1st of July, 2024

Curriculum Vitae

FULL NAME: DR. DILLIP KUMAR SATAPATHY

Designation and Contact Address

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Researcher ID: http://www.researcherid.com/rid/A-9737-2010

PERSONAL DATA:

- Date of birth: 10th July 1978
- Nationality: Indian
- Sex: Male

EDUCATION:

1989 -1992 : High School Education
At: Brajendra High School, Nayagarh, Orissa
Grade: First division

1992 -1994 : Higher Secondary Education
At: Nayagarh College, Council of Higher Secondary Education, Bhubaneswar, Orissa
Grade: First division

1994 -1997 : Bachelor of Science (B. Sc. Physics (Honors))
At: Nayagarh College, Utkal University, Bhubaneswar, India
Grade: First class honours with distinction

1998 - 2000 : Master of Science (M. Sc. Physics)
At: Department of Physics, Utkal University, Bhubaneswar, India
Grade: First class

2000 - 2002 : Master of Technology (M. Tech, Solid State Materials)
At: Department of Physics, Indian Institute of Technology (IIT), Delhi, India
Cumulative grade point average: 8.3 (on a 10 point scale)

2002 - 2005 : Doctor of Philosophy in Physics (Ph.D.)
At: Paul-Drude-Institut and Dept. of Physics, Humboldt University, Berlin, Germany.
Thesis title: *Molecular-beam epitaxy growth and structural characterization of semiconductor-ferromagnet heterostructures by grazing incidence x-ray diffraction*
Thesis advisor: Prof. Dr. Klaus H. Ploog
Grade: Magna cum laude

RESEARCH DETAILS

2022 - cont. : Professor at Department of Physics, IIT Madras, India

2018 - 2022 : Associate Professor at Department of Physics, IIT Madras, India

2012 - 2018 : Professor at Department of Physics, IIT Madras, India

Research : - Polymer physics, x-ray and neutron scattering
- Responsive soft matter
- Self-assembly of colloids
- Soft thermoelectrics for energy harvesting

2009 - 2012: Postdoctoral research fellow in the group of Prof. Dr. Christian Bernhard at Department of Physics, University of Fribourg, Switzerland

Research : - Determination of magnetic induction profiles in of ferromagnet (FM)/super–conductor (SC) superlattices using polarised neutron reflectometry (PNR)
- Proximity induced effects in SC/FM/SC heterostructures at low temperatures
- Element specific magnetization density profile determination in FM/SC heterostructures using x-ray resonant techniques

2006 - 2009: Postdoctoral research fellow in the group of Prof. Dr. J. F. van der Veen at Swiss Light Source (SLS), Paul Scherrer Institut,Villigen PSI, Switzerland

Research : - Determination of the structure of fluids (colloidal dispersions and micelles) in extreme confinement using small angle x-ray scattering (SAXS)
- Application of one-dimensional phase retrieval methods in SAXS

2002 - 2005: Ph.D. student, Paul-Drude-Institut für Festkörperelektronik, Berlin, Germany

Research : - Fabrication of ferromagnet/semiconductor heterostructures by MBE
- Determination of interface structures in heterostructures by using grazing incidence x-ray diffraction at BESSY II, Berlin
- Investigation of surface structure and nucleation of over-layers using RHEED azimuthal scans

2000 - 2002: M. Tech. student, Indian Institute of Technology (IIT), Delhi, India

Research : - Growth of ZnO thin films on silicon and glass substrates by spray pyrolysis, sol-gel spin coating methods and subsequent structural, electrical and optical characterizations

1999 : Summer internship during M. Sc., Institute of Physics, Bhubaneswar,India

Research : - Structure of Si(111) surface by Low Energy Electron Diffraction (LEED)

SCHOLARSHIPS AND AWARDS:

- **Early Carrier Institute Research and Development Award (IRDA), IIT Madras (2018).**
- **Young Scientist Awards (YSA), Academy of Sciences, Chennai (2017).**
- **Young Faculty Recognition Award (YFRA) , IIT Madras (2017).**
- **DAE Young Scientist Research Award (DAE-YSRA) for the project entitled " Glass Transition in Confined Polymers" (2014).**

STUDENT GUIDANCE

Ph.D. (Completed)

- **Dr. L. Pradipkanti**
  Title of the Thesis : Novel Properties of Polymers Under Confinement"
  (Sole Guidance)
  Worked for two years as Postdoctoral Fellow at the Department of Physics, University of Freiburg, Germany.
  Current occupation: National Postdoctoral fellow, JNCASR, Bengaluru (Continuing).

- **Dr. P. M. Geethu**
  Title of the Thesis : Interfacial Rigidity and Intramicellar Polymer Dynamics in Microemulsions"
  (Sole Guidance)
  Worked for two years as Postdoctoral Fellow at the Department of Physics, Technical University, Munich, Germany.
  At present in a carrier break due to personal reasons.
  [Recipient of Institute Research Award from IIT Madras (2018)]

- **Dr. Biporjoy Sarkar**
  Title of the Thesis : Conducting Polymers Under Mechanical Deformation and Vapor-induced Swelling: Physics and Sensor Applications
  (Co-Guide)
  Primary Guide: Dr. Manu Jaiswal (Physics)
  Current Occupation : Postdoctoral Researcher University of Calgary, Canada.
  [Recipient of Institute Research Award from IIT Madras (2019)]

- **Dr. G. Suresh**
  Title of the Thesis : Exploring The Physical and Mechanical Properties of Poly(vinyliedene Fluraide), its Blends and Composites"
  (Primary Guide)
  Co- Guide: Prof. M. S. Ramachandra Rao (Physics)

Current Occupation : Faculty, Department of Physics, VNR VIGNANA JYOTHI INSTITUTE OF ENGINEERING AND TECHNOLOGY, Hyderabad, India.

- **Dr. Hisay Lama**
  Title of the Thesis : Desiccation Cracks in Colloidal Films: Effect of Particle Shape and External Fields
  (Primary Guide)
  Co-Guide: Dr. Basavaraja M. Gurappa (Chemical Engineering Department)
  Current Occupation : Postdoctoral Fellow, Takeuchi Lab, Department of Physics, School of Sciences, The University of Tokyo, Tokyo, Japan
  [Recipient of Institute Research Award from IIT Madras (2018)]

- **Dr. M. Mayarani**
  Title of the Thesis : Interface Assisted Evaporative Self-assembly of Soft Microgel Particles
  (Sole Guide)
  Current Occupation : Postdoctoral Fellow, Soft Biophysics group, LPTMS and PMMH of CNRS, University of Paris-Saclay, France.
  [Recipient of Institute Research Award from IIT Madras (2019)]
  [Received INSPIRE Faculty Fellowship in Physical Sciences from Department of Science and Technology, Govt of India (2022).]

- **Mr. G. Manikandan** (MM15D032, Inter Disciplinary Research Program (IDRP))
  Thesis topic: Silk Fibroin Films As Soft Actuators
  (Co-Guide)
  Primary Guide: Prof. Ravi Kumar (Dept. of Metallurgical and Materials Engineering)
  Current Occupation : Postdoctoral Fellow, Department of Physics, Chemistry and Biology, Linköping University, Sweden.

- **Ms. Merin Jose** (PH17D004)
  Thesis Topic: Two-dimensional self-assembly of soft colloids"
  (Sole Guide)
  Current Occupation : Postdoctoral Fellow, Department of Physics, Radboud University, The Netherlands.

Ph.D. (Continuing)

- **Mr. Sanket Kumar** (PH18D013)
  Thesis topic: Desiccation cracks in self assembled Colloids
  (Primary Guide, Joined JUL 2018 and Continuing)
  Co-Guide: Dr. Basavaraja M. Gurappa (Chemical Engineering)

- **Ms. Minati Tiadi** (PH18D300, ID-External)
  Thesis topic: Thermoelectric materials for high temperature applications
  (Primary Guide, Joined JAN 2019 and Continuing)
  (Co-Guide: Dr. Satyesh Kumar Yadav (Metallurgical and Materials Engineering)

- **Ms. Sonam Zangpo Bhutia** (PH19D076)
  Thesis topic: Confined polymers and Bound layers
  (Sole Guide, Joined JAN 2019 and continuing)

- **Mr. T V Venkat Ramana** (MM17D408)
  Thesis Topic: Polymer and Inorganic Composites for Renewable Energy Applications
  (Co-Guide, Joined JUL 2017 and continuing)
  Guide: Prof. N. V. Ravi Kumar (Metallurgical and Materials Engineering)

- **Ms. Shakshi Gupta** (PH18D007)
  Thesis topic: Crystallization Kinetics of Polymers
  (Sole Guide, Joined JUL 2018 and continuing)

- **Mr. Sanjeeb Majumder** (PH19D028)
  Thesis topic: Self assembly of
  (Sole Guide, Joined JUL 2019 and continuing)

- **Mr. Vipin Kumar** (PH19D201)
  Thesis topic: Vapour Responsive Actuators
  (Sole Guide, Joined JUL 2019 and continuing)

- **Mr. Santhosh Kumar** (PH19D203)
  Thesis topic: Soft thermoelectrics
  (Primary Guide, Joined JUL 2019 and Continuing)
  Co-Guide: Dr. K. Sethupathi (Physics)

- **Ms. Sarah Ahmed** (PH20D075)
  Thesis topic: Soft actuators via 4-D printing
  (Sole Guide, Joined JUL 2020 and continuing)

- **Ms. Sourav Mondal** (PH23D039)
  Thesis topic: Physics of Biological Active Matter
  (Co-Guide, Dr. Sumesh P Thampi; Joined JUL 2023 and continuing)

- **Ms. Bhargavi Suchitra** (PH23D066)
  Thesis topic: Physics of Flexible Thermolelctrics
  (Co-Guide, Dr. Manjusha Battabyal, ARCI, Hyderabad; Joined JUL 2023 and continuing)

Student Thesis (M.Sc., M. Tech, B. Tech)

- `Ms. M. Mayarani`; Thesis title: "*Dielectric Spectrosocpy Study of Phase transition of pNIPAM Microgels at LCST*" (M. Sc. Project, Completed, 2014).

- `Mr. Venketesh T.R`; Thesis title: "*Ion-Dipole Dynamcis of Aqueous Solutions: A dielectric spectroscopy study*" (M. Sc. Project, Completed, 2015).

- `Mr. Yurlan R`; Thesis title: "*Structure and dielectric relaxation studies of ferroelectric polymer blends*" (M. Sc. Project, Completed, 2016).

- `Mr. Tonmoy Gogoi`; Thesis title: "*Self assembly of nanoparticles on soft substrates*" (M. Sc. Project, Completed, 2017).

- `Mr. Vivek Kumar Madhesia`; Thesis title: "*Evaporation driven coffee rings formation in soft microgel particles* " (M. Sc. Project, Completed, 2017).

- `Mr. Santhosh K. Dasila`; Thesis title: "*Swelling dynamics of sulphonated poly vinyl alcohol thin films*" (M. Tech. Project, Completed, 2017).

- `Mr. Bharath Chandran`; Thesis title: "*Sessile Drop Evaporation Induced Wrinkle Morphology Of Freestanding Elastomer Films*" (B. Tech. Project, Completed, 2017).

- `Mr. Ayan Nandi`; Thesis title: "*Mechanical response of polymer-polymer interface*" (M. Sc. Project, Completed, 2018).

- `Mr. Nighil Nand`; Thesis title: "*Evaporative self assembly of hard and soft colloidal spheres*" (M. Sc. Project, Completed, 2018).

- `Mr. Sonam Zango Bhutia`; Thesis title: "*Swelling kinetics of thin ionic polymer films*" (M. Sc. Project, Completed, 2018).

- `Mr. Sanjoy Khawas`; Thesis title: "*Studies on electric filed driven crack formation in an evaporated colloidal self assembled system* " (M. Sc. Project, Completed, 2018).

- `Mr. Kamalesh Chaurasia`; Thesis title: "*Responsive Polymer Membranes*" (M. Sc. Project, Completed, 2019).

- `Mr. Kiran Kumar Panigahi`; Thesis title: "*Soft Colloids at Fluid-Fluid Interfaces*" (M. Sc. Project, Completed, 2021).

- `Ms. Ankita Mohanta`; Thesis title: "*Kinetics of Bound Layer in Polymer Thin Films*" (M. Sc. Project, Ongoing).

RESEARCH PROJECTS ONGOING/COMPLETED AS PRINCIPAL INVESTIGATOR :

- *Glass Transition in Polymers Under Confinement*, New Faculty Seed Grant Scheme, IIT Madras (2012- 2016).

  [Sanctioned amount: Rs. 22,50,000]

- *Glass Transition Dynamics in Ultra-thin Polymer Films by Hot Stage Ellipsometry*, Nissan Research Program. (2013-2015).

  [Sanctioned amount: Rs. 11,00,000]

- *Glass Transition in Confined Polymers*, Advanced Technology Committee, Board of Research in Nuclear Sciences (BRNS). (2014-2017).

  [Sanctioned amount: Rs. 16,30,000]

- *Fabrication of polymer based materials for thermoelectric applications*, (IMPacting Research INnovation and Technology (IMPRINT) initiative MHRD. (2017 - continuing)

  [Sanctioned amount: Rs. 3,28,30,000].

- *In-situ Investigations of Swelling Dynamics of Confined Glassy Ionic Polymers*, Science and Engineering Research Board, SERB-DST (2017- 2020)

  [Sanctioned amount: Rs. 62,00,000].

- *Effect of alcohols and polymers on the bending modulus of reverse microemulsion* , UGC-DAE Consortium for scientific Research, Mumbai (2017-2021)

  [Sanctioned amount: Rs. 1,35,000. Beamtimes and support for carrying out small angle neutron scattering (SANS) experiment at Neutron reactor facility located at BARC Mumbai for 3 years]

- *Sessile Drop Evaporation Induced Wrinkle Morphology Of Freestanding Elastomer Films*, Exploratory Research Proposal Scheme, IIT Madras (2017- 2018)

[Sanctioned amount: Rs. 6,00,000].

- *Reprogrammable Polymer Based Soft Actuators*, Scheme for Transformational and Advanced Research in Sciences (STARS), Ministry of Human Resource and Development (2020-2023)

  [Sanctioned amount: Rs. 50,00,000].

RESEARCH PROJECTS ONGOING/COMPLETED AS CO-INVESTIGATOR :

- Center for research on confined soft matter, IC&SR, IIT Madras (2015-2017)

  [Sanctioned amount: 2,03,80,000]

- Indigeneous Low-Cost Compact Optical No0n-Contact Device for in-situ Characterization of Soft Matter, (IMPacting Research INnovation and Technology (IMPRINT) initiative Ministry of Human Resource and Development . (2017 - 2021)

  [Sanctioned amount: 1,18,46,000]

- *Natural and Artificial Porous Materials Filled with Liquid and Solid Dielectrics*, BRICS – Department of Science & Technology (2021- 2024)

  [Sanctioned amount: Rs.40,14,118].