

## **Bio-data**

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### **Educational Qualifications:**

Bachelor of Mechanical Engineering – 1990 (Jadavpur University, Kolkata, India)

Master of Mechanical Engineering – 1994 (Jadavpur University, Kolkata, India)

Ph.D. (Engineering) – 2008 (Jadavpur University, Kolkata, India)

### **Employment**

1990-1992	Service Engineer, Babcock & Wilcox (India) Ltd
1994-1998	Same as above
1998-1999	Proposal Engineer, ABB-ABL Limited
1999-2002	Lecturer in Mechanical Engineering, Cooch Behar Polytechnic
2002- 2004	Lecturer, Department of Power Engineering, Jadavpur University, Kolkata
2004- 2008	Senior Lecturer, Department of Power Engineering, Jadavpur University,
2008-2011	Reader, Department of Power Engineering, Jadavpur University
2011-2014	Associate Professor, Department of Power Engineering, Jadavpur University
2014- date	till Professorr, Department of Power Engineering, Jadavpur University

### **Administrative post held**

2014-2016, Head, Department of Power Engg., Jadavpur University

2014-2015, Member of the Executive Council of Jadavpur University

### **Area of Research**

Heat transfer using Nanofluid, CFD, Alternative fuel & Environmental pollution.

**Ph.D. Thesis Guided:** Completed – 3

## Research publications:

### Journal

1. **Amitava Dutta**, Apurba Kumar Santra and Ranjan Ganguly, “Microfluidic concentration enhancement of bio-analyte by temperature gradient focusing via Joule heating by DC plus AC field: A numerical approach”, *ASME, Journal of T.S.E.A.*, 13, 061002 (2021).
2. **Amitava Dutta**, Apurba Kumar Santra., and Ranjan Ganguly., “Non-linear temperature gradient focusing of DNA in a microfluidic channel with patterned surface charges: a numerical study” *Journal of T.S.E.A.* NOVEMBER 2022, Vol. 14 / 114501-1-6; doi.org/10.1115/1.4054911
3. T. Bar, C. Basu, M. Das, A. K. Santra, S. Sen, “Simulation of heat transfer and dissipation in targets used in nuclear astrophysics experiments”, *Nuclear Instruments and Methods in Physics Research Section B: Beam Interactions with Materials and Atoms* 2019, vol-449, pp-105-116.
4. M. Das, M. Sarkar, A. Datta, A. K. Santra, “An experimental study on the combustion, performance and emission characteristics of a diesel engine fuelled with diesel-castor oil biodiesel blends”, *Renewable energy* 2018, Vol-119, pp174-184.
5. P. K. Das, A. K. Mallik, R. Ganguly, A. K. Santra “Stability and thermophysical measurements of TiO<sub>2</sub> (anatase) nanofluids with different surfactants”, *Journal of Molecular Liquids* 2018, vol-254, pp-98-107.
6. M. Das, M. Sarkar, A. Datta, A. K. Santra “Study on viscosity and surface tension properties of biodiesel-diesel blends and their effects on spray parameters for CI engines”, *Fuel* 2018, vol-220, pp769-779
7. M. Das, A. Chakraborty, A. Datta, A. K. Santra, “Experimental studies on burning characteristics of methanol, diesel, and sunflower biodiesel fuels”, *Combustion Science and Technology* 2017, vol-189 (2), pp-213-230
8. PK Das, N Islam, AK Santra, R Ganguly, “Experimental investigation of thermophysical properties of Al<sub>2</sub>O<sub>3</sub>–water nanofluid: Role of surfactants” *Journal of Molecular Liquids* 2017, vol-237, pp-304-312.
9. P.K. Das, A.K. Mallik, R. Ganguly, A.K. Santra, “Synthesis and characterization of TiO<sub>2</sub>–water nanofluids with different surfactants” *International Communications in Heat and Mass Transfer* 2016, Vol-75, pp-341-348.
10. K. Sarkar and A.K. Santra, “Effect of Aspect Ratio on Heat Transfer in a Differentially Heated Square Cavity Using Copper-Water Nanofluid”, *International Journal of Micro-Nano Scale Transport*, 2011, vol.2. Issue 2-3. pp 151-165
11. K. Sarkar, A.K. Santra, “Effect of aspect ratio on heat transfer in a differentially heated square cavity using non-Newtonian Nanofluid” *Int. J. Emerg. Technol. Adv. Eng* 2013, Vol 3, pp443-450,
12. A.K. Santra, S. Sen and N. Chakraborty, “Particle Diameter Effect on Heat Transfer Due to Natural Convection Using Cu-Water Nanofluid – A Non-Newtonian Approach”, *International Journal of Emerging Multidisciplinary Fluid Sciences*, 2010, Vol-2, Issue 2-3, pp 205-214
13. A.K. Santra, N. Chakraborty and S. Sen, “Prediction of Heat Transfer due to Presence of Copper-Water Nanofluid Using Resilient-propagation Neural

Network”, *International Journal of thermal Sciences*, 2009, vol. 48, Issue 7, pp 1311-1318

14. A.K. Santra, S. Sen and N. Chakraborty, “Effect of Particle Size on Heat Transfer in a Differentially Heated Square Cavity Using Copper-Water Nanofluid” *Journal of Energy Heat and mass Transfer*, 2010, Vol 32, pp 29-44.
15. A.K. Santra, S. Sen and N. Chakraborty, “Study of Heat Transfer due to Laminar Flow of Copper-Water Nanofluid Through Two Isothermally Heated Parallel Plates”, *International Journal of Thermal Sciences*, 2009, vol. 48, Issue 2, pp 391-400.
16. N. Chakraborty, I. Mukherjee, A.K. Santra, S. Chowdhury, S. Chakraborty, S. Bhattacharya, A. P. Mitra, C. Sharma, “Measurement of CO<sub>2</sub>, CO, SO<sub>2</sub>, and NO emissions from coal-based thermal power plants in India”, *Atmospheric Environment*, 2008, Vol 42 (6), pp. 1073–1082.
17. A.K. Santra, S. Sen and N. Chakraborty, “Study of Heat Transfer Characteristics of Copper-Water Nanofluid in a Differentially Heated Square Cavity with Different Viscosity Models” *Journal of Enhanced Heat Transfer*, 2008, 15 (4), pp. 273-287.
18. A.K. Santra, S. Sen and N. Chakraborty, “Study of Heat Transfer Augmentation in a Differentially Heated Square Cavity Using Copper-Water Nanofluid” *International Journal of thermal Sciences*, 2008, vol.47. Issue 9, pp 1113-1122.
19. A.K. Santra, S. Sen and N. Chakraborty, “Comparison of Heat Transfer Augmentation in a Square Cavity Using Nanofluid Following Two Different Thermal Conductivity Models” *Journal of Energy Heat and mass Transfer*, 2007, Vol-29, pp 289-310.
20. I. Mukherjee, M. Chakraborty, A. K. Santra, N. Chakraborty, “Measurement of Green House Gas Emission from thermal Power Plants in and around Kolkata”, *Indian Journal Of Air Pollution Control*, 2005, Vol-V, No. 1, pp 94-100.
21. A. K. Santra, D. Misra and S. Ray, “Analysis of Laminar Natural Convection from a Discrete Isothermal Flushed Heater Mounted on the Side Wall of a Partially Open Rectangular Enclosure”, *Numerical Heat Transfer-A*, 1996, Vol: 29, pp 211-225.

#### Conference Proceedings:

1. **Amitava Dutta**, Apurba Kumar Santra, and Ranjan Ganguly, “Numerical study of concentration of bio-analyte by temperature gradient focusing via Joule heating in a microfluidic channel”, *ICESD 2020. International Conference on Energy and Sustainable Development*, Jadavpur University, Kolkata-700032, India, February 14-15,2020
2. **Amitava Dutta**, Apurba Kumar Santra, Ranjan Ganguly and Mintaz Ahmed, “Numerical investigation of non-linear Joule heating effects on an electrokinetic flow in a microfluidic channel”, *Proceedings of the International Conference on Advancements in Mechanical Engineering (ICAME 2020)* held at Aliah University, Kolkata during 16 to 18 January 2020
3. **Das M**, Sarkar M, Datta A, Santra AK. The Effects of Castor Oil Methyl Ester Blending with Diesel on Combustion, Performance and Emission Characteristics of

- a Compression Ignition Engine. Proc. 1st Int. Conf. Mech. Eng. Jadavpur Univ. Kolkata India, January 4 – 6, Kolkata: 2018
4. P.K Das, N. Islam, K. Zakaria, B. Roy, A.K. Santra, R. Ganguly, Measurement of surface tension and contact angle of different nanofluids: An experimental study, 24<sup>th</sup> National and 2<sup>nd</sup> International ISHMT-ASTFE Heat and Mass Transfer Conference (*IHMTC-2017*), 27-30 December 2017.
  5. **Das M**, Chakraborty A, Sarkar M, Datta A, Santra AK. Comparative Study of Burning Characteristics of Biodiesel, Diesel and their Blends using Porous Sphere Experimental Technique. Proc. 6th Int. 43rd Natl. Conf. Fluid Mech. Fluid Power, MNNITA, Allahabad, U.P., India, December 15-17, 2016, p. 1–3.
  6. **Das M**, Sarkar M, Datta A, Santra AK. Performance and Emission Studies of Blended Fuel of Castor Oil Methyl Ester (COME) and Diesel in Compression Ignition Engine. Proc. 6th Int. 43rd Natl. Conf. Fluid Mech. Fluid Power, MNNITA, Allahabad, U.P., India, December 15-17, 2016, p. 1–3.
  7. P.K. Das, R. Ganguly, A.K. Santra, Experimental investigation on thermal conductivity of TiO<sub>2</sub>-water based nanofluids, 6<sup>th</sup> International and 43<sup>rd</sup> National Conference on Fluid Mechanics and Fluid Power (*FMFP-2016*) December 15-17, 2016, MNNIT, Allahabad, U.P., India
  8. **Das M**, Chakraborty A, Datta A, Santra AK. Study on Burning Characteristics of Biofuel-Kerosene Blends Using Porous Sphere Setup. Proc. 23rd Natl. Heat Mass Transf. Conf. 1st Int. ISHMT-ASTFE Heat Mass Transf. Conf. Thiruvananthapuram, India, December 17-20, 2015, p. 1–6.
  9. P.K. Das, A.K. Santra and R. Ganguly, PERFORMANCE ANALYSIS OF DIRECT ABSORPTION SOLAR COLLECTOR USING MULTIPHASE MODEL, Proceedings of the 23<sup>rd</sup> National Heat and Mass Transfer Conference and 1<sup>st</sup> International ISHMT-ASTFE Heat and Mass Transfer Conference (*IHMTC-2015*), 17-20 December, 2015, Thiruvananthapuram, India.
  10. M. Das, A. Chakraborty, A. Datta, A. K. Santra, "Experimental Investigation of Burning Characteristics of Kerosene and Its Blend with Ethanol". Proceedings of the International Conference on Advanced Materials and Energy Technology (ICAMET-2014), page 169-170, December 17-19, 2014, IEST Shibpur, Howrah, West Bengal, India.
  11. P. K. Das, A. K. Santra and R. Ganguly, "Numerical investigation of heat transfer coefficient of nanofluids flow through a vertical pipe", Proceedings of the International Conference on Advanced Materials and Energy Technology (ICAMET-2014) December 17-19, 2014.
  12. P. K. Das, A. K. Santra and R. Ganguly, "Study of Performance of Direct Absorption Solar Collector using Nanofluids", Proceedings of the 5th International & 41st National Conference on Fluid Mechanics and Fluid Power , December 12-14, 2014, IIT Kanpur.
  13. Krishanu Sarkar & Apurba. K. Santra, "Study of Forced Convection in a Microchannel Using Two Different nanofluids", Proceedings of the 5th International & 41st National Conference on Fluid Mechanics and Fluid Power , December 12-14, 2014, IIT Kanpur.

14. P. K. Das and A. K. Santra, "CFD Simulation on Laminar Forced Convection Heat Transfer of Cu-Water Nanofluids inside a Vertical Tube", International Conference on Electronics and Communication Systems (ICECS'14), Feb 13-14, 2014 KCE, Coimbatore, India
15. P. K. Das, A. K. Santra and R. Ganguly, "Numerical Study of Forced Convective Heat Transfer of Nanofluids through a Long Straight Tube", Proceedings of International Conference on Frontiers in Chemical Engineering (ICFCE 9-11th December 2013).
16. Krishanu Sarkar and A.K. Santra, "Study of Heat Microchannel Using a Newtonian Nanofluid", Proceedings of 58th Congress of ISTAM 18 to 21 December 2013, BESU, Shibpur Howrah.
17. Krishanu Sarkar and A.K. Santra, "Study of Heat Transfer due to Laminar Forced Convection of Nanofluid through Microchannel", Proceedings of the 22nd National and 11th International ISHMT-ASME Heat and Mass Transfer Conference December 28-31, 2013, IIT Kharagpur, India
18. Krishanu Sarkar and A.K. Santra, "Effect of Aspect Ratio on Heat Transfer in a Differentially Heated Square Cavity Using Non-Newtonian Nanofluid", International Conference on Energy Resources & Technologies for Sustainable Development (ICERTSD) Feb 07-09, 2013, INDIA
19. A.K. Santra, S. Sen and N. Chakraborty, "Dependence of Heat Transfer on Particle Size due to Laminar Natural Convection Using Copper-Water Nanofluid", Proceedings of the 19th National & 8th ISHMT-ASME Heat and Mass Transfer Conference 2008, JNTU Hyderabad, India. Paper no. 469.
20. A.K. Santra, S. Sen and N. Chakraborty, "A Correlation for Heat Transfer in a Differentially Heated Square Cavity Using Copper-Water Nanofluid", Proceedings of International Conference on Recent Trends in Nanoscience and Technology – 2006, 8-9 December, 2006 Jadavpur University, Kolkata, pp 160-164.
21. A.K. Santra, S. Sen and N. Chakraborty, "Analysis of Heat Transfer Augmentation due to Natural Convection in a Differentially Heated Square Cavity using Nanofluid", Proceedings of the 33rd National & 3rd International Conference on Fluid Mechanics and Fluid Power, December 7, 2006 Indian Institute of Technology Bombay, Mumbai – 400 076 India.
22. A.K. Santra, S. Sen and N. Chakraborty, "Study of Enhancement of Heat Transfer Due to Flow of Nanofluid inside a Rectangular Duct with Isothermal Heat Source at Top and Bottom" Proceedings of the 18th National & 7th ISHMT-ASME Heat and Mass Transfer Conference 2006, IIT Guwahati, India. pp-1307-1314.
23. A.K. Santra, S. Sen and N. Chakraborty, "Analysis of Heat Transfer Due to Laminar Natural Convection in a Square Cavity Using Nanofluid Utilizing Bruggemann Model", National Conference on Nano-Science and Technology, JU, Kolkata, January, 2005
24. A.K. Santra, S. Sen and N. Chakraborty, "Analysis of Laminar Natural Convection In A Square Cavity Using Nanofluid" Proceedings of the 31st National Conference on Fluid Mechanics and Fluid Power, 2004. pp.240-248.

25. A. K. Santra, D. Misra and S. Ray, "Analysis of Laminar Natural Convection from a Discrete Isothermal Protruded Heater Mounted on the Side Wall of a Partially Open Rectangular Enclosure", 16th National and 5th ASME-ISHMT Heat and Mass Transfer Conference, 2002, pp 466-471.

**Additional Information:**

Member, Institute of Engineers (India)

Acted as Deputy co-ordinator of the DST SAP-II Project titled 'Distributed Generation' **(Ref. No. F.3-31/2012(SAP-II) dated 7/11/2012)**

Acted as co-ordinator of the RUSA funded Project titled 'Preparation and characterization of nano-biofuels and study of their performance in IC engines' **(Ref. No. R-11/543/19 dated 11.06.2019)**