

1. Name and Designation

Dr. AMREESH CHANDRA

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2. Professional Experience

- a) *Professor, Department of Physics, Indian Institute of Technology, Kharagpur, West Bengal, India, Feb. 2020 – onwards*
- b) *Associate Professor, Department of Physics, Indian Institute of Technology, Kharagpur, West Bengal, India, August 2014 – Feb. 2020*
- c) *Assistant Professor, Department of Physics, Indian Institute of Technology, Kharagpur, West Bengal, India, January 2009 – August 2014*
- d) *Research Officer, Physical Science, University of Surrey, Guildford GU27XH, United Kingdom, March 2007 – January 2009*
- e) *Max Planck Post Doctoral Fellow, Max Planck Institute for Polymer Research, Mainz, Germany, June 2005 – December 2006*
- f) *Senior Research Fellow, School of Materials Science and Technology, Institute of Technology, B.H.U., Varanasi, India, August 2002 – April 2005*
- g) *Ph.D. (Materials Science and Technology), School of Materials Science and Technology, Institute of Technology, B.H.U., Varanasi, India, December 2004*

3. Research:

- (i) Hierarchical Nanostructures of Metal Oxides for Energy Applications
- (ii) Technology Development: Large Sized Energy Storage Devices

4. Achievements

- (i) **HEAD, MAX PLANCK PARTNER GROUP (2014-18)** by Max Planck Society and DST (India).
- (ii) **EDITORIAL BOARD MEMBER, SCIENTIFIC REPORTS** (Springer Nature)
- (iii) **REVIEW EDITOR, FRONTIERS on COLLOIDAL MATERIALS AND INTERFACES**
- (iv) **GUEST EDITOR, Special Issue of Proceedings of National Academy of Sciences India** (Springer Publishers) on 'Novel Energy Materials and Technologies: Recent Trends' (2012)
- (v) **SECTIONAL RECORDER (Materials Science), 100th Indian National Science Congress Meeting, Kolkata, (2013)**

5. Research Publications

Journals	:67
Conference	:65
Reports / Patents	:1
Books	:4

6. Teaching experience: 11 Years (UG + PG)

Courses Taught: (i) Science & Technology of Nanomaterials (ii) Condensed Matter Physics (iii) Physics I, (iv) Physics of Functional Materials (v) Analytical Techniques, (vi) Experimental Methods, (vii) Electronics for Physicists, (viii) Physics Labs (ix) Physics of Renewable Systems

7.0 AWARDS/RECOGNITIONS

Individually

<i>S.No.</i>	<i>Name of Award</i>	<i>Awarding Agency</i>	<i>Year</i>
1.0	ENDEAVOUR EXECUTIVE FELLOWSHIP AWARD	<i>Government of Australia</i>	2018
2.0.	ALEXANDER VON HUMBOLDT CONNECT FELLOWSHIP	<i>AvH Foundation (Germany)</i>	2013
3.0	IIT FACULTY – DAAD EXCHANGE FELLOWSHIP	<i>DAAD (Germany)</i>	2012
4.0	MAX PLANCK INDIA FELLOWSHIP AWARD	<i>Max Planck Society (Germany)</i>	2010
5.0	YOUNG SCIENTIST RESEARCH AWARD	<i>Department of Atomic Energy (DAE), India</i>	2010
6.0	YOUNG SCIENTIST AWARD	<i>Indian Science Congress Association, India</i>	2004
7.0.	YOUNG SCIENTIST AWARD	<i>International Conference on Electroactive Polymers: Materials and Devices, Dalhousie, India</i>	2004

[ii] By Student/Scholars of the Research Group

- i. Vikas Sharma, *Best Oral Presentation*, at 5th International Conference on Nanoscience and Nanotechnology (ICONN-2019), SRM IST, INDIA-2019**
- ii. Surbhi Priya, *Best Paper Presentation Award*, at 5th International Conference on Nanoscience and Nanotechnology (ICONN-2019), SRM IST, INDIA-2019**
- iii. Vikas Sharma, *Young Scientist Award*, at 7th International Conference on Electroactive Polymers (ICEP-2019), Udaipur, INDIA-2019**
- iv. Prasenjit Haldar, *Best Poster Award*, at International conference on Nanotechnology: Ideas, Innovations, and Initiatives-2017 (ICN:3I-2017), IIT Roorkee, INDIA-2017**
- v. **BEST POSTER AWARD**, 12th National Conference on Solid State Ionics (NCSSI-12) organized by Department of Physics BITS Pilani, Pilani Campus, Dec. **2017** [Title: Mn₃O₄-Polyaniline-Graphene as Excellent Composites for Achieving High-Performance Supercapacitor by Prasenjit Halder and Amreesh Chandra].**
- vi. **BEST POSTER AWARD**, International Symposium on Functional Materials (ISFM-2018), organized by IIT Kanpur, Panjab University and University of Illinois Chicago at Chandigarh in April **2018**. [Title: facile low temperature synthesis of Cu₂O hollow nanospheres for application as anode materials in supercapacitors by Vikas Sharma and Amreesh Chandra].**

- VII.** Vikas Sharma, *2nd position in Poster Presentation*, at International conference on Nanotechnology: Ideas, Innovations, and Initiatives-2017 (ICN:3I-2017), IIT Roorkee, INDIA-2017
- VIII.** **SURESH CHANDRA MEMORIAL AWARD FOR BEST POSTER**, 6th International Conference on Electroactive Polymers and Ceramics held at IIT Kharagpur in Feb. **2017** [Title of the paper: VOC sensing properties of Ce³⁺ doped CuO hollow nanostructures – Significance for industrial applications Authors of the paper: Inderjeet Singh, Sayan Dey, Sumita Santra, Amreesh Chandra]
- IX.** **BEST POSTER AWARD**, Research Scholars Day, School of Nanoscience and Nanotechnology, IIT Kharagpur, **2016** (Title of the paper: CuO Nanoflakes with catalytic activity even higher than corresponding hollow or solid particles. Vikas Sharma and Amreesh Chandra).
- X.** Sushanta Lenka, *3rd position in Poster Presentation*, at International conference on Nanotechnology: Ideas, Innovations, and Initiatives-2017 (ICN:3I-2017), IIT Roorkee, INDIA-2017
- XI.** **BEST POSTER AWARD**, 100th Indian National Science Congress Meeting, Kolkata, **2013**. [Paper presented by [Title of the paper: Application of activated carbon supported MnO₂ nanorods for achieving high power densities in Microbial Fuel Cells. Inderjeet Singh and Amreesh Chandra].
- XII.** **YOUNG SCIENTIST AWARD**, 100th Indian National Science Congress Meeting, Kolkata, **2013**. [Paper presented by [Title of the paper: Graphite Oxide based composites: Promising Candidates for Application in Energy Storage Devices by A. Singh and A. Chandra].
- XIII.** **BEST POSTER AWARD**, 5th International Conference on Electroactive Polymers: Materials and Devices, BHU, Varanasi, **Nov. 2012**. [Title of the paper: Graphite oxide – polymer based electrode material for high energy density supercapacitor. A. Singh and Amreesh Chandra].
- XIV.** **BEST POSTER AWARD**, 4th International Conference on Electroactive Polymers: Materials and Devices, Surujkund, **Nov. 2010**. [Title of the paper: Flexible Polymeric Membranes: Their Application in Microbial Fuel Cells. J. Khera and Amreesh Chandra]

8. [A] Sponsored/Funded Projects undertaken/ currently being supervised as Principal Investigator

- I.** *Hierarchically nanostructured energy materials for next generation Na-ion storage systems and their use in renewable energy systems.* Sponsoring Agency: **DST (India) (2017-2021)**
TOTAL GRANT: ~Rs. 94.5 Lakhs
- II.** **Head, Max Planck Partner Group on Hybrid Nanostructures for alternative energy systems** Sponsoring Agency: **IGSTC (India) and MPG (Germany) (Five years - 2014-19).**
TOTAL GRANT: ~Rs. 1.3 CRORES
- III.** *Next Generation Supercapacitors with High Energy Storage Capacity* Sponsoring Agency: **SGIRG Scheme, Indian Institute of Technology Kharagpur (2014-16)** **TOTAL GRANT: Rs. 25 LAKHS**
- IV.** *Use of Nanomaterials in Alternative Energy Systems.* Sponsoring Agency: **Indo-UK UKIERI Thematic Exchange Project (2012-2014)** **TOTAL GRANT: UK POUNDS 40,000 (~Rs. 36.00 Lakhs)**
- V.** *Polymer composites for energy Systems.* Sponsoring Agency: **Max Planck Society, Germany (2010-13).** **TOTAL GRANT: EUROS 12,000 (Rs. 8.00 Lakhs)**
- VI.** *Structural Phase Transition Studies in Multifunctional Ceramics.* Sponsoring Agency: **DAE-BRNS, BARC, Mumbai, India. (2010-2013)** **TOTAL GRANT: ~ Rs. 21 LAKHS**

VII. Multifunctional Ceramics and Polymer Composites: Their Synthesis and Characterization.
Sponsoring Agency: ISIRD, IIT Kharagpur, India (2010-2013). **TOTAL GRANT: ~Rs. 5.0 LAKHS**

[B] Sponsored/Funded Projects undertaken as Co- Principal Investigator

- I) *Extensional rheometer for microscale samples.* Sponsoring Agency: DST (India) (2013-16), **Total Grant: ~RS. 44.00 Lakhs**
- II) *Fist Project – To strengthen the post graduate teaching and research facilities in the department.* Sponsoring Agency: DST (India) (2011-16), **Total Grant: ~ RS. 365.00 Lakhs**

**2. LIST OF PRESENT AND PAST STUDENTS PURSUING/ COMPLETED
PH.D./M.TECH./M.SC./ INT. M.SC./B.TECH. PROJECTS**

<i>Sr. No.</i>	<i>Name</i>	<i>Course</i>	<i>Project Title</i>	<i>Status</i>	<i>Yr</i>
1)	Vikas Sharma	Ph.D.	Hierarchical Cu-oxide based nanostructures for application in supercapacitors	Completed	2019
2)	Prasenjit Halder	Ph.D.	Manganese (II, III) Oxide Based Electrodes for Application in Supercapacitors	Completed	2019
3)	Inderjeet Singh	Ph.D.	Hollow nanostructures of CuO based functional ceramics for device applications	Completed	2017
4)	Md. Aqueel Akhtar	Ph.D.	Co ₃ O ₄ based porous nanostructures as electrode materials in supercapacitors	Completed	2017
5)	Arvinder Singh	Ph.D.	High Performance Asymmetric Supercapacitors using Metal Oxides based Composites	Completed	2016
6)	Satish K. Mandal	Ph.D.	Establishing structure property correlation in Bi _{1-x} Sr _x FeO ₃ multiferroic ceramics and their solid solution with quantum paraelectric CaTiO ₃	Completed	2014
7)	P. Tirupathi	Ph.D.	Establishing structure-property correlation in multiferroic Bi _{1-x} Ca _x FeO ₃ nanoceramic and its solid solution with ferroelectric PbTiO ₃ and BaTiO ₃	Completed	2013
8)	Sudipta Biswas	Ph.D.	Next generation Na-ion supercapacitors	Ongoing	-
9)	Ananya Choudhury	Ph.D.	Tuning oxide nanoparticles for gas sensing applications	Ongoing	-
10)	Mayukh Chakraborty	Ph.D.	Magnetic field induced modulations in supercapacitors	Ongoing	-
11)	Debabrata Mandal	Ph.D.	Hollow Nano-oxides for sensing applications	Ongoing	-
12)	Puja De	Ph.D.	Micro- and mesoporous structures of hard carbon for use in Na-ion supercapacitors	Ongoing	-
13)	Joyonti Halder	Ph.D.	Nanostructured oxides for energy systems	Ongoing	-
14)	Surbhi Singh	Ph.D.	Hollow Metal Oxide Based Nanoparticles for sensors	Ongoing	-
15)	Sakshi Kansal	Ph.D.	Integrated Smart Energy Systems	Ongoing	-
16)	Satvik Anshu	M.Tech	Tin based hierarchical nanostructures for energy applications	Completed	2020
17)	Surbhi Priya	M.Tech	Morphology Driven Tuning of SnO ₂ nanoparticles for VOC Sensing	Completed	2019
18)	Abhishek Kumar	M.Tech	Stabilization of nano-sized Na-based oxides for energy applications	Completed	2019

19)	Sushanto Lenka	<i>M.Tech</i>	Mn ₃ O ₄ based Nanostructure Materials for Supercapacitor Applications	Completed	2018
20)	Charu Lakshmi	<i>M.Tech</i>	Tuning electrochemical properties of NaMPO ₄ (M=Mn, Fe) nanoparticles for their application in Na-ion supercapacitors	Completed	2017
21)	Shivangi Shree	<i>M.Tech</i>	Studies on nanostructured metal oxides based electron transport layer for perovskite solar cells	Completed	2017
22)	Prateek Srivastava	<i>M.Tech</i>	Enhanced electrochemical response of PANI, reduced graphite oxide and Co ₃ O ₄ composites – Their use in supercapacitors	Completed	2017
23)	Ajit Suryawanshi	<i>M.Tech</i>	Organic-Inorganic Hybrid Perovskite Solar Cells	Completed	2016
24)	Gopi Nalla	<i>M.Tech</i>	Nano Metal Oxides for Concentration Sensors Using Optical Fibers	Completed	2015
25)	Mousumi Beto	<i>M.Tech</i>	Mn-based system for energy application and structural characterization and phase transition in (1-x)BiMnO ₃ -xBaTiO ₃ system	Completed	2014
26)	Md. Mofasser Malick	<i>M.Tech</i>	Synthesis of ZnO Nanostructures for applications in gas sensors and nanogenerators	Completed	2013
27)	Bittu Singh	<i>M.Tech</i>	Structural characterization and Phase Transition in xBiMnO ₃ -(1-x)PbTiO ₃ composites system	Completed	2013
28)	Narendar G.	<i>M.Tech</i>	Growth and Characteristics of ZnO Nanorods for Hybrid Photovoltaic Applications	Completed	2012
29)	Inderjeet Singh	<i>M.Tech</i>	Improved power production in microbial fuel cells using nano-oxides	Completed	2012
30)	Jatin Khera	<i>M.Tech</i>	Design, Fabrication and Characterization of Microbial Fuel Cells"	Completed	2011
31)	Aakansha Sangwan	<i>Int. M.Sc.</i>	Vanadium and tungsten based oxides as electrode materials for high performance supercapacitor	Completed	2018
32)	Lakpa Tamang	<i>M.Sc.</i>	A comparative study on metal oxides and sulphides as electrode materials for supercapacitors	Completed	2018
33)	Jadhav Vikrant Vinayak	<i>M.Sc.</i>	Novel Fe ₂ O ₃ Nano-leaflets like structures and their application as pure negative electrode material for supercapacitor devices	Completed	2017
34)	Ashutosh Goyal	<i>Int. M.Sc.</i>	Spinel NiCo ₂ O ₄ nanobars as pure positive electrode material for supercapacitor applications	Completed	2017
35)	Pratteek Das	<i>Int. M.Sc.</i>	Design of a novel, robust nanogenerator based on triboelectric effect and contact charge separation	Completed	2016
36)	Shantanu Majumder	<i>Int. M.Sc.</i>	Solution processed planar Perovskite-kesterite tandem solar cells with high open-circuit voltage	Completed	2016
37)	Sayan Kumar Pal	<i>M.Sc.</i>	Alternative energy storage resources – Supercapacitors	Completed	2015
38)	Mitali Mondal	<i>M.Sc.</i>	Photocatalytic Activity of TiO ₂ Nano-particles	Completed	2015
39)	Aman Kanojia	<i>Int. M.Sc.</i>	PbTiO ₃ based ceramics for power harvesters	Completed	2014
40)	Pratik Bhaskar	<i>Int. M.Sc.</i>	Mn-based oxides for energy storage devices and MFCs	Completed	2014
41)	Bappaditya Sankhari	<i>M.Sc.</i>	Phase Transition and Structural Analysis of PbZr _x Ti _{1-x} O ₃ ceramics	Completed	2013

42)	Pradeep Balaji	<i>Int. M.Sc.</i>	Designing a sensor using PiezoelectricMaterial	Completed	2013
43)	Larionette P L Mawlong	<i>M.Sc.</i>	Synthesis and Characterization of Nanoferroelectric Ceramics(Calcium doped Lead Zirconate)	Completed	2012
44)	Sajal Mandal	<i>M.Sc.</i>	Synthesis and characterizations of MnO ₂ as electrode materials for supercapacitors	Completed	2011
45)	Preetham varma	<i>Int. M.Sc.</i>	Density of state calculations in Perovskite PbTiO ₃	Completed	2011
46)	Bandan Chakraborty	<i>M.Sc.</i>	Synthesis and characterization of functional ceramics for application in alternative energy systems	Completed	2010
47)	Parth Gattani	<i>B. Tech.</i>	Solar concentrators	Completed	2010
48)	Amaleshwar Sinha	<i>B. Tech</i>	Parabolic trough based concentrated solar photovoltaic module	Completed	2010

9.0 Conferences/ workshops/ short-term courses organized and course development

Sr. No.	NAME OF THE CONFERENCE/ WORKSHOP ORGANIZED AT IIT KHARAGPUR	POSITION HELD	YEAR
1)	<i>SPARC sponsored Indo-Belgium Workshop on Upscaling and field scale application of bio-electrochemical systems for wastewater treatment and bioenergy recovery</i>	<i>Co-Convenor</i>	Feb. 2020
2)	<i>6th International Conference of Functional Electroceramics and Polymers (ICEP)</i>	<i>Convenor</i>	Feb. 2017
3)	<i>Joint Indo German Workshop on Electrochemical Storage Systems: Synergy of Materials Design and Modelling</i>	<i>Convenor</i>	Feb. 2016
4)	<i>International Conference on 21st Century Energy Needs - Materials, Systems and Applications</i>	<i>Member, Organizing Committee</i>	Dec. 2016
5)	<i>Photonics</i>	<i>Member, Organizing Committee</i>	Dec. 2014
6)	<i>6th National Conference on Solid State Ionics (NCSSI)</i>	<i>Convenor</i>	Dec. 2013
7)	<i>National Strings Conference</i>	<i>Member, Organizing Committee</i>	Dec. 2013
8)	<i>6th India-Singapore Joint Physics Symposium</i>	<i>Organizing Secretary</i>	Feb. 2013
9)	<i>International conference on Theoretical and Applied Physics (IC TAP)</i>	<i>Organizing Secretary</i>	Dec. 2011

10. Collaborations with various national and international Institutes

University of Surrey, U.K. (Prof. R.C.T. Slade), **Max Planck Institute for Polymer Research** (Prof. K. Landfester, Dr. Munuz Espi, Dr. Wolfgang Meyer), **TU-Braunschweig** (Prof. Dr. Ulrich Krewer), **Deakin University**, Australia (Prof. M. Forsyth), **CRNS, Paris, France** (Prof. B. Dkhil), **BARC, Mumbai**, India (Prof. A.K. Tyagi), **IISER Kolkata**, India (Prof. G.D. Mukherjee), **BHU, Varanasi**, India (Prof. R.K. Singh).