

Name: Dr. Madhusree Kole

Department: Basic Science and Humanities (PHYSICS)

Contact Nos.: +91 9732229378



Qualifications: Ph.D, Post Doctorate

Designation: Assistant Professor (with AGP Rs. 7000/-)

Experience (Teaching / Research / Industry, in years):

Teaching: 6 years and 5 months

Research: 13 years

Date of Joining at the Present Institution: 02/07/2013

Examinations Cleared: NET-CSIR/GATE GATE 2007

Qualifications Summary (Reverse chronological order):

Degree	Institute	From - To	Subjects
Ph.D	IIT Kharagpur	2008- 2013	Thermophysical Properties, Pool Boiling Characteristics, and Heat Pipe Application of Nanofluids
M.Sc	Visva Bharati University, Santiniketan	2006- 2008	Physics (Special Paper: Condensed Matter Physics)
B.Sc	Visva Bharati University, Santiniketan	2003- 2006	Physics (Hons.) Subsidiary: Mathematics and Chemistry
Higher Secondary (WBCHSE)	Bidhan Chandra Institution for Girls', Durgapur	2003	Beng., Eng., Physics, Chemistry, Mathematics, and Biology
10 th (ICSE)	Carmel Convent High School, MAMC, Durgapur	2001	Eng., Beng., Maths, Sciences, Hist. & Geography, and Economics

Experience Summary (In chronological order):

Sl. No.	Designation	Organization	From	To
1.	Assistant Professor of Physics	Dr. B.C. Roy Engineering College, Durgapur	02/07/2013	Till date (Presently on study leave from 01/12/2019 for a period of two years).
2.	Institute Post-Doctoral Fellow	Department of Mechanical Engineering, IIT Kanpur	02/12/2019	Till date

Specialization/Research Interest:

Thermophysical Properties, Nanofluids, Heat Transfer, Ferrofluids

Awards & Recognitions:

Achievement: Ranked within **top 2% Global Scientist/Researchers** in the world, 2020.

Achievement: Enlisted in **Global AD (Alper-Doger) Scientific Index 2021** list.

Awards: Thermophysical Society of India Founder President **Gold Medal Award 2009 and 2011.**

Fellowships: DST sponsored JRF & SRF, IIT Kharagpur Institute SRF, CSIR SRF.

Recognized Reviewer of several Elsevier Journals like ENERGY, Powder Technology, International journal of Thermal Sciences, etc.

Courses taught:

B.Tech:

1. Engineering Physics I, PH-101 (1st Semester Theory, 2013, 2014, 2015, 2016)
2. Engineering Physics I, PH-201 (2nd Semester Theory, 2014, 2015, 2016, 2017, 2018)
3. Engineering Physics II, PH-301 (3rd Semester Theory, 2013, 2014, 2015, 2016, 2018)
4. Engineering Physics II PH-401 (4th Semester Theory, 2017, 2018, 2019)
5. Engineering Physics II, PH (EE) 401 (4th Semester Theory, 2014, 2015, 2016)
6. Engineering Physics I, BS PH 101 (New Syllabus, 1st Semester Theory, 2018, 2019)
7. Engineering Physics I, BS PH 201 (New Syllabus, 2nd Semester Theory, 2019)
8. Physics Laboratory I, PH-191 (1st Semester Laboratory, 2013, 2014, 2015, 2016)
9. Physics Laboratory I, PH-291 (2nd Semester Laboratory, 2014, 2015, 2016, 2017, 2018),
10. Physics Laboratory II, PH-391 (3rd Semester Laboratory, 2013, 2014, 2015, 2016, 2018),
11. Physics Laboratory II, PH-491 (4th Semester Laboratory 2014, 2015, 2016, 2017, 2018, 2019),
12. Physics Laboratory II, PH (EE) 491 (4th Semester Laboratory, 2014, 2015, 2016, 2017, 2018, 2019)
13. Physics Laboratory I, BS PH-191 (New Syllabus, 1st Semester Laboratory, 2018, 2019)

Online Mode of Teaching: Not Applicable

Publications:

Journal Publications (PhD related):

1. **Madhusree Kole** and T. K. Dey, "Viscosity of alumina nanoparticles dispersed in car engine coolant", *Experimental Thermal and Fluid Science*, (2010), 34, pp. 677-683, ISSN 0894-1777.
2. **Madhusree Kole** and T. K. Dey, "Effect of aggregation on the viscosity of copper oxide-gear oil nanofluids", *International Journal of Thermal Sciences*, (2011), 50, pp. 1741-1747, ISSN 1290-0729.
3. **Madhusree Kole** and T. K. Dey, "Thermal conductivity and viscosity of Al₂O₃ nanofluid based on car engine coolant", *Journal of Physics D: Applied Physics*, (2010), 43, pp. 315501-10, ISSN 0022-3727.
4. **Madhusree Kole** and T. K. Dey, "Investigation of thermal conductivity, viscosity, and electrical conductivity of graphene based nanofluids", *Journal of Applied Physics*, (2013), 113, pp. 084307, ISSN 0021-8979.
5. **Madhusree Kole** and T. K. Dey, "Thermal performance of screen mesh wick heat pipes using the water-based copper nanofluids", *Applied Thermal Engineering*, (2013), 50, pp. 763-770, ISSN 1359-4311.
6. **Madhusree Kole** and T. K. Dey, "Effect of prolonged ultrasonication on the thermal conductivity of ZnO-ethylene glycol nanofluids", *Thermochimica Acta*, (2012), 535, pp. 58-65, ISSN 0040-6031.
7. **Madhusree Kole** and T. K. Dey, "Investigations on the pool boiling heat transfer and critical heat flux of ZnO-ethylene glycol nanofluids", *Applied Thermal Engineering*, (2012), 37, pp. 112-119, ISSN 1359-4311.
8. **Madhusree Kole** and T. K. Dey, "Role of interfacial layer and clustering on the effective thermal conductivity of CuO-gear oil nanofluids", *Experimental Thermal and Fluid Science*, (2011), 35, pp. 1490-1495, ISSN 0894-1777.
9. **Madhusree Kole** and T. K. Dey, "Thermophysical and pool boiling characteristics of ZnO-ethylene glycol nanofluids", *International Journal of Thermal Sciences*, (2012), 62, pp. 61-70, ISSN 1290-0729.
10. **Madhusree Kole** and T. K. Dey, "Enhanced thermophysical properties of copper nanoparticles dispersed in gear oil", *Applied Thermal Engineering*, (2013), 56, pp. 45-53, ISSN 1359-4311.
11. **Madhusree Kole** and T. K. Dey, "Pool boiling heat transfer and critical heat flux enhancement of copper nanoparticles dispersed in distilled water", *Journal of Nanofluids*, (2014), 3, pp. 85-96. ISSN 2169-432X.

Journal Publications (outside PhD work):

1. Sanjib Baglari, **Madhusree Kole**, and T. K. Dey, "Effective Thermal Conductivity and Coefficient of Linear Thermal Expansion of HDPE/Fly Ash Composites", *Indian Journal of Physics*, (2011), 85, pp. 559-573, ISSN 0973-1458.
2. **Madhusree Kole**, Dinesh Tripathi, and T. K. Dey, "Percolation based enhancement in the effective thermal conductivity of HDPE/LBSMO composites", *Bulletin of Material Sciences*, (2012), 35, pp. 601-609, ISSN 0250-4707.
3. R. S. Bhoopal, D. Tripathi, **Madhusree Kole**, T. K. Dey, and Ramvir Singh, "Experimental and numerical investigations on the effective thermal conductivity of low-density polyethylene filled with Ni and NiO particles", *Composites: Mechanics, Computations, Applications, An International Journal*, (2012), 3, pp. 79-93.
4. S.K. Ghoshal and **Madhusree Kole**, "Some Simple Applications of the Concept of Superacceleration in the Field of Classical Mechanics", *Journal of Applied Physical Science International*, (2015), 2 (3), pp. 107-110, ISSN 2395-5260.
5. S.K. Ghoshal and **Madhusree Kole**, "Exploring the intricacies of hidden correlations of power with kinetic energy, frequency, and temperature", *Journal of Basic and Applied Research International*, (2015), 11 (2), pp. 80-86, ISSN 2395-3438.
6. S.K. Ghoshal and **Madhusree Kole**, "On the possibility of constructing devices capable of extracting energy from the forces of nature", *International Journal of Engineering and Applied Sciences*, (2016), 3 (3), pp. 90-95, ISSN 2394-3661.
7. **Madhusree Kole** and Sameer Khandekar, "Engineering Applications of Ferrofluids: A Review", *Journal of Magnetism and Magnetic Materials*, (2021), 537, 168222.

Please visit my *Google Scholar* page for updated list:

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

Conference:

1. **Madhusree Kole**, T. K. Dey, "Experimental investigation on thermal conductivity and viscosity of engine coolant based alumina nanofluids", *National Conference on Thermo Physical Properties, NCTP-09, October 7th-9th, 2009, National Conference, Published in American Institute of Physics Conference Proceedings 1249, 120-124 (2010). Publishers - AIP, ISSN 0094-243X.*
2. **Madhusree Kole**, Sanjib Baglari and T. K. Dey, "Effective Thermal Conductivity and Coefficient of Linear Thermal Expansion of HDPE/Fly Ash Composites", *9th Asian Thermophysical Properties Conference, October 19th-22nd, 2010, International Conference, Published in the Conference Proceedings, Paper No. 109049.*
3. **Madhusree Kole**, Ram Krishna Shah, and Sameer Khandekar, 'Heat Transfer Augmentation of Air-Ferrofluid Taylor Bubble Flow in Presence of a Magnet', *26th National and 4th International ISHMT-ASTFE Heat and Mass Transfer Conference,*

December 17-20, 2021, IIT Madras, Chennai-600036, Tamil Nadu, India, Accepted for publication in the Conference Proceedings, Paper 198.

Book: None

Book Chapter:

1. S.K. Ghoshal and **Madhusree Kole**, "Some Simple Applications of the Concept of Superacceleration in the Field of Classical Mechanics" pp. 79-83 "Theory and Applications of Physical Science", (Book Publisher International, Vol. 1, Chapter 4, 2019), Print ISBN: 978-93-89246-70-4, e-book ISBN 978-93-89246-71-1.
2. **Madhusree Kole**, Tapas Kumar Dey, and Sameer Khandekar, 'Nanofluids: Prospects and Challenges in Thermo-fluid Engineering, Accepted to be published by Springer Nature.

Supervision of Ph.D/M.Tech / B.Tech Projects:

Projects:

1. Supervised an **innovative project** entitled "**Smart Railway System**" carried out by six students of B. Tech (2016-2020) 3rd year of ECE Department. Students of the above-mentioned project have won the second prize in Innovative Model Presentation organized by Maulana Abul Kalam Azad University of Technology (MAKAUT) on the occasion of National Science Day held on 28th February 2019.
2. Supervised several inter-disciplinary projects of B.Tech 2nd year students under Humanities
Paper code

Invited Lectures:

1. **Dr. Madhusree Kole**, 'Nanofluids: Prospects and Challenges in Thermo-fluid Engineering', International Symposium on Fluids and Thermal Engineering, organized by the Department of Mechanical Engineering, Amity School of Engineering & Technology, Amity university, Noida, Uttar Pradesh, India, on 22nd July, 2021.

Participation in seminar/conference/symposium/workshop/discussion meeting

Name of the event, duration, Year, Organized by.

1. **Oral Presentation**, Effective thermal conductivity and coefficient of linear thermal expansion of HDPE/LBSMO nano-composites, **Madhusree Kole** and T. K. Dey National Conference on Condensed Matter Physics, NEHU, Sillong, March 21st-23rd, 2010.
2. **Oral Presentation**, Investigations on the enhanced thermal conductivity of nanoparticle-in gear oil dispersions as advanced energy-efficient coolants, **Madhusree Kole** and T. K. Dey, International Conference on Multifunctional Materials, ICM-2010, BHU, Varanasi, U. P., December 7th -9th, 2010.

4. **Oral Presentation**, Suitability of alumina nanoparticles filled Polyvinylidene Fluoride nano-composites for electronic packaging applications, **Madhusree Kole** and T. K. Dey, NCMCN-2011, University of Rajasthan, Jaipur, January 6th- 8th, 2011.
5. **Oral Presentation**, On the thermophysical properties and pool boiling characteristics of ZnO-ethylene glycol nanofluids as energy efficient coolants. Madhusree Kole and T. K. Dey. National Conference on Thermo Physical Properties, NCTP-11, BHU, Varanasi, U. P. October 11th-13th, 2011.
6. **Poster Presentation**, New observations on the thermophysical properties and pool boiling characteristics of ZnO-ethylene glycol nanofluids as energy efficient coolants. **Madhusree Kole** and T. K. Dey. International Conference on Theoretical and Applied Physics ICTAP-11, IIT Kharagpur, W. B. December 1st-2nd, 2011.
7. **Oral Presentation**, Investigation of thermal conductivity, viscosity, and electrical conductivity of graphene based nanofluids. **Madhusree Kole** and T. K. Dey. Third National Seminar on Recent Trends in Condensed Matter Physics including Laser Application, TNSCMPLA-2013, University of Burdwan, W. B. March 5th-7th, 2013.
8. **Seminar participation**, "Teaching and Learning Skill Development" organized by IEEE Student Branch & IEI Student's Chapter, BCREC on 22nd August 2019.
9. **Webinar participation**, "Trends of Modern Communication Engineering Systems" organized by ECE Department and IEEE Student Branch, BCREC on Sept. 18th-20th, 2020.
10. **Webinar participation**, "Trends in Nanotechnology", organized by Research and Development Cell, BCREC, on October 20th, 2020.
11. **Webinar participation**, "Journey from Vacuum Tube to Carbon Nanotube", organized by Research and Development Cell, BCREC, on February 27th, 2021.
12. **Oral Presentation**, Air-Ferrofluid Taylor Bubble Flow as Energy Efficient Coolant at Low Reynolds Number. **Madhusree Kole**, Ram Krishna Shah, and Sameer Khandekar. 7th Micro and Nano Flows Conference MNF 2021, Imperial College London, United Kingdom, May 24th-26th, 2021.

Participation in faculty development programmes:

1. One-week Online FDP under **AICTE Training And Learning (ATAL) Academy** on "Green Technology & Sustainability Engineering" organized by Netaji Subhas University of Technology from Oct. 5th- Oct. 9th, 2020.

Organization of events (Dr. B. C. Roy Engineering College)

Activities organized as the NSS coordinator:

1. NDRF workshop, 27th September 2019, Role: Convenor.
2. BCREC Charity Drive for Vivekananda Bani Prachar Samiti and Abhaya Ashram, Durgapur, 21st November 2019, Role: Convenor.

Participation in administrative committees (selected)

Name of the post	Name of the committee	Date/Year
Coordinator	NSS, BCREC	29 th August 2019 to 30 th November 2019
Convenor (Guardian assistance and reception team)	Orientation Program	2018, 2019
Convenor	BS & Hu Departmental NBA Committee	12 th July 2019 to 30 th November 2019
Member	BCREC Library Committee	17 th February 2018 to 30 th November 2019
Member	Project Monitoring and Industrial Liaising (PMIL) Cell	20 th March 2019 to 30 th November 2019
Member of the Review Board	BCREC online Journal (BEST)	29 th August 2019 to 30 th November 2019
Member	NSS, BCREC	May 2018 to August 2019

Project Ideas Submitted to Govt. Agencies/ On-going Projects / Research Ideas under preparation & execution

Heat Transfer of Ferrofluids, Solar Desalination

Membership of professional bodies: IEEE, IETE, IEL, CSI, MGMI etc.

Life Member (L 057) of Thermophysical Society of India (TPSI)