSOCIATE DEAN- FACULTY AFFAIRS DIVISION
16/01/2014- 31/08/2018	Associate DEAN-Academics & Resources Planning (Goa Campus)
SUMMER 2018	ACADEMIC VISITOR, UNIVERSITY OF CAMBRIDGE
01/07/2016 -30/09/2016	Visiting Associate Professor- NTUST Taipei Taiwan
01/03/2023 -	PROFESSOR - Chemistry, BITS- Pilani, K K Birla Goa Campus
01/02/2013- 31/02/2023	Associate Professor, Chemistry, BITS- Pilani, Goa Campus
Jan 2006–31/01/2013	Assistant Professor, BITS- Pilani, Goa Campus.
1999- Jan 2006	Departmental RA (Lecturer Grade), Department of Chemistry, University of Allahabad, India.
2004 (SEPT-OCT)	Academic Visitor – IIT BOMBAY, under Prof. Nand Kishore.
1997-1998	Lecturer in FIITJEE, New Delhi.

## **SPONSORED PROJECTS / COMPETITIVE GRANTS**

CDRF PROJECT OF RS. 50 LAKHS (WITH MANPOWER) – SEPT. 2023- 2 YEARS; PI

SPARC PHASE 3 PROJECT WITH STELLENBOSCH UNIVERSITY, & University of CAPE TOWN SOUTH AFRICA - APRIL 2024; 24 MONTHS : FUNDING INR 73,20,000/-.

UNIVERSITY IMMERSION GRANT IN 2018 (COMPETITIVE GRANT) FROM BITS PILANI UNIVERSITY FOR ACADEMIC EXPOSURE IN A WORLD CLASS UNIVERSITY.

RESEARCH PROJECT: CSIR, NEW DELHI, INDIA Completed: 30/11/2015  
SANCTIONED AMOUNT: 10.3 LAKHS - P I and Sole Investigator

INTERIM RESEARCH GRANT OF Rs. 93,650/- IN 2020 BY SRCD, BITS GOA.

CO – PI OF PROJECT FUNDED BY MINISTRY OF FERTILIZERS (2007-2010);  
FUNDING: 70 LAKHS (Rs. 7 MILLION)

2 INTERNATIONAL & 2 NATIONAL projects submitted to Funding Agencies for Approval.

## **FELLOW/ MEMBER OF PROFESSIONAL BODIES, SOCIETIES, etc.**

1. FELLOW, ROYAL SOCIETY OF CHEMISTRY(FRSC), U.K.
2. MEMBER, NATIONAL ACADEMY OF SCIENCES INDIA (NASI) [ Life]
3. MEMBER, AMERICAN CHEMICAL SOCIETY [Annual]
4. INDIAN THERMODYNAMICS SOCIETY [Fellow, Life]; MEMBER- EXECUTIVE COMMITTEE
5. CHEMICAL RESEARCH SOCIETY OF INDIA (CRSI) [LIFE]
6. FELLOW OF INDIAN CHEMICAL SOCIETY[Life]

## **ACHIEVEMENTS / RECOGNITION / AWARDS**

1. PROF. S T NANDIBEWOOR AWARD -2024 PRESENTED BY THE INDIAN COUNCIL OF CHEMISTS (ICC), FOR CONTRIBUTION TO TEACHING AND RESEARCH IN CHEMICAL SCIENCES DURING 43<sup>RD</sup> ANNUAL NATIONAL CONFERENCE OF ICC, PES MODEL COLLEGE, PUNE, 26<sup>TH</sup> -28<sup>TH</sup> DECEMBER, 2024.
2. BEST TEACHER AWARD, BITS PILANI GOA CAMPUS, September 2022.
3. 1700 CITATIONS, *h* Index: 19; *i*-10 index: 39.
4. 575+ CITATIONS IN LAST 2 YEARS ( 2023 - Till date)
5. MAANPATRA SAMMAN & CITATION FROM BSCA, ALLAHABAD FOR HIGHER EDUCATION IN APRIL 2017.

6. VISITED NTU AND NUS IN SINGAPORE AS ASSOC. DEAN- ARP IN JULY 2016 AND ASSISTED ONE STUDENT IN GETTING SCHOLARSHIP IN NTU FOR HIS FIRST-DEGREE THESIS.
7. ONE PAPER IN *RSE* (2010) WITH IMPACT FACTOR OF 16.82 [ 390 + citations till date].
8. MEMBER OF NATIONAL ACADEMY. OF SCIENCES, INDIA (NASI) SINCE 2009.
9. FELLOW OF INDIAN CHEMICAL SOCIETY.
10. MEMBER ROYAL SOCIETY OF CHEMISTRY- LOCAL SECTION DECCAN. (RSC-LSD).

### LECTURE SERIES :

- LECTURE SERIES ON “**SOLUTION THERMODYNAMICS & ELECTROCHEMICAL APPLICATIONS**” AT J C BOSE UNIVERSITY, FARIDABAD, FEB 24<sup>TH</sup>-26<sup>TH</sup>, 2019.
- LECTURE SERIES AT DEPT. OF CHEMICAL ENGG. AT **NATIONAL TAIWAN UNIVERSITY OF SCIENCE AND TECHNOLOGY(NTUST), TAIPEI, TAIWAN**, JUNE – JULY 2016 TO M.TECH. AND Ph.D. STUDENTS OF CHEMICAL ENGG. DEPT.
- LECTURE SERIES ON ELECTROCHEMISTRY TO MSc., M.Phil. & D.Phil. STUDENTS, BUNDELKAHAND UNIVERSITY, JHANSI, U.P., INDIA (MAY 14-15, 2015).

### SESSIONS CHAIRED:

1. SESSION CHAIR IN THE PHYSICAL CHEMISTRY SECTION IN THE 43<sup>RD</sup> ANNUAL CONFERENCE ON THE INDIAN COUNCIL OF CHEMISTS, 26<sup>TH</sup> -28<sup>TH</sup> DECEMBER, 2024, PUNE.
2. 1<sup>ST</sup> TECHNICAL SESSION (PHYSICAL CHEMISTRY) AT 41<sup>ST</sup> INDIAN COUNCIL OF CHEMISTS (ICC) CONFERENCE, AGRA, 27<sup>TH</sup> -29<sup>TH</sup> DEC, 2022.
3. TECHNICAL SESSION IN NFCFA 2019, GOA, INDIA. (20<sup>TH</sup>– 22<sup>ND</sup>, DEC 2019).
4. TECHNICAL SESSION IN ICICBES 2019, 27<sup>th</sup>-28<sup>th</sup>, FEB 2019, ARYA PG COLLEGE, PANIPAT, INDIA.
5. TECHNICAL SESSION ON “BASIC SCIENCES” AT SCIFFI, 17<sup>TH</sup> – 19<sup>TH</sup>, JAN 2019, GOA, INDIA.
6. TECHNICAL SESSION IN NFCFA 2017, GOA, INDIA (27<sup>TH</sup>-28<sup>TH</sup>JAN, 2017).
7. TECHNICAL SESSION AND SYMPOSIUM ON INDUSTRY AND ITS INTERFACE WITH ACADEMIA IN NFCFA 2015(18<sup>TH</sup>-19<sup>TH</sup>DECEMBER 2015).

8. ORAL PAPER PRESENTATION AND JUDGE FOR THE YOUNG SCIENTIST AWARD AT 32<sup>ND</sup> ANNUAL CONFERENCE OF INDIAN COUNCIL OF CHEMISTS, KARNATAKA UNIVERSITY, DHARWAD, KARNATAKA, INDIA, 28<sup>TH</sup> -30<sup>TH</sup> NOVEMBER, 2013.
9. CHAIRED SIXTH SESSION IN INTERNATIONAL CONFERENCE ON EMERGING TRENDS IN CHEMICAL SCIENCES (ICETCS-2013) AT CUG, GANDHINAGAR, GUJARAT, INDIA MARCH 12-13, 2013.

## **RESOURCE PERSON**

1. MHRD SPONSORED REFRESHER COURSE - CHEMISTRY IN THE INDIAN KNOWLEDGE SYSTEM, H S GOUR UNIVERSITY, SAGAR, M.P. 12<sup>TH</sup> – 25<sup>TH</sup> SEPT, 2023.
2. “APPLICATIONS OF CHEMISTRY IN ADVANCED TECHNOLOGY”, Under DBT STAR College Scheme at CMP Degree College, Prayagraj, 4<sup>th</sup> December, 2021.
3. “MOLECULAR INTERACTION STUDIES BASED ON SOLUTION THERMODYNAMICS”, online Refresher Course on Chemistry at the Interface with Biology and Material Science, H S GOUR University, Sagar, M.P., India. 11<sup>th</sup> – 25<sup>th</sup> NOV, 2021.
4. “SOLUTION THERMODYNAMICS AND ITS APPLICATIONS”, RESOURCE PERSON AT UGC-MHRD FACULTY DEVELOPMENT PROGRAMME REFRESHER COURSE IN CHEMISTRY-RECENT TRENDS IN CHEMISTRY EDUCATION AND RESEARCH, 23<sup>RD</sup> NOV – 5<sup>TH</sup> DEC, 2020, SGB AMRAVATI UNIVERSITY, Maharashtra, India.
5. UGC Sponsored Refresher Course – RECENT ADVANCES IN CHEMISTRY, H S GOUR University, Sagar, 17<sup>th</sup> – 29<sup>th</sup> AUG, 2020.
6. RESOURCE PERSON AT NAVAL EDUCATION SOCIETY SCIENCE WORKSHOP, GOA-2017.

## **INVITED TALKS**

1. “ENVIRONMENTALLY GREEN AND SUSTAINABLE SOLVENTS OF THE FUTURE”, 43<sup>rd</sup> Annual National Conference of the Indian Council of Chemists, PES Modern College, 26<sup>th</sup> -28<sup>th</sup> December, 2024, Pune.
2. “INTERMOLECULAR INTERACTIONS IN DMSO/NMP IN WATER AT VARYING TEMPERATURES”, 43<sup>rd</sup> Annual National Conference of the Indian Council of Chemists, PES Modern College, 26<sup>th</sup> -28<sup>th</sup> December, 2024, Pune.
3. “GREEN SOLVENTS OF THE FUTURE”, at 18<sup>th</sup> International Congress of Thermal Analysis and Calorimetry (ICTAC 2024) & 14<sup>th</sup> National Conference of the Indian Thermodynamics Society (ITS), 2<sup>nd</sup> – 7<sup>th</sup> September, 2024, IIT MADRAS, Chennai, India.
4. “SOLUTION THERMODYNAMICS AND ITS APPLICATIONS TO MOLECULAR INTERACTION STUDIES.”, at DMR PG College, Ponda, Goa, 16<sup>th</sup> February, 2024.



5. INVITED TALK on **“New Pathways for Predicting Thermophysical Properties for Binary and Multicomponent Liquid Mixtures”** , National Conference on Thermodynamics of Chemical and Biological Systems(NCTCBS-2023), RMT University, Nagpur, 26<sup>th</sup> -28<sup>th</sup> October, 2023.
6. **“NOVEL APPROACHES FOR THERMOPHYSICAL PROPERTIES: PREDICTIVE MODELS AND ANN”**, INDIAN INSTITUTE OF INFORMATION AND TECHNOLOGY-ALLAHABAD(IIIT-A), PRAYAGRAJ, 1<sup>ST</sup> FEBRUARY, 2023.
7. **“NEWLY DEVELOPED EFFECTIVE MODELS FOR VISCOSITY PREDICTION”**, MOTILAL NEHRU NATIONAL INSTITUTE OF TECHNOLOGY (MNNIT)-ALLAHABAD, 30<sup>TH</sup> JAN, 2023.
8. **“SIMPLE AND EFFECTIVE APPROACHES FOR VISCOSITY PREDICTION OF BINARY AND HIGHER ORDER LIQUID MIXTURES”**, 41<sup>ST</sup> INDIAN COUNCIL OF CHEMISTS (ICC) CONFERENCE, AGRA, 27<sup>TH</sup> -29<sup>TH</sup> DEC, 2022.
9. **“IDEAL SOLUTIONS AND THEIR PROPERTIES”**, DARUL ULOOM AUTONOMOUS COLLEGE, HYDERABAD, 17<sup>TH</sup> NOV., 2021.
10. **“THERMODYNAMICS AND ITS ENGINEERING APPLICATIONS”**, DMR PG COLLEGE, MAPUSA, GOA, 28<sup>TH</sup> OCTOBER, 2021.
11. **“NEWLY DEVELOPED, SIMPLE YET HIGHLY EFFECTIVE APPROACHES FOR PREDICTING THERMOPHYSICAL PROPERTIES”**, IIT- PALAKKAD, 9<sup>TH</sup> OCTOBER, 2021.
12. **“USE OF COMBINED ANAEROBIC BIOREACTOR AND LOW PRESSURE MEMBRANE FILTRATION SYSTEM FOR THE TREATMENT OF LOW STRENGTH WASTEWATER TO RECOVER RENEWABLE RESOURCES”** INVITED TALK IN FDP CUM WORKSHOP ON WASTE TO BIOENERGY, ORGANIZED BY SHARDA UNIVERSITY AND MIT, 28<sup>TH</sup> JUN - 4<sup>TH</sup> JULY, 2020.
13. **“VISCOSITY PREDICTIONS OF BINARY AND MULTICOMPONENT LIQUID MIXTURES USING NEWLY DEVELOPED ROUTES”** AT NATIONAL SEMINAR ON GREEN TECHNOLOGY, HNB PG COLLEGE, NAINI, ALLAHABAD, 23-24 FEB, 2020.
14. **“SOME NEWLY DEVELOPED APPROACHES FOR PREDICTION OF VISCOSITY”** IN NATL WEBINAR ON INSIGHTS INTO FUNDAMENTALS OF CHEMISTRY , DEPT. OF CHEMISTRY, CMP DEGREE COLLEGE, UNIVERSITY OF ALLAHABAD, PRAYAGRAJ, 18<sup>TH</sup> – 20<sup>TH</sup> JUNE , 2020.
15. INVITED TALK IN NATIONAL CONVENTION OF CHEMISTRY TEACHERS(NCCT), DEPT OF CHEMISTRY, SBG AMRAVATI UNIVERSITY, 5<sup>TH</sup> – 7<sup>TH</sup> DECEMBER, 2019.
16. **“A NOVEL VOLUME FRACTION BASED APPROACH FOR PREDICTING VISCOSITY OF BINARY AND MULTICOMPONENT LIQUID MIXTURES”**, 2<sup>ND</sup> INTERNATIONAL Conference on Innovations in Chemical and Biological Sciences, ICICBS 2019, Panipat, Haryana, India, FEB 27<sup>TH</sup> -28<sup>TH</sup> ,2019.

17. **"NOVEL, SIMPLE EFFECTIVE PATHWAYS FOR VISCOSITY PREDICTIONS "**, DEPARTMENT OF CHEMISTRY, CAMBRIDGE UNIVERSITY, CAMBRIDGE, U.K., 18<sup>TH</sup> JUNE 2018.
18. **"NEW SIMPLE AND EFFECTIVE METHODS FOR VISCOSITY PREDICTION OF BINARY AND HIGHER ORDER LIQUID MIXTURES"**, THEORETICAL CHEMISTRY GROUP, HEIDELBERG UNIVERSITY, HEIDELBERG, GERMANY, 13<sup>TH</sup>JULY, 2017.
19. **"NOVEL PATHWAYS FOR VISCOMETRIC PREDICTION OF BINARY AND MULTICOMPONENT LIQUID MIXTURES"**, Department OF Chemistry, UNIVERSITY OF ALLAHABAD, ALLAHABAD, 13<sup>TH</sup>APRIL, 2017.
20. **"PREDICTION OF THERMODYNAMIC AND TRANSPORT PROPERTIES OF BINARY AND MULTICOMPONENT LIQUID MIXTURES"**, DEPARTMENT OF CHEMICAL ENGINEERING, NTUST, TAIPEI, TAIWAN, 29<sup>th</sup> JUNE 2016.
21. **"DEVELOPMENT OF UNIVERSAL MODELS FOR PREDICTION OF TRANSPORT PROPERTIES"**, NFCFA, BITS PILANI GOA CAMPUS, 18<sup>TH</sup> -19<sup>TH</sup> DECEMBER,2015.
22. **"PERIODIC TABLE- A HISTORIC OVERVIEW AND APPLICATIONS"** SUMMER SCHOOL, NASI, ALLAHABAD, U.P., 8<sup>TH</sup>JUNE, 2014.
23. **"INTERACTION STUDIES of RTIL's WITH SOME SOLVENTS AT TWO DIFFERENT TEMPERATURES"** at 32<sup>nd</sup> Annual Conference of Indian Council of Chemists, Karnataka University, Dharwad, Karnataka, 28<sup>th</sup> – 30<sup>th</sup> November,2013.
24. **"THERMODYNAMIC, TRANSPORT AND EXCESS PROPERTIES OF MULTICOMPONENT LIQUID MIXTURES"** at Centre of excellence of Basic Sciences (CBS), MUMBAI UNIVERSITY, KALINA, MUMBAI, 14<sup>TH</sup>MARCH, 2011.

### **REVIEWER FOR:**

1. Journal of Chemical Thermodynamics (JCT)
2. Journal of Chemical Engineering Data (JCED)
3. Journal of American Chemical Society (JACS)
4. Journal of Molecular Liquids.
5. Physical Chemistry Chemical Physics (PCCP)
6. Frontiers in Chemistry
7. Fluid Phase Equilibria
8. Journal of Solution Chemistry
9. Springer Nature Applied Sciences (SNAS)
10. International Journal of Biological Macromolecules. (IJBM)
11. Journal of Thermal Analysis and Calorimetry.(JTAC)
12. Chemical Thermodynamics and Thermal Analysis (CTTA)
13. Heliyon

14. Chemical Data Collections (CDC)
15. Journal of Ambient Energy.
16. Advances in Material Science and Engineering.
17. International Journal of Thermophysics And Heat Transfer
18. Indian Journal of Pure & Applied Ultrasonics.
19. International Journal of Chemical Modeling (IJCM)
20. African Journal of Biotechnology
21. Journal of Soil Sciences and Environmental Management
22. International Journal of Thermodynamics
23. IEEE- Sensors Journal
24. Indian Journal of Chemistry
25. Indian Journal of Physics
26. Indian Journal of Pure & Applied Physics
27. Journal of Indian Chemical Society
28. African Journal of Pure and Applied Chemistry (AJPAC)

### **ADDITIONAL ACADEMIC ASSIGNMENTS / ENGAGEMENTS**

1. As a Visiting Associate Professor to NTUST – Taipei, Taiwan, in June-July 2016, taught a graded Summer Course to M.E. Chemical Engineering and Ph.D. scholars a course entitled “Thermodynamic Applications to Electrochemical Systems.” The entire expense for the travel, lodging and boarding was borne by the NTUST.
2. Headed a Team of 4 faculties from various disciplines for Confidential Paper setting for a national Level Entrance Examination- 2015.

### **THESIS REVIEW:**

1. BARC
2. MUMBAI UNIVERSITY
3. RTM UNIVERSITY, NAGPUR
4. BUNDELKHAND UNIVERSITY
5. BHARTHIDASAN UNIVERISTY, TIRUCHIRAPPALI.
6. MADURAI KAMARAJ UNIVERSITY.
7. S V UNIVERSITY, TIRUPATI.
8. S G B UNIVERSITY, AMRAVATI.

### **COURSES TAUGHT:**

1. **CORE (CHEMISTRY),**
  - a. CHEMISTRY I
  - b. CHEMISTRY II
  - c. CHEMISTRY PROJECT LABORATORY,
  - d. MEAUREMENT TECHNIQUES
  - e. PHYSICAL CHEMISTRY (B.Sc. I, II and III)

- f. GENERAL CHEMISTRY
  - g. CHEMISTRY LABORATORY
  - h. THERMOPHYSICAL PROPERTIES OF LIQUID MIXTURES BITS F382.
- 2. HIGHER LEVEL**
- a. CHEMICAL THERMODYNAMICS
  - b. NON-EQUILIBRIUM (Irreversible) THERMODYNAMICS
  - c. ELECTROLYSIS AND POLARIZATION
  - d. ELECTROLYTIC SOLUTIONS
  - e. INSTRUMENTAL METHODS OF ANALYSIS
  - f. PHYSICAL CHEMISTRY I (Redesigned Curriculum)
  - g. STATISTICAL THERMODYNAMICS
  - h. ENVIRONMENTAL CHEMISTRY- CHEM G521 ( HD LEVEL / PRE Ph.D.)
  - i. ENVIRONMENTAL CHEMISTRY (M.Tech. ENVIRONMENTAL ENGG.) WILP Professionals.
  - j. M. Tech. –SANITATION SCIENCE TECHNOLOGY & MANAGEMENT
- 3. INTERDISCIPLINARY**
- a. CHEMICAL REACTION ENGINEERING
  - b. CHEMICAL ENGG THERMODYNAMICS
  - c. CHEMICAL PROCESS SAFETY
  - d. CORROSION ENGINEERING
- 4. MULTIDISCIPLINARY**
- a. STRUCTURE AND PROPERTIES OF MATERIALS
  - b. ENGINEERING THERMODYNAMICS.
  - c. INTELLECTUAL PROPERTY RIGHTS
  - d. ENVIRONMENTAL SCIENCE
- 5. Ph.D. COURSES**
- a. PHYSICAL METHODS IN CHEMISTRY.
  - b. RESEARCH PROJECT 1
  - c. STUDY IN ADVANCED TOPICS
  - d. ADVANCED PHYSICAL CHEMISTRY.
  - e. RESEARCH METHODOLOGY

#### **INTERNATIONAL TEACHING ASSIGNMENT:**

Awarded the Visiting Associate Professorship from National Taiwan University of Science and Technology (NTUST), Taipei, Taiwan, to teach a Graded course to M. Tech. Chemical Engineering and Ph. D. Scholars in the Summer of 2016.

#### **RESEARCH UNDERWAY**

In the past few years we developed simple yet effective predictive models for thermophysical properties to give good agreement with the experimental findings with the focus on Ionic Liquids [*J Chem Thermodyn*, 156, 106383 [2021], *J. Mol. Liq.*, 367,120457(2022)] as one of the components, since mixtures with ionic liquids as one of the components are very difficult to model owing to their non-ideal behavior. Machine Learning has been tested (*Journal of*

*Molecular Liquids*, 397, 124147 (2024). ). Desalination studies and Water-Energy-Nexus is also being undertaken. ( *Ind. Eng. Chem. Res.* 2020, 59, 16029–16042 ) .

- For the first time, a volume fraction based approach (DEY-BISWAS) was developed for predicting viscosity of binary and multicomponent liquid mixtures and was published in *Journal of Molecular Liquids*, 265, 356-360 (2018). DEY-BISWAS has been tested on more than 600 binary, more than 50 ternary and 5&6 component mixtures over a wide range of temperature with very good agreement with experimental findings. It has also been tested on IL mixtures and Deep Eutectic solvents with at varying temperature with a fair degree of accuracy, [*Journal of Molecular Liquids*, 367 120457 (2022); 397, 124147 (2024).]
- A modified form of the Hind Ubbelohde approach has been tested on 150 + binary, ternary and quaternary liquid mixtures, *Journal of Molecular Liquids* 333 (2021) 115919.
- A Volume fraction based Hind-Ubbelohde modification has been tested on 196 binary, 13 ternary and 5 quaternary mixtures at varying temperatures (*Journal of Molecular Liquids* 350 (2022) 118526).
- A New pathway developed for predicting viscosity of binary and multicomponent liquid mixtures was presented at THERMAM 2017 at University of Rostock, Rostock, Germany, 17<sup>th</sup>- 18<sup>th</sup> July, 2017.
- Modified Frenkel approach has been tested on a number of binary and ternary liquid mixtures (*RSC Advances*, 6,43838-43,2016).
- Two new simple models developed for predicting viscosity of binary, ternary and higher order liquid mixtures (*RSC Advances* ,6, 113657–113662, 2016).
- For the first time, with my collaborator, Dr. Mihaiela C. Stuparu, of Nanyang Technical University (NTU) Singapore, we have investigated Host-guest interaction between corannulene and  $\gamma$ -cyclodextrin: Mass spectrometric evidence of a 1:1 inclusion complex formation, [*RSC Advances Communications*, 6,110001-110003(2016)].

Theoretical knowledge of thermodynamic, transport, interfacial properties of multicomponent liquid mixtures is essential for studying intermolecular interactions are used extensively in applications and engineering design processes associated with various industries.

Aim is to develop simple, effective and universal equations for predicting thermodynamic, transport, optical and allied properties which will give Average Absolute Percentage Deviations than the currently existing ones. The second aim is to develop new technologies which will help in Water Energy Nexus (WEN) applications including Desalination. Separation of Industrial Wastewater using Solar and encapsulated magnetic Nanoparticles with phase change materials is also under investigation (SPARC PROJECT).

**2 projects are underway and 2 International projects are under Review.**

## **ADMINISTRATIVE EXPERIENCE (BITS-PILANI, GOA CAMPUS)**

1. Chairperson – Disciplinary Committee : Jan 2025 - .
2. Member – Examination Sub Committee – Jan 2025 - .
3. Convener- Department Committee of Academics(DCA- Chemistry), July 2022- 24.
4. Committee Member – Sports Activity Center(SAC) , July 2022- 3 years.
5. Member NAAC Advisory Committee – April 2023 ~.
6. Member IQAC Committee- Goa Campus ( April 2023- )

7. Associate Dean (Acting) Faculty Affairs: Jan – Feb 2020.
8. Associate Dean - Academics & Resources Planning, Goa Campus (2014- 2018).
9. Faculty Coordinator- Mess Committee: 2009 – 2016.
10. Member: Faculty Grievance Committee: 2020 – 2022.
11. Member Department Short Listing Committee: 2013 – Till date.
12. Admission & registration committee of new & old students
13. Member of flying squad for prevention of ragging.
14. Member of doctoral advisory committee.
15. Convocation core committee member since 2010.
16. Hostel warden (2007-2015 December)
17. Headed a sub-committee for administrative procedures under internal quality assessment cell (IQAC, 2009-2012)
18. Coordinator for hostel allotment for 2009, 2010, 2011.
19. Faculty Coordinator for **MATRIX** (Mind & Thought in Rapid Information Exchange) club [Jan 2010 - 2014].
20. Coordinator of goa campus in 2013 for golden jubilee celebrations of BITS Pilani University (2013-14). Handled funds of Rs. 33 lakhs (Rs. 3.3million) for various events.
21. Coordinator/Convener for student faculty council (SFC) [2015 –till date]
22. Member of departmental committee of academics (DCA).

## RESEARCH PAPERS PRESENTED IN CONFERENCES, SYMPOSIUM AND WORKSHOPS (2013-till date)

### ▪ INTERNATIONAL

Sr. No.	Name of conference	Place	Title of Presentation	Date
1	THERMAM 2020	ROSTOCK, GERMANY (Webinar)	MODIFIED HIND UBBELOHDE APPROACH	15 <sup>th</sup> OCT 2020
2	THERMAM 2019	CESME , IZMIR , TURKEY	KEYNOTE	SEPT 22 <sup>ND</sup> - 24 <sup>TH</sup> ,2019,
3	THERMAM 2017 organized by Institute of Technical Thermodynamics Rostock University, in collaboration with ATU, Baku, Azerbaijan and Dokul Eylul University, Turkey	Institute of Technical Thermodynamics, Rostock University, Germany	NOVEL APPROACHES FOR VISCOMETRIC PREDICTION OF BINARY AND HIGHER ORDER LIQUID MIXTURES.	17 <sup>th</sup> – 18 <sup>th</sup> JULY, 2017
4	19 <sup>th</sup> Symposium on Thermophysical Properties organized by University of Colorado, Boulder in	Colorado University, Boulder, Colorado, USA.	TRANSPORT, OPTICAL, INTERFACIAL AND THERMODYNAMIC PROPERTIES OF	20 <sup>th</sup> – 26 <sup>th</sup> June 2015

	collaboration with NIST and AICHe -ASME.		BINARY AND TERNARY LIQUID MIXTURES	
<b><u>INTERNATIONAL AND NATIONAL CONFERENCES IN INDIA (2013-2017)</u></b>				
Sr. No	Name of conference	Place	Title of Presentation	Date
1	INT. CONFERENCE ON EMERGING TRENDS IN MICRO TO NANO (ETMN-2013)	BITS PILANI K K BIRLA GOA CAMPUS	Local Organizing Committee	23 <sup>RD</sup> -24 <sup>TH</sup> FEB, 2013
2	INT. CONF. ON EMERGING TRENDS IN CHEMICAL SCIENCES (ICETCS)-2013	CENTRAL UNIV. OF GUJARAT, GANDHINAGAR	Thermodynamic multicomponent liquid mixtures	14 <sup>TH</sup> -15 <sup>TH</sup> MARCH, 2013
3	MID YEAR SYMPOSIUM-CRSI	NIT – K SURATHKAL, KARNATAKA	Temperature mixtures	12 <sup>TH</sup> -13 <sup>TH</sup> JULY, 2013
4	ICC 32 <sup>ND</sup> ANNUAL CONFERENCE	KARNATAKA UNIV., DHARWAD	Study of properties .. temperature	28 <sup>TH</sup> -30 <sup>TH</sup> NOV, 2013
5	83 <sup>RD</sup> ANNUAL SESSION OF Natl. Acad. Sciences India (NASI)	GOA UNIV., GOA	A study of..... different temp.	4 <sup>TH</sup> -6 <sup>TH</sup> DEC. 2013
6	RSC Symposium	IIT- Bombay		6 <sup>TH</sup> Feb, 2014
7	NSC-CRSI Conference	IIT- Bombay	Study of....liq. mixtures.	7 <sup>TH</sup> -9 <sup>TH</sup> Jan 2014
8	TCBNES-2014	S P Univ, Anand GUJARAT	Thermodynamic..... temperatures	17 <sup>TH</sup> -18 <sup>TH</sup> Oct 2014
9	International Symposium on Ultrasonics (ISU – 2015)	Nagpur University, Nagpur, Maharashtra.	Thermophysical and excess .... mixtures	22 <sup>ND</sup> – 24 <sup>TH</sup> Jan 2015.
10.	Royal Society of Chemistry Symposium and NSC-CRSI Conference	NCL, Pune, India	Comparative study .... amines at three temperatures	5 <sup>TH</sup> – 8 <sup>TH</sup> Feb, 2015
11.	New Frontiers in Chemistry- From Fundamentals to Applications NFCFA, Dept of Chemistry, BITS Pilani Goa Campus with RSC	BITS Pilani K K Birla Goa Campus	ONE ORAL and two posters	18 <sup>TH</sup> - 19 <sup>TH</sup> December ,2015
12.	INDO UK WORKSHOP ON ADVANCED MATERIALS AND NANOTECHNOLOGY (AMAN-2016)	BITS Pilani K K Birla Goa Campus	Local Organizing committee	11 <sup>TH</sup> -12 <sup>TH</sup> Jan, 2016.
13.	RSC RESEARCH SCHOLARS MEET	BITS Pilani K K Birla Goa Campus	Gold Medal (Res scholar) for Best paper	NOV 2016
14.	NFCFA 2017, Department of Chemistry, BITS Pilani Goa Campus in association with RSC	BITS Pilani K K Birla Goa Campus	ONE ORAL AND 3 POSTERS	27 <sup>TH</sup> -28 <sup>TH</sup> JAN 2017



### **SHORT TERM COURSES/ SEMINARS/ WORKSHOPS/ VISITS ORGANIZED**

- **ORGANIZING COMMITTEE MEMBER OF THE INTERNATIONAL CONFERENCE ON FUNCTIONAL NANO MATERIALS (ICFNA-2024) HELD AT BITS PILANI K K BIRLA GOA CAMPUS ( 16<sup>TH</sup> -18<sup>TH</sup> NOV, 2024 WITH DCT's DHEMPE COLLEGE, GOA.**
- **JOINT ORGANIZING SECRETARY, INTERNATIONAL WORKSHOP ON GREEN ENERGY AND SUSTAINABLE DEVELOPMENT, BITS PILANI, PILANI, 26<sup>TH</sup>-28<sup>TH</sup> SEPTEMBER, 2024.**
- Organized lecture series on Corrosion Engineering by Prof. A. S. Khanna, IIT-Bombay, an eminent personality in this field at BITS-Pilani, Goa Campus from 17<sup>th</sup> – 21<sup>st</sup> October 2008.
- Organized lectures on HAZOP/HAZAN (Process Plant Safety) for final year Chemical Engg. Students (2009) by Dr. K. Ponnani, EX DGM, R&D, Chemical Engineering Division, IPCL.
- Organized plant visit for final year Chemical Engineering (2004) batch to SOLARIS CHEMTEK, BILT at Karwar, Karnataka in October 2007.
- Organized plant visit for students of process plant safety to BHARAT GAS, Verna, Goa Industrial Development Corporation on 17<sup>th</sup> April 2010.

### **TEACHING OUTREACH**

1. Visited several schools in Singapore in Summer 2016 as a part of Outreach for International Students Admissions to BITS as Associate Dean – Academics and Resource Planning.
2. **Given several Popular Science Talks in various schools in Goa, India.**
3. **Interacted with 200 young students from 6<sup>th</sup> to 9<sup>th</sup> Classes for Promotion of Science Education by explaining basic Chemistry and Elements in Summer School organized by National Academy of Sciences India, (NASI) in Allahabad, India in June 2014.**
4. **Keynote to School Children (9<sup>th</sup> to 12<sup>th</sup> Class) under BASIC SCIENCES Theme in Science Film Festival of India (SCIFFI) in 2019 in Goa.**
5. **Taught students of Classes 9<sup>th</sup> – 11<sup>th</sup> in a charitable school in interior Himalayas in the summer of 2013. This school is in Ukhimath, Uttarakhand, India, where a severe flood and landslide led to thousands of lives being lost in Kedarnath shrine.**
6. Problem Solving Sessions organized by **Goa Educational Development Corporation (GEDC)** in BITS-Pilani, Goa Campus (2007 - 2010) to 400 meritorious students drawn from various Schools and Colleges of Goa related in a few topics for IITJEE/ PMT.