BIODATA

Dr. Dipak Sen

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National Institute of Technology Arunachal Pradesh
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RESEARCH AREAS

Micro/Nanoscale phase change heat transfer, Boiling heat transfer, Fabrication of micro/nanostructured surface using various techniques, Bubble dynamics, Mixed convection, Alternative fuels.

EDUCATION

- Ph.D. in Engineering, National Institute of Technology Agartala, Tripura, India.
- M.Tech. in Thermal Engineering, National Institute of Technology Silchar, Assam, India.
- B.E. in Mechanical Engineering, M.S. Bidve Engineering College, Latur, Maharashtra, India.

PROFESSIONAL EXPERIENCES

- **Associate Professor,** July 2022 - Present, *Department of Mechanical Engineering*, **National Institute of Technology Arunachal Pradesh**, India
- **Assistant Professor,** January 2015 – July 2022, *Department of Mechanical Engineering*, **National Institute of Technology Arunachal Pradesh**, India.
- **Assistant Professor,** August 2010-January 2015, *Department of Mechanical Engineering*, **National Institute of Technology Agartala**, Tripura, India.

RESEARCH PROJECTS

[1] **Co-Principal Investigator** for Council of Scientific and Industrial Research (CSIR) sponsored project grant: Project Title: Study on Some Thin Film Coating Flow Problems Using Nanoliquid (Ongoing: 2017- Present). [Funds sanctioned: Rs.14,00,000/-]

[2] **Principal Investigator** for Council of Scientific and Industrial Research (CSIR), sponsored project grant: Project Title: Use of high percentage of Methanol fuel in a Diesel Engine (Ongoing: 2019 - 2022). [Funds sanctioned: Rs.17,59,560/]

[3] **Principal Investigator** for SEED Grant (TEQIP-III), Project Title: Study of pool boiling heat transfer on copper micro/nano structured surface (Ongoing: 2019 - Present). [Funds sanctioned: Rs.2,00,000/]

INTERNATIONAL REFERRED JOURNALS

2022

1. Sen, P., Kalita, S., Sen, D., Das, A.K. and Saha, B.B., 2022. Pool boiling heat transfer and bubble dynamics of modified copper micro-structured surfaces. **International Communications in Heat and Mass Transfer, 134, p.106039.**

2. Sen, P., Kalita, S., Sen, D., Das, S. and Das, A.K., 2022. Pool Boiling Heat Transfer on a Micro-Structured Copper Oxide Surface with Varying Wettability. **Chemical Engineering & Technology, 45(5), pp.808-816.**

3. S. Maity, R. Krishanan, S.K. Singh, B.S. Dandapat, D. Sen "Development of CNTs suspended thin nanoliquid film over a nonlinear stretching sheet", Mathematics and Computers in Simulation, vol. 201, pp. 291-304, 2022. (https://doi.org/10.1016/j.matcom.2022.05.001)

4. Stephy Jose, Sudev Das, Teja Reddy Vakamalla and Dipak Sen "Electrochemical Glucose Sensing Using Molecularly Imprinted Polyaniline–Copper Oxide Coated Electrode", Surface Engineering and Applied Electrochemistry, vol. 58, pp. 260-268, 2022. (https://doi.org/10.3103/S1068375522030127)

2021

1. Kalita, S., Sen, P., Sen, D., Das, S., Das, A.K. and Saha, B.B., 2021. Experimental study of nucleate pool boiling heat transfer on microporous structured by chemical etching method. **Thermal Science and Engineering Progress, 26, p.101114.**

2020

1. **SK Mandal, Arnab Deb, Dipak Sen** "A computational study on mixed convection with surface radiation in a channel in presence of discrete heat sources and vortex generator based on RSM", Journal of Thermal Analysis and Calorimetry, vol. 141, pp. 2239-2251 , 2020.

2019

1. **Mandal, S.K., Deb, A. and Sen, D** "Mixed convective heat transfer with surface radiation in a rectangular channel with heat sources in presence of heat spreader.", Thermal Science and Engineering Progress, vol. 14, pp. 100423, 2019.

2018

1. **Mandal, S.K., SEN, D. and GIRI, A.** "Multi objective optimization of laminar mixed convective heat transfer of electronic chips in a horizontal channel with vortex generator.", International Journal of Mechanical and Production Engineering Research and Development, vol. 8, pp. 155-166, 2018.

2016

1. **Triveni, M.K., Sen, D. and Panua, R.** "Numerical Study of Laminar Natural Convection in an Arch Enclosure Filled with Al 2 O 3-Water Based Nanofluid.", Journal of Applied Fluid Mechanics, vol. 9(4), 2016.
2. **Triveni, M., Panua, R. and Sen, D.** "Effects of Variant Positions of Cold Walls on Narural Convection in a Triangular Cavitiy", Journal of Applied Fluid Mechanics, vol. 9(1), 2016.

2015

1. **Triveni, M.K., Panua, R. and Sen, D.** "Natural convection in a partially heated triangular cavity with different configurations of cold walls.", Arabian Journal for Science and Engineering, vol. 40(11), pp. 3285-3297, 2015.
2. **Sen, D. and Ghosh, R.** "A computational study of very high turbulent flow and heat transfer characteristics in circular duct with hemispherical inline baffles.", Int J Mech Aerosp Ind Mechatron Manuf Eng, vol. 9, pp. 985-990, 2015.
3. **Triveni, M., Sen, D. and Panua, R.** "Convective Heat Transfer Analysis in an Arch Enclosure.", Frontiers in Heat and Mass Transfer (FHMT), vol. 6(1), 2015.
4. **Sen, D., Bose, P.K., Panua, R. and Das, A.K.** "Numerical analysis of laminar natural convection in a quadrantal cavity with a hot bottom and cold curved walls." Heat Transfer Research, vol. 46(7), 2015.

2014

1. **Triveni, M.K., Sen, D. and Panua, R.** "Laminar natural convection for thermally active partial side walls in a right-angled triangular cavity.", Arabian Journal for Science and EngineeringArabian Journal for Science and Engineering, vol. 39(12), pp. 9025-9038, 2014.
2. **Sen, D., Triveni, M. and Panua, R.** "Numerical Analysis of Natural Convection in a Right-Angle Triangular Enclosure.", Frontiers in Heat and Mass Transfer (FHMT), vol. 5(1), 2014.

2013

1. **Bose, P.K., Sen, D., Panua, R. and Das, A.K.** "Numerical Analysis of Laminar Natural Convection in a Quadrantal Cavity with a Solid Adiabatic Fin Attached to the Hot Vertical Wall.", Journal of Applied Fluid Mechanics, vol. 6(4), 2013.
2. **Bose, P., Sen, D., Panua, R., Das, A. and Sen, P.** "Laminar natural convection study in a quadrantal cavity using heater on adjacent walls.", Frontiers in Heat and Mass Transfer (FHMT), vol. 4(1), 2013.

REFERRED CONFERENCES

1. **S K Mandal, Bhiktor M. Sen and Dipak Sen** "A numerical investigation & multiple criteria decision-making approach on flow over cylinders at different orientations", Proceedings of the 48thNational Conference on Fluid Mechanics and Fluid Power (FMFP), 2021.

2. **SK Mandal, Arnab Deb, Dipak Sen** "Mixed Convective Heat Transfer with Surface Radiation in a Vertical Channel in Presence of Heat Spreader", Advances in Applied Mechanical Engineering, Springer, Singapore Vol.https://doi.org/10.1007/978-981-15-1201-8_7, 978-981-15-1200-1,(2020).

3. Kumar, R., Dev, K., Kumar, R., Sen, P. and Sen, D., 2020. Influence of Pulsating Flow on Thermal Characteristics in a Triangular Sharp-Edged Wavy Channel. In Advances in Thermofluids and Renewable Energy (pp. 113-126). Springer, Singapore.

4. **Paul, A., Sen, D. and Das, A.K.** "3-D numerical study of the effect of Reynolds number and baffle angle on heat transfer and pressure drop of turbulent flow of air through rectangular duct of very small height. ", Perspectives in Science, vol. 8, pp. 583-585, 2016.

5. **Sen, D., Panua, R., Sen, P. and Das, D.** "Thermodynamic analysis and cogeneration of a cement plant in India-a case study", International Conference on Energy Efficient Technologies for Sustainability, P.P 641-646, 2013.

RESEARCH GUIDANCE

Ph.D. (Completed: 1, Ongoing: 3)

[1] **Dr. Sandip Kumar Mandal** (2015 - 2019) Thesis title: Mixed convection with surface radiation in a rectangular channel with heat sources in presence of vortex generator and heat spreader.
Thesis defended on September 27, 2019

[2] **Mr. Raushan krishanan** (2018 - Present): Research Area: Thin film coating using nanoliquid
Current status: Ongoing

[3] **Mr. Sanjib Kalita** (2019 - present): Research Area: Pool boiling heat transfer
Current status: Ongoing

[4] **Mr. Jyotikalpa Bora** (2020 - present): Research Area: Use of high percentage of Methanol fuel in a Diesel Engine
Current status: Ongoing

M.Tech. (Completed: 9)

[1] **Mr. Dipanjan Paul** (2016 - 2018) Project title: Numerical analysis of laminar natural convection in a quadrantal cavity.

[2] **Mr. Pragyan Kumar Sarma** (2016 - 2018) [in Joint Supervision with Dr. Susanta Maity] Project title: MHD Boundary layer flow of reiner-philippoff nanofluid over a stretching sheet with thermal radiation.

[3] **Mr. Martn Koyu** (2016 - 2018) Project title: Numerical analysis of laminar natural convection in an isosceles triangular cavity.

[4] **Mr. Duyu Tani** (2016 - 2018): Project title: Numerical analysis of laminar natural convection in a right-angled triangular enclosure.

[5] **Mr. Sanjib Kalita** (2017 - 2019) Project title: Experimental study of pool boiling heat transfer on copper microstructure surface.

[6] **Mr. Ashutosh Singh** (2017 - 2019) Project title: Unsteady mixed convection in a rectangular channel over two cylinders at different inclination.

[7] **Mr. Shravan Kumar Yadav** (2017 - 2019) Project title: Numerical analysis on flow and heat transfer in a microchannel heat sink with different profile structures.

[8] **Mr. Prince Kumar** (2018 - 2020): Project title: A Three dimensional numerical analysis of unsteady laminar flow over two circular cylinders in tandem inside a rectangular channel during mixed convection.

[9] **Mr. Ranjan Kumar** (2018 - 2020): Project title: Study pool boiling heat transfer of particle coated copper surface through myristic acid.

ADMINISTRATIVE EXPERIENCES

- **Head, Department of Mechanical Engineering**, NIT Arunachal Pradesh (September 2021 - Present)
- **Chief Vigilance Officer (CVO)**, NIT Arunachal Pradesh (February 2018 - Present)
- **Co-ordinator, Unnat Bharat Abhiyan (UBA)** of NIT Arunachal Pradesh (February 2019 – September 2021)
- **Faculty-in-charge, Music & Drama,** NIT Arunachal Pradesh (February 2018 - Present)
- **Head, Department of Mechanical Engineering**, NIT Arunachal Pradesh (June 2016 - December 2018)
- **Chairman, Central Purchase Committee**, NIT Arunachal Pradesh (July 2015 - June 2016)
- **Warden, Deer Hall of Residence**, NIT Arunachal Pradesh (July 2015 - August 2016).

TEACHING

Theory courses

1. Fluid Mechanics I & II [*Undergraduates of NIT Arunachal Pradesh & NIT Agartala*]
2. Heat Transfer [*Undergraduates of NIT Arunachal Pradesh*]
3. Power Plant Engineering [*Undergraduates of NIT Arunachal Pradesh*]
4. Engineering Mechanics I & II. [*Undergraduates of NIT Agartala*]
5. Engineering Graphics I & II. [*Undergraduates of NIT Agartala*]
6. Two-phase flow and Boiling Heat Transfer [*Post Graduates of NIT Arunachal Pradesh*]
7. Advanced Fluid Mechanics and Heat Transfer [*Post Graduates of NIT Arunachal Pradesh*]
8. Refrigeration and Cryogenics [*Post Graduates of NIT Arunachal Pradesh*]

Laboratory courses

1. Fluid Mechanics Laboratory [*Undergraduates of NIT Arunachal Pradesh, NIT Agartala*]
2. Heat Transfer Laboratory [*Undergraduates of NIT Arunachal Pradesh*]
3. Lab – I *[Post Graduates of NIT Arunachal Pradesh]*

OTHER QUALIFICATIONS/AWARDS

- ✓ Qualified Graduate Aptitude Test in Engineering (GATE-2005).