



Dr. Ritamay Bhunia

Assistant Professor

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Seeking a new career opportunity in teaching along with research which enables me to work in a creative and challenging environment for teaching and research where I could constantly teach the students about subject and research procedure and deliver solution to problems and fulfil my personal ambitions.

Education

- **Ph.D. (Science)**

University of Calcutta | Kolkata (2013-2017)

- **M.Sc. (Physics) (Score: 62.1%)**

University of Calcutta | Kolkata (2009-2011)

- **B.Sc. (Physics Hons.) (Score: 55.75%)**

Jadavpur University | Kolkata (2005- 2009)

Computer Proficiency

- Language: SQL, Basic Python
- Word, Excel, Power Point, Tableau

Examination Qualified

- CSIR NET Lectureship June 2012 (Rank 187) and Physics June 2014 (Rank 99)
- Gate 2012 in (Rank 298)

Research Publications

- *Google Scholar*

h-index: 16

i-10index: 23

- **International Peer-Reviewed Journals**
Articles: 38
- **Book Chapters:** 2
- **First Authorship Articles:** 14
- **Corresponding Authorship:** 2

Scientific Profiles

- Scopus ID: 56418706800
- Google scholar: Ritamay Bhunia

Personal Details

Nationality: Indian

Gender: Male

Year of birth: 1988

Marital Status: Married

Caste: General

Differently Abled: No

POST-DOCTORAL EXPERIENCES (~6 yrs. 6 months)

1. **National Post-Doctoral Fellow** (Funded by SERB-DST, Govt. of India) at **IIT Kanpur, India** (September 2017 - September 2019).
2. **Project Post-Doctoral Fellow** at **IIT Kanpur, India** (October 2019 - December 2019).
3. **Dr. D. S. Kothari Postdoctoral Fellowship** (Funded by UGC, Govt. of India) at **IISc, India** (8 January 2020 - 9 September 2020).
4. **Brain-Korea Postdoctoral Fellow** at **Hanyang University (2023 QS Rank: 157), Seoul, South Korea** (23 November 2020 - 31 January 2023).
5. **Post Doctoral Research Associate-III** at **S. N. Bose National Centre for Basic Sciences, Kolkata, India** (9 February 2023- 31 July 2024).

RESEARCH EXPERIENCES

Device fabrication:

- Thin film Organic Electrochemical Transistor,
- Thin film based piezoelectric, triboelectric nanogenerator.
- Device fabrication in glove box in clean room (Class: ISO 4 standard)
- Synaptic Transistor

Synthesis:

- 2. Nano particles, nano-rod synthesis through hydrothermal method.
- 3. Thin film synthesis through Spin coating, Pulse LASER Deposition, Evaporation, Electro-deposition, Multi-target Sputtering (Metal and Semiconductors)

Characterization:

Nano-device electrical characterization, Probe Station, EIS Spectroscopy, P-E loop Ferroelectric Tester, D₃₃ measurement, Impedance Analyzer with Temperature, AFM, PFM, KPFM, FESEM, XRD, FTIR, Optical Absorption, Photoluminescence, XPS, EXAFS and XANES, Solar cell characterization, optical behaviour of SPR peak.

REFERENCES

Prof. Arun Kumar Pal
(Ph.D. Supervisor)
Instrumentation Science,
Jadavpur University, India
msakp2002@yahoo.co.in

Dr. Avijit Chowdhury
S. N. Bose National Centre for
Basic Sciences
Kolkata
avijitc@bose.res.in

Prof. Ashish Garg
Sustainable Energy
Engineering,
IIT Kanpur, India
ashishg@iitk.ac.in

Fellowships and Grants Awarded

- **National Post-Doctoral Fellowship** (Funded by SERB-Department of Science and Technology, Govt. of India) (Research Institution: September 2017-September 2019 at IIT Kanpur, India).
 - **Dr. D. S. Kothari Postdoctoral Fellowship** (Funded by University Grants Commission, Govt. of India) (Research Institution: Indian Institute of Science, Bangalore, India: January 2020).
 - **International Travel Support Scheme Award** (Funded by SERB-Department of Science and Technology, Govt. of India) Date: 05 July, 2017 for attending conference named “6th International Conference on Functional Materials & Devices (ICFMD 2017)” at Melaka, Malaysia.
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➤ **PhD. Thesis title:**

Some aspects of polyvinylidene fluoride (PVDF) film and related device applications

Guide Name:

1. Prof. Arun Kumar Pal (maskp2002@yahoo.co.in)
2. Prof. Radhaballabh Bhar (rbusicju32@yahoo.co.in)

Institute Name: Jadavpur University

Degree Awarded Year: 2017

Conferences Participations

Name of Conferences	Organized by & date	Status of Conferences	Type of Participation/ Presentation
International Conference on Optoelectronics and Bio-Inspired Nanomaterials (ICOBIN-2023)	Department of Chemistry IIT Roorkee (December 04-06, 2023), India	International	Poster (Best Poster Award by Nanoscale-Royal Society of Chemistry) (offline)
22 nd International Meeting on Information Display (IMID 2022)	Korean Information Display Society (August 23-26, 2022) Busan, South Korea	International	Oral (offline)
National Conference on Emerging Trends in Physical Sciences (ETPS-2021)	The ICFAI University Tripura, Physics Department, ICFAI Science School (27 th September -1 st October, 2021)	National	Oral (online)
International Conference on Frontiers in Materials Science & Technology	National Institute of Science & Technology (Odisha, India) (10 th -12 th December, 2015)	International	Poster (offline)
6 th International Conference of Functional Materials & Devices	Centre for Ionics, University of Malaya (Malaysia) 15 th -18 th August, 2017	International	Oral (offline)
10 th International Conference on Materials for Advanced Technologies	Materials Research Society of Singapore Nanyang Technological University (Singapore) 23 rd -28 th June, 2019	International	Oral (offline)
National Conference on Technical Advances in Materials Science and Research	Sambalpur University (Odisha, India) (13 th -15 th February, 2014)	National	Oral (offline)
National Symposium on	Bhabha Atomic Research	National	Poster

Vacuum Technology and Its Applications to Electron Beams	Centre & Indian Vacuum Society 18 th -20 th November, 2015		(offline)
Research Scholars' Workshop	UGC-DAE Consortium for Scientific Research (Indore, India) 18 th -19 th December, 2015	National	Oral (Best Presentation Award) (offline)

➤ **List of Publications:**

Already Published:

2024:

1. Ferroelectric-Assisted Ion Dynamics for Prolonged Tactile Cognizance in a Biomimetic Memory-in-Sensor System by **Ritamay Bhunia**, Joo Sung Kim, Hayoung Oh, Dong Jun Kim, Seokyeong Lee, Cheolmin Park, Do Hwan Kim. (2024) **Advanced Electronic Materials** <https://doi.org/10.1002/aelm.202400550>. ISSN: 2199-160X, **Impact Factor: 5.3**
2. Conductive Islands Assisted Resistive Switching in Biomimetic Artificial Synapse for Associative Learning by **Rajesh Jana**, **Ritamay Bhunia**, Swapnomoy Pramanik, Avijit Chowdhury; **Advanced Functional Materials**, 35, 2412804 (2025) ISSN: 1616-3028, **Impact Factor: 18.5**
3. Recent developments in the state-of-the-art optoelectronic synaptic devices based on 2D materials: A Review by **Rajesh Jana**, **Sagnik Ghosh**, **Ritamay Bhunia***, **Avijit Chowdhury***; **Journal of Materials Chemistry C**, 12; 5299-5338 (2024) ISSN:2050-7534, **Impact Factor: 6.4**.

2023:

4. Neural-inspired artificial synapses based on low-voltage operated organic electrochemical transistors by **Ritamay Bhunia**, Elvis K Boahen, Dong Jun Kim, Hayoung Oh, Zhengyang Kong, Do Hwan Kim; **Journal of Materials Chemistry C**, 11; 7485-7509 (2023) ISSN:2050-7534, **Impact Factor: 6.4**.
5. Functionality tuning in Hierarchically engineered magnetoelectric nanocomposites for energy-harvesting applications by **Shashikant Gupta**, **Chandrachur Chatterjee**, **Bushara Fatma**, **Kumar Brajesh**, **Ritamay Bhunia**, **N. Shara Sowmya**, **Soumyabrata Roy**, **Ajit Kulkarni**; **ACS Applied Materials & Interfaces**, 15; 26563-26575 (2023) ISSN: 1944-8244, **Impact Factor: 9.229**.

2022:

6. Ferroelectric Ion Gel-Modulated Long-Term Plasticity in Organic Synaptic Transistors by **Ritamay Bhunia**, Joo Sung Kim, Hyukmin Kweon, Dong Jun Kim, Do Hwan Kim; **Materials Chemistry and Physics**, 287; 126227 (2022) ISSN: 0254-0584, **Impact Factor: 4.094**.
7. In-situ Fabrication of Barium-titanate@polyvinyl pyrrolidone in polyvinylidene fluoride polymer nanocomposites for dielectric capacitor applications by **Prateek**, **Ritamay Bhunia**, **Shashikant Gupta**, **Ashish Garg**, **Raju Kumar Gupta**; **Journal of Polymer Science**, 60; 961-967 (2022) ISSN: 2642-4169, **Impact Factor: 2.702**.

2021:

8. Unveiling the Role of Graphene Oxide as an Interface Interlocking Ingredient in PVDF Based Multi-Layered Thin-Film Capacitors for High Energy Density and Ultrafast Discharge Applications by **Prateek**, **Ritamay Bhunia**, **Arnab Sarkar**, **Sandeep Anand**, **Ashish Garg**, **Raju Kumar Gupta**; **Energy Technology**, 9; 2000905 (2021) ISSN: 2194-4296, **Impact Factor: 3.404**.
9. Exfoliated Molybdenum Disulfide-Wrapped CdS Nanoparticles as a Nano-Heterojunction for Photo-Electrochemical Water Splitting by **Sukdev Dolai**, **Pradip Maiti**, **Arup Ghorai**, **Ritamay Bhunia**, **Pabitra Kumar Pal**, **Dibyendu Ghosh**; **ACS Applied Materials & Interfaces**, 13; 438-448 (2021) ISSN: 1944-8244, **Impact Factor: 9.229**.

2020:

10. Probing the Interface Activation in Designing Defect-Free Multilayered Polymer Nanocomposites for Dielectric Capacitor Applications by **Prateek**, **Ritamay Bhunia**, **Ashish Garg**, **Raju Kumar Gupta**; **Journal of Physical Chemistry C**, 124; 22914-22924 (2020) ISSN: 1932-7455, **Impact Factor: 4.126**.

11. Triboelectric generators made of mechanically robust PVDF films as self-powered autonomous sensors for wireless transmission based remote security systems by *Bushara Fatma, Shashikant Gupta, Chandrachur Chatterjee, Ritamay Bhunia, Vivek Verma, Ashish Garg*; **Journal of Materials Chemistry A**, 8; 15023-15033 (2020) ISSN: 2050-7496, **Impact Factor: 12.732**.

12. Interface modulation in multi-layered BatiO₃ nanofibers/PVDF using the PVP linker layer as an adhesive for high energy density capacitor applications by *Prateek, Sahil Siddiqui, Ritamay Bhunia, Narendra Singh, Ashish Garg, Raju Kumar Gupta*; **Materials Advances**, 1; 680-688 (2020) ISSN: 2633-5409, **Impact Factor: 5.2**.

2019:

13. Milli-Watt Power Harvesting from Dual Triboelectric and Piezoelectric Effects of Multifunctional Green and Robust Reduced Graphene Oxide/P(VDF-TrFE) Composite Flexible Films by *Ritamay Bhunia**, *Shahsikant Gupta, Bushara Fatma, Prateek, Raju Kumar Gupta, Ashish Garg*; **ACS Applied Materials & Interfaces**, 11(41); 38177-38189 (2019) ISSN: 1944-8244, **Impact Factor: 9.229**.

14. Significantly Enhanced Energy Density by Tailoring the Interface in a Hierarchical-Structured TiO₂-BaTiO₃-TiO₂ Nanofillers in PVDF Based Thin Film Polymer Nanocomposites by *Prateek, Ritamay Bhunia, Sahil Siddiqui, Ashish Garg and Raju Kumar Gupta*. **ACS Applied Materials & Interfaces**, 11(15); 14329-14339 (2019) ISSN: 1944-8244, **Impact Factor: 9.229**.

15. Maghemite/Polyvinylidene Fluoride Nanocomposite for Transparent, Flexible Triboelectric Nanogenerator and Noncontact Magneto-Triboelectric Nanogenerator by *Bushara Fatma, Ritamay Bhunia, Shashikant Gupta, Amit Verma, Vivek Verma, Ashish Garg*; **ACS Sustainable Chemistry & Engineering**, 7(17); 14856-14866 (2019) ISSN:2168-0485, **Impact Factor: 8.198**.

16. Poly(vinylpyrrolidone)/Poly(vinylidene fluoride) as Guest/Host Polymer Blends: Understanding the Role of Compositional Transformation on Nanoscale Dielectric Behavior through a Simple Solution-Process Route by *Prateek, Ritamay Bhunia, Ashish Garg, Raju Kumar Gupta*; **ACS Applied Energy Materials**, 2(9); 6146-6152 (2019) ISSN: 2574-0962, **Impact Factor: 6.024**.

17. Multifunctional and Flexible Polymeric Nanocomposite Films with Improved Ferroelectric and Piezoelectric Properties for Energy Generation Devices by *Shashikant Gupta, Ritamay Bhunia, Bushara Fatma, Deepam Maurya, Deepa Singh, Prateek, Rajeev Gupta, Shashank Priya, Raju Kumar Gupta, Ashish Garg*; **ACS Applied Energy Materials**, 2(9); 6364-6374 (2019) ISSN: 2574-0962, **Impact Factor: 6.024**.

2018:

18. Enhanced piezo-electric property induced in graphene oxide/polyvinylidene fluoride composite flexible thin films by *Ritamay Bhunia, Rajkumar Dey, Shirsendu Das, Shamima Hussain, Radhaballav Bhar and Arun Kumar Pal*. **Polymer Composites**, 39 (11); 4205-4216 (2018) ISSN: 0272-8397, **Impact Factor: 2.265**.

19. Fabrication and characterization of Cu/Cu₂O/CuO/ZnO/Al-ZnO/Ag heterojunction solar cells by *R. Bhunia, S. Dolai, R. Dey, S. Das, S. Hussain, R. Bhar and A. K. Pal*. **Semiconductor Science and Technology**, 33; 105007 (10pp) (2018) ISSN: 0268-1242, **Impact Factor: 2.352**.

20. Structural and Optical Properties of Manganese-Doped Nanocrystalline Zinc Oxide/Polyvinylidene Fluoride Flexible Composite Thin Films Deposited by the Sol-Gel Method by *R Bhunia, S. Das, S. Hussain, G. Sehgal, B.R. Chakraborty, R. Bhar, A.K. Pal*. **Advances in Polymer Technology**, 37(1); 60-70 (2018) ISSN: 0730-6679, **Impact Factor: 2.389**.

21. CdS impregnated cellulose nanocrystals/PVDF composite flexible and freestanding films: Impedance spectroscopic studies by *Debabrata Das, Ritamay Bhunia, Shirsendu Das, Rajkumar Dey, Shamima Hussain, Anup K. Ghosh, Arun K. Pal*. **Polymer Engineering and Science**, 58; 1419-1427 (2018) ISSN: 0032-3888, **Impact Factor: 1.917**.

22. Flexible and free-standing films containing cobalt-doped nanocrystalline zinc oxide dispersed in polyvinylidene fluoride matrix: synthesis and characterization by *Rajkumar Dey, Ritamay Bhunia, Shamima Hussain, Bibhash Ranjan Chakraborty, Radhaballav Bhar, Arun Kumar Pal*. **Polymer Bulletin**, 75; 307-325 (2018) ISSN: 0170-0839, **Impact Factor: 2.014**.

2017:

23. Room temperature magnetism in free-standing nano-Ni/PVDF composite by *Rajkumar Dey, Ritamay Bhunia, Prabir Dutta, Souvik Chatterjee, Shamima Hussain, Radhaballav Bhar and Arun Kumar Pal*. **Polymer Plastics Technology and Engineering**, 56 (11); 1213-1224 (2017) ISSN: 0360-2559, **Impact Factor: 1.973**.

24. Probing local structure of co doped polyvinylidene fluoride-ZnO thin films using X-ray absorption spectroscopy by *Rajkumar Dey, Ashok Kumar Yadav, Ritamay Bhunia, Shambhu Nath Jha, Dibyendu Bhattacharyya, Shamima Hussain, Radhaballav Bhar, Arun Kumar Pal*. **Spectrochimica Acta Part B: Atomic Spectroscopy**, 131; 115-123 (2017) ISSN: 0584-8547, **Impact Factor: 3.752**.

25. Alternate current conductivity in BSb films prepared by PLD technique: Electron transport processes in low-temperature range (10-275 K) by *Shirsendu Das, Ritamay Bhunia, Shamima Hussain, Radhaballabh Bhar and Arun Kumar Pal*. **The European Physical Journal Plus**, 132; 176 (1-8) (2017) ISSN: 2190-5444, **Impact Factor: 3.911**.

26. Structural and Optical Studies on Sol-gel Composites of Nickel-Doped Nano-crystalline Zinc Oxide/Polyvinylidene Fluoride by R. Dey, R. Bhunia, S. Hussain, R. Bhar, B.R. Chakraborty, A.K. Pal. **Polymer Plastics Technology and Engineering**, 56 (3); 310-320 (2017) ISSN: 0360-2559, **Impact Factor: 1.973**.

2016:

27. Flexible nano-ZnO/polyvinylidene difluoride piezoelectric composite films as energy harvester by Ritamay Bhunia, Shirsendu Das, Saikat Dalui, Shamima Hussain, Rajib Paul, Radhaballav Bhar and Arun Kumar Pal. **Applied Physics A: Materials Science & Processing**, 122(7); 637 (1-13) (2016) ISSN: 0947-8396, **Impact Factor: 2.584**.

28. Local structure studies of Ni doped ZnO/PVDF composite free-standing flexible thin films using XPS and EXAFS studies by Ashok Kumar Yadav, Rajkumar Dey, Ritamay Bhunia, Shamima Hussain, Shambhu Nath Jha, Dibyendu Bhattacharyya, Radhaballav Bhar, Arun Kumar Pal. **Journal of Polymer Research**, 23; 265 (1-10) (2016) ISSN: 1022-9760, **Impact Factor: 3.097**.

29. Enhanced UV detection by transparent graphene oxide/ZnO composite thin films by R. Paul, R. N. Gayen, S. Biswas, S. Venkataprasad Bhat and R. Bhunia. **RSC Advances**, 6; 61661-61672 (2016) ISSN: 20462069, **Impact Factor: 3.361**.

2015:

30. Coulomb Gap and Metal–Insulator–Semiconductor (MIS) Transition in ZnO/n-Ag/ZnO Film in the Plasmonic Domain by R. Bhunia, N. Bhadra, S. Das, S. Hussain, B. R. Chakraborty, R. Bhar, A. K. Pal. **Plasmonics**, 10(6); 1291-1300 (2015) ISSN: 1557-1955, **Impact Factor: 2.404**.

31. Probing local environment of Mn-doped nanocrystalline-ZnO/PVDF composite thin films by XPS and EXAFS studies by R. Bhunia, A.K. Yadav, S.N. Jha, D. Bhattacharyya, S. Hussain, R. Bhar, A.K. Pal. **Polymer**, 78; 1-12 (2015) ISSN: 0032-3861, **Impact Factor: 4.43**.

32. Some aspects of microstructural and dielectric properties of nanocrystalline CdS/poly(vinylidene fluoride) composite thin films by Ritamay Bhunia, Dibyendu Ghosh, Barun Ghosh, Shamima Hussain, Radhaballav Bhar and Arun Kumar Pal. **Polymer International**, 64(7); 924-934 (2015) ISSN: 0959-8103, **Impact Factor: 2.574**.

33. Free-standing nanocrystalline-Cadmium sulfide/Polyvinylidene fluoride composite thin film: synthesis and characterization by R Bhunia, B Ghosh, D Ghosh, S Hussain, R Bhar, AK Pal. **Journal of Polymer Research**, 22(5); 71(pp 1-11) (2015) ISSN: 1022-9760, **Impact Factor: 3.097**.

34. Free-standing and flexible nano-ZnO/PVDF composite thin films: Impedance spectroscopic studies by R. Bhunia, B. Ghosh, D. Ghosh, S. Hussain, R. Bhar and A. K. Pal. **Polymers for Advanced Technologies**, 26(9); 1176-1183 (2015) ISSN: 1042-714, **Impact Factor: 3.1**

35. Free-standing flexible nanocrystalline-ZnO-impregnated polyvinylidene fluoride composite thin films by R Bhunia, D Ghosh, B Ghosh, S Hussain, R Bhar, A K Pal. **Journal of Composite Materials**, 49; 3089-3101 (2015) ISSN: 0021-9983, **Impact Factor: 2.3**

36. H₂S Gas Sensor Based on Nanocrystalline Copper/DLC Composite Films by N Bhadra, S Hussain, S Das, R Bhunia, R Bhar, AK Pal. **Plasmonics**, 10(3); 503-509 (2015) ISSN: 15571955, **Impact Factor: 3.3**

37. Electron transport in the plasmonic regime: Silver nanoparticles in ZnO matrix by D Ghosh, B Ghosh, R Bhunia, S Das, S Hussain, R Bhar, AK Pal. **Physica Status Solidi (b)**, 252(3); 558-565 (2015) ISSN: 0370-1972, **Impact Factor: 1.5**

38. Synthesis and characterization of boron antimonide films by pulsed laser deposition technique by S. Das, R Bhunia, S. Hussain, R. Bhar, B.R. Chakraborty, A.K. Pal. **Applied Surface Science** 353; 439-448. (2015) ISSN: 0169-4332. **Impact Factor: 6.3**

➤ **Book Chapter:**

1. **Chapter 3:** Piezoelectric Materials-based Nanogenerators by Ritamay Bhunia, Do Hwan Kim. **Book: Advanced Functional Piezoelectric Materials and Applications**, Eds: Inamuddin, Tariq Altalhi, Mohammad Luqman, Hamida-Tun-Nisa Chisti, Materials Research Foundations LLC Publisher, Print ISBN 978-1-64490-208-0. Vol. 131, pp 61-116 (2022). DOI: <https://doi.org/10.21741/9781644902097-3>

2. **Chapter 7:** Biomechanical energy harvesting with piezoelectric materials by Shashikant Gupta, Bushara Fatma, Ritamay Bhunia, Prateek, Raju Kumar Gupta, Ashish Garg. **Book: Ferroelectric Materials for Energy Harvesting and Storage (Woodhead Publishing Series in Electronics and Optical Materials)**, Eds: Deepam Maurya, Abhijit Pramanick, Dwight Viehland. ISBN: 978-0-08-102802-5 (2021), Pages: 209-247. ELSEVIER. <https://doi.org/10.1016/B978-0-08-102802-5.00007-8>