

Dr. ANIL KUMAR SHARMA

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CAREER SUMMARY

- Expertise in carrying out thermal hydraulic experiments related to safety investigation of Fast Breeder Reactors.
- Specialization in **Computational Fluid Dynamics** (CFD) and Heat Transfer.
- Design and Development of advanced technologies for Fast Reactor systems.

PROFESSIONAL EXPERIENCE

- **March 20th, 2020 Onwards:**

Professor, Department of Mechanical Engineering, Faculty of Engineering and Technology, Jamia Millia Islamia, New Delhi 110 025

- **November 15th, 1995 to March 19th, 2020:**

At Indira Gandhi Centre for Atomic Research (IGCAR), Department of Atomic Energy, Government of India, Kalpakkam, Tamilnadu, India. IGCAR is an Indian government research organization engaged in broad based multidisciplinary programme of scientific research and advanced engineering directed towards the development of Fast Breeder Reactor Technology.

Scientific Officer/G & Head, PT&DHRSS/ Thermal Hydraulics Division & Faculty (Engineering Sciences), Homi Bhabha National Institute, Mumbai at IGCAR, Kalpakkam

Responsible for planning, design and experimentation related to post accident heat removal potential of core catcher (where fragmented core debris settle after a severe accident), interaction of molten fuel with sodium coolant during its travel from core to core catcher, propagation of sodium fires in the case of leak in sodium lines, interaction of sodium with critical concrete structures, sodium fire suppression devices and other studies related to R&D on safety issues of fast reactors. Basic and application oriented CFD studies towards design of the experiments and validation of the chosen options for the reactor have also been carried out.

MAJOR ASSIGNMENTS

- Assessor at **National Assessment and Accreditation Council** (NAAC), Bangalore.
- Expert/Member at **All India Council and Technical Education** (AICTE), New Delhi.
- Served as an External Expert in the Board of Studies (BOS) of the Department of Mechanical Engineering at Delhi Technological University (DTU)-Delhi.
- Departmental Coordinator during 2024-25 for **MOOC courses from SWAYAN and NPTEL** of the Faculty of Engineering and Technology, JMI, New Delhi.
- Departmental Coordinator of **Minors and Honors Programs** of Faculty of Engineering and Technology, JMI, New Delhi.
- Member at Faculty of Engineering and Technology of **Additional Programmes** in faculty.
- Member at Faculty of Engineering and Technology of **Sponsored Research Coordination Committee (SRCC)**, JMI New Delhi.
- Member committee at Faculty of Engineering and Technology to scrutinize the applications and to recommend names for **Research Award -2024**, JMI New Delhi.
- Completed NEP 2022 orientation and sensitization program under **Malviya Mission Teacher Training program (MM-TTP)** of UGC by MM-TTC, JMI, New Delhi from 20th May to 30th May 2024.
- Session chair at 4th Biannual **International Conference FLAME 2024** held at Amity University, UP, Noida.
- External examiner for UG/PG programmes at **Aligarh Muslim University** (AMU), UP.
- Numerical investigations and experimental campaigns for heat transfer studies on the scaled water model of FBR internal core catcher.
- CFD modeling of lower plenum of reactor system under severe accident conditions with parametric studies based on source temperature, heat generation rates and geometrical variations of the Indian FBR of 500 MWe capacity.
- Optimization of chimney configuration in in-vessel core catcher for effective natural convective heat transfer.
- Study on IAEA Research Contract No. 18086. "**Sodium Properties and Safe Operation of Experimental Facilities in Support of the Development and Deployment of Sodium-cooled Fast Reactors** (NAPRO)".
- Development of computational model for fluid flow and heat transfer in non-circular sub-channel geometries of nuclear fuel bundle.
- Development of sub-channel analysis framework to study the effect of cross flow mixing on thermal hydraulic safety margins.
- **Expert Member** in Doctoral Committees for Ph.D. scholars in HBNI-IGCAR and a member in M. Tech. Committees constituted by the HBNI-Standing Committee in Engineering Sciences at IGCAR.
- **Session Chair** at the 11th International and 51st National Conference on Fluid Mechanics and Fluid Power (FMFP 2024) December 21-23, 2024, AMU Aligarh, India.

- **Reviewer** for prestigious international peer-reviewed journals and conferences, including Annals of Nuclear Energy, Nuclear Engineering and Design, International Journal of Thermal Sciences, and International Journal of Heat and Mass Transfer.
- **M.Tech and PhD External Thesis Examiner** for various reputed institutes and central universities, evaluating doctoral research and contributing to academic excellence.

EDUCATION

2001-2003: M. Tech. (Mechanical Engineering: specialization in Thermal Engineering), Indian Institute of Technology (IIT), Madras, Chennai, India.

July 2004 – October 2007: Ph.D., Indian Institute of Technology (IIT)-Madras, Chennai (Research Advisor: **Prof. C. Balaji**, Department of Mechanical Engineering, IITM).

Thesis: Conjugate Turbulent Natural Convection and Surface Radiation in Enclosures

COMPUTER PROFICIENCY

- Programming languages- **FORTRAN 77**
- Software Packages – **Fluent, Phoenix, PV Elite, AutoCAD**

INVITED LECTURE DELIVERED

- Advances in Thermal Design of Engineering Systems using Computational Fluid Dynamics & Heat Transfer Tools, 24th April 2007, **ASAN College of Engineering**, Tamil Nadu, India.
- Application of Computational Fluid Dynamics (CFD) in Mechanical Engineering, 10th Jan 2008, MAPS, **Nuclear Power Corporation of India (NPCIL)**, Kalpakkam- 603102, Tamil Nadu, India.
- An Introduction to Conduction and Radiation Heat Transfer, 27 - 29th March 2008, **ASAN College of Engineering**, Tamil Nadu, India.
- Modeling Turbulent Natural Convection and a Case Study to Analysis the Safety Issues of Indian Fast Reactors, 3rd Feb 2010, **SSN College of Engineering**, Chennai, Tamil Nadu, India.
- Studies on Post Accident Heat Removal in Fast Breeder Reactors, Jan 2014, MAPS, **Nuclear Power Corporation of India (NPCIL)**, Kalpakkam- 603102, Tamil Nadu, India.
- Areas of Cutting Edge Research in Industries/Research Organizations on the Topic of “An Overview of Engineering Safety Issues of Pool Type Fast Breeder Reactors” at **Indian Institute of Technology (IIT)**, Madras, India.

- Fundamentals of Nuclear Engineering and General Awareness at **RMK College of Engineering and Technology**, Chennai, India, 2014, 2015.
- Represented IGCAR as an exhibitor at “**103rd Indian Science Congress**” hosted by **University of Mysore, Mysore** from 3rd to 7th January 2016. The focal theme of the congress was the science & technology for indigenous development in India.
- Application of Heat Transfer and Fluid Dynamics in Nuclear Industries at **National Institute of Technology (NIT)**, Pondicherry, India, July 2017.
- Keynote speaker at 1st International Conference on Future Learning Aspects of Mechanical Engineering (FLAME-2018), **Amity School of Engineering & Technology**, Uttar Pradesh, India, 3-5 October, 2018.
- **Expert Lecture** in the One Week AKTU Sponsored Online Faculty Development Program on “**Computational Fluid Dynamics for Heat and Fluid Flow Applications**” during February 22–26, 2021, at Mechanical Engineering Department, Raj Kumar Goyal Institute of Technology, Ghaziabad.
- Delivered a **Keynote Lecture** titled “A systematic CFD approach to present the innovative concept of safe in- vessel core debris retention after severe accident in a fast reactor” in an **International Conference on Future Technologies**, 2021 (ICOFT 2021).
- **Expert talk** on “Nuclear power: The energy source for sustainable development” in the two weeks faculty development program on “Alternative energy sources for sustainable development” organised by **Delhi Technical University, (DTU)**, Delhi during January 3-14-2024.
- **Keynote speaker** at the International Conference on Pervasive Computational Technologies (ICPCT-2025) held during 8th - 9th February 2025 at GL Bajaj Institute of Technology and Management (GLBITM), Greater NOIDA, Uttar Pradesh, India.

MEMBERSHIP IN SCIENTIFIC SOCIETIES

- **Life Member (LM - 7153)**, Indian Nuclear Society (**INS**), Mumbai.
- **Member (M 1390354)**, The Institution of Engineers (**IEI**) (India).
- **Life Member** (Membership No. 1493), Indian Society for Heat and Mass Transfer (**ISHMT**)

AWARDS/HONORS

- Qualified **Graduate Aptitude Test in Engineering** (GATE) in 2000 and 2001, a national examination for admission with fellowship to postgraduate programme in the discipline of Mechanical Engineering.

- **Scientific & Technical Excellence Award-2009** in recognition of outstanding contributions to the departmental programme (DAE, **Government of India**).
- Chairperson for one of the technical sessions of the ISHMT/ASME Heat and Mass Transfer Conference 2011 held at IIT Madras.
- **Group Achievement Award-2014** for the activity titled as “Experimental Verification and Qualification of Equipments towards Demonstrating Safety of Sodium System of PFBR” in recognition of outstanding contributions to the departmental programme under DAE (Excellence in Science, Engineering and Technology) award scheme.
- Received **Best paper award-2019** for presenting a poster on “Protection of Fast Breeder Reactors after severe whole core meltdown accident” in Hindi scientific seminar (2019) held at IGCAR, Kalpakkam.
- Research Scholar **won prestigious Best M.Sc. (Engineering) thesis** award for the thesis titled “Depiction of solidification and fragmentation processes of molten fuel during its relocation in sodium” from Homi Bhabha National Institute (HBNI) Mumbai Centre at IGCAR, 2019.
- **Hindi Sevi Samman-2019** for excellent contribution towards official language implementation in field of Science and Technology by Department of Atomic Energy, **Government of India**
- **Received Best paper award-2019** for a paper titled “Aerosol Penetration in Submerged Gravel Bed Scrubber”, during the 7th Asian Symposium on Computational Heat Transfer and Fluid Flow-2019, September 3-7, 2019, **Tokyo University of Science, Tokyo, Japan.**
- Attended AICTE sponsored six days online short term training programme on *Electric vehicles: An opportunity for India* from 7th September to 12th September 2020.
- **Master student received outstanding student award of HBNI for the year 2019** project titled “Process Design of Continuous Precipitator and Dryer for Production of Dried Heavy Metal Oxides” from Homi Bhabha National Institute (HBNI) Mumbai, 2020.
- **Advisory Board Member** for International Conference on Future Technologies, 2021.
- **Advisory Board Member** for an International Conference on advances in Heat Transfer and Fluid Dynamics (**AHTFD-2022**), Aligarh Muslim University, Aligarh, India, 1-3rd December 2022.

CONTRIBUTION TO THE ACADEMIC PROGRAMME

- **Visiting Faculty** during 2010 to 2016 at **Delhi University (DU)** in Department of Physics and Astrophysics, M. Tech in Nuclear Science and Technology.
- **Adjunct Faculty** during 2017 to 2019 at *RMK College of Engineering and Technology*, Chennai, India.
- **External Examiner** for viva voce examination of M. Tech projects at IIT Madras.
- **Expert Member** in Oral Examination board of Ph.D. programme at Centre for Research, Anna University, Chennai, Tamilnadu.

COURSES TAUGHT

1. *Advanced Heat and Mass Transfer*
2. *Nuclear Reactor Thermal Hydraulics*
3. *Fast Breeder Reactors and Nuclear Engineering Materials*
4. *Nuclear Reactor Systems Design*
5. *Fluid Dynamics and Thermal Hydraulics*
6. *Foundations in Fluid Mechanics*
7. *Gas Dynamics*
8. *Advanced Fluid Mechanics*
9. *Foundations in Heat and Mass Transfer*

RESEARCH GUIDANCE

- **Ph.D.**, A. Moorthi, Estimation of Mixing Parameters to Characterize the Key Thermal Hydraulic Margins Related to Safety Issues of Nuclear Reactor, 2018.
- **Ph.D.**, Arjun Pradeep, Heat and Mass transfer in Enclosed Spaces of Sodium cooled Fast Reactors, 2021.
- **Ph.D.**, Rosy Sarkar, Transient Analysis of Reactor Components during Power Raising and Crash Cooling 2021.
- **Ph.D.**, Anuj Dubey, Development of multiphase core thermal hydraulic models for investigation of fuel melting during severe accidents, 2021.
- **Ph.D.**, Vidhyasagar Jhade, Heat transfer analysis to study the cooling capability of core catcher assembly under fuel meltdown scenario in fast reactors, 2022.
- **M.Tech.**, Abdullah Ghazi, 3-D Investigation of Coupled Natural Convection and Surface Radiation Heat Transfer and Fluid Flow Characteristics in Interconnected Cavities, **Jamia Millia Islamia (A Central University)**, New Delhi, 2024.
- **M.Tech.**, MD Naseer, Natural Convection Analysis around the Finned Surfaces, **Jamia Millia Islamia (A Central University)**, New Delhi, 2023.
- **M.Tech.**, MD Sohail Alam, Development of Mathematical Model to Simulate the Heat Transfer and Fluid Flow Characteristics in Heat Oven, **Jamia Millia Islamia (A Central University)**, New Delhi, 2023.

- **M.Tech.**, Tabasum Iqbal, Development of Computational Model for Laminar Flow in Different Pipe Configurations for different Reynolds Numbers, **Jamia Millia Islamia (A Central University)**, New Delhi, 2023
- **M.Tech.**, Sahil R. Bhat, Turbulent natural convection in an enclosure due to in-built heat sources. **Jamia Millia Islamia (A Central University)**, New Delhi, 2022.
- **M.Tech.**, Sajid Raza, Laminar natural convection due to heat source of different geometrical shapes placed inside an enclosure, **Jamia Millia Islamia (A Central University)**, New Delhi, 2022.
- **M.Tech.**, Sahil R. Bhat, Turbulent natural convection in an enclosure due to in-built heat sources. **Jamia Millia Islamia (A Central University)**, New Delhi, 2022.
- **M.Tech.**, **Ahmad Jamal**, CFD simulation of laminar and turbulent natural convection and its interaction with surface radiation in an annular space, **Jamia Millia Islamia (A Central University)**, New Delhi, 2021.
- **M.Tech.**, Dijo.K. David, Experimental and Numerical Investigation of Natural Convection in Debris Bed towards the Development and Validation of Core catcher, 2013. Indian Institute of Technology (**IIT Madras**) Chennai.
- **M.Tech.**, Sakshi Mukhija, Feasibility Study of Ex-Vessel Core Retention in SFR after Severe Accident, University of Delhi (**DU**), Delhi, 2015.
- **M.Tech.**, Swapnil Shivaji Patil, Heat Transfer Analysis to Study the Cooling Capability of Core Catcher Assembly under Fuel Meltdown Scenario in a Fast Breeder Reactor, Pandit Deendayal Petroleum University (**PDPU**), Gujarat, India, 2015.
- **M.Tech.**, Lokesh Verma, Decay heat removal from degraded core debris settled in upper and lower plenum of a typical 500 MWe FBR, Department of Physics and Astrophysics, University of Delhi (**DU**), Delhi, June, 2016.
- **M.Tech.**, Rakhi, Investigation on heat transfer enhancement using multi-tray core catcher in SFR, Department of Physics and Astrophysics, University of Delhi (**DU**), Delhi, June, 2016.
- **M.Tech.**, S Pattanayak, Variable reluctance type speed sensor for high temperature and acidic environment, Homi Bhabha National Institute (**HBNI**) Mumbai, July, 2018.
- **M.Tech.**, Ram Balak Yadav, Process Design of Continuous Precipitator and Dryer for Production of Dried Heavy Metal Oxides, Homi Bhabha National Institute (**HBNI**) Mumbai, July, 2019.

- **M.Sc. (Engineering Sciences)**, Gogad Pratik Kishor, Numerical study of water hammer transients in Parallel pump feed water system, **Homi Bhabha National Institute (HBNI), Mumbai** 2015.
- **M.Sc. (Engineering Sciences)**, Anuj Dubey, Development of multiphase core thermal hydraulic model, **Homi Bhabha National Institute (HBNI) Mumbai**, 2017.
- **M.Sc. (Engineering Sciences)**, Avinash Kumar Acharya, Depiction of solidification and fragmentation processes of molten fuel during its relocation in sodium, **Homi Bhabha National Institute (HBNI) Mumbai**, 2018.
- **B.Tech.**, Ishak J C Thomas, Prasad, Himanshu, CFD Analysis of Flow Characteristics in Narrow Channels, Department of Mechanical Engineering, National Institute of Technology (**NIT**), Puducherry, Karaikal (May 2018).
- **B.Tech.**, B. Aravind, S. Gowri Shankar, A. SabrishSibi, CFD Studies on Enhancement in Passive Cooling of Source with Embedded Cooling Chimney, Department of Mechanical Engineering, National Institute of Technology (**NIT**), Puducherry, Karaikal (May 2018).
- **UG**, Elimination of warpage rejection in a pillar cover of automotive parts, Mr. M. Ambigaibalan, ST- 516177- 6, The Institute of Engineers (India) Kolkata, (August, 2015).
- **UG**, Numerical study of flow characteristics in an eccentric annular space, Mr. V. Karthikeyan, ST543419-5, The Institute of Engineers (India) Kolkata, (August, 2016).
- **UG**, Enhancement of performance of the three stage reciprocating compressor, Mr. Akhilesh Kumar Shukla, ST 572793-1, **The Institute of Engineers (India) Kolkata** (February, 2016).
- **UG**, Fabrication and performance evaluation of mobile hydrostatic test facility, M. Kalairaj, ST- 557598-8, The Institute of Engineers (India) Kolkata (February 2019).
- **M.Tech.**, Ram Balak Yadav, Process design of continuous precipitator and dryer for production of heavy metal oxide, **Homi Bhabha National Institute (HBNI) Mumbai**.
- **UG**, (Mechanical Engineering), S. Vidhyakant, P. Yuvaraj, Investigation on influence of fin parameters on natural convection heat transfer, Department of Mechanical Engineering, **Jepiaar Engineering College, affiliated to Anna University, Chennai**, (March 2019).
- **UG**, Frranc Steeve I.M (16BME1101), project report titled 'Investigations on the interaction of surface radiation and turbulent natural convection in enclosures with

different source and sink positions', submitted to School of Mechanical and Building Sciences, **Vellore Institute of Technology (VIT) Chennai** (March 2020).

- **B.Tech**, Sarthak Gautam, Mohd Junaid Khan, Areeb Khan, Vivek Sharma, Fahad Farid project report "Enhancement of natural convection heat transfer in cylindrical enclosure with internal heat source" **Jamia Millia Islamia (A Central University), New Delhi, 2021.**
- **B.Tech**, Ameer Altaf, Yusuf Siddiqui, Abdur Ranheem, Muhammad Ikhtlaq Mir project report titled "Conjugate natural convection and surface radiation in attic shaped enclosure" **Jamia Millia Islamia (A Central University), New Delhi, 2022.**
- **B.E**, Sabir Khan, Mohd arif Ansari, Mohd Mehsar project report titled "Enhancement of human safety during crash in new car assessment program with additional IOT device" **Jamia Millia Islamia (A Central University), New Delhi, 2022.**
- **B.Tech**, Mariyam Fatima, Md Adil Umar, Dilshad Rahbar, Syed Affan Ahmad, project report titled "Natural Convection Heat Transfer to determine optimum placement of a Heat Generating Source within an Enclosure" **Jamia Millia Islamia (A Central University), New Delhi, 2023.**
- **B.Tech**, Mohd Sonu, Sandeep Yadav, Tanna Charan Sai, Osama, project report titled "CFD analysis of flow characteristics in arterial flows" **Jamia Millia Islamia (A Central University), New Delhi, 2024.**

PERSONAL DETAILS

- Father's Name: Shri S.B. Sharma
- Date of Birth : June 30, 1971
- Marital Status : Married

REFERENCES

1. **Prof. C. Balaji**, Professor, Department of Mechanical Engineering, Indian Institute of Technology (IIT) Madras, Chennai – 600 036. **Contact No.: 9444877357** (M) Email: balaji@iitm.ac.in
2. **Prof. K. Velusamy**, Former-Associate Director and Professor, Nuclear Systems Analysis Group, Indira Gandhi Centre for Atomic Research (IGCAR), Department of Atomic Energy, Government of India, Kalpakkam- 603 102, **Contact No.: 7810067345** (M), Email: kvelu@igcar.gov.in.

PUBLICATIONS

A. International Journals

1. Investigation of combined natural convection and radiation in a square enclosure with a partition, Mariyam Ali, **Anil Kumar Sharma**, Sādhanā, Academy Proceedings in Engineering Sciences, Springer, Sādhanā 48, 184 (2023). <https://doi.org/10.1007/s12046-023-02235-8>.
2. Natural convection phenomena in a liquid metal pool due to relocated and heap of heat-generating core debris: Numerical study, V. Jhade, **Anil Kumar Sharma**, Nuclear Engineering and Design, [Volume 385](#), (2021), 111520.
3. Enhancement in heat transfer from heat generating core debris using a passive approach in fast reactors: 3-D CFD analysis, V. Jhade, **Anil Kumar Sharma**, International Journal of Thermal Sciences, Volume 160, (2021), 106636.
4. Experimental investigation of the evolution of fuel clad ballooning using real-time x-ray imaging and its microstructural studies, Rosy Sarkar, V.D. Vijayanand, Avinash Kumar Acharya, **Anil Kumar Sharma**, R Suresh Kumar, G Prasad Reddy, Transactions of the Indian Institute of Metals, (2021).<https://doi.org/10.1007/s12666-021-02285-8>.
5. Investigations on the interaction of surface radiation and turbulent natural convection in enclosures with multiple positions of source and sink, Frranc Steeve I.M, Vidhyasagar Jhade, **Anil Kumar Sharma**, Joseph Daniel, Sādhanā, Academy Proceedings in Engineering Sciences, Springer, [Volume 46 \(2021\)](#) - Sādhanā. <https://doi.org/10.1007/s12046-021-01590-8>.
6. Modeling, verifications and safety feedback assessment of annular fast reactor fuel pins with severe accident code MITRA, Anuj Dubey, **Anil Kumar Sharma**, Nuclear Engineering and Design, Volume 364, (2020), 110684.
7. Design of core catchers for sodium cooled FBRs – Challenges, V. Jhade, P.K. Shukla, A. Jasmin Sudha, **Anil Kumar Sharma**, E.H. Rao, S.K. Das, G. Lydia, D. Ponraju, B.K. Nashine, P. Selvaraj, Nuclear Engineering and Design, 359 (2020) 110473.
8. Numerical and experimental investigation of air-water system to simulate bubble dynamics in liquid sodium pool, Arjun Pradeep, **Anil Kumar Sharma**, M. P. Rajiniganth, N. Malathi, M. Sivaramakrishna, D. Ponraju, B. K.Nashine, P. Selvaraj, Brazilian Journal of Chemical Engineering, **2019**, 36(4), 1475-1485.
9. In-pin fuel motion dynamics for beginning-of-life core in fast breeder reactors, Anuj Dubey, T. Sathiyasheela, **Anil Kumar Sharma**, Nuclear Engineering and Design, 347 (2019) 31-44.

10. Cooling of heat generating core debris using multiple passive jets in a liquid metal pool of LMFBR, Vidhyasagar Jhade, **Anil Kumar Sharma**, Progress in Nuclear Energy 116 (2019) 137–147.
11. Numerical investigation of single bubble dynamics in liquid sodium pool, Arjun Pradeep and **Anil Kumar Sharma**, Sādhanā (2019) 44: 56, Springer.
12. Reactor dynamics of in-pin fuel motion in fast breeder reactors, Anuj Dubey, T. Sathiyasheela, **Anil Kumar Sharma**, Nuclear Engineering and Design, 340 (2018) 431-446.
13. Semi empirical model for wet scrubbing of bubble rising in liquid pool of sodium-cooled fast reactor, Arjun Pradeep, **Anil Kumar Sharma**, Nuclear Engineering and Technology, 50 (2018) 849 – 853.
14. A review of sub-channel thermal hydraulic codes for nuclear reactor core and future directions, A. Moorthi, **Anil Kumar Sharma**, K. Velusamy, Nuclear Engineering and Design, 332 (2018) 329–344.
15. Ballooning in fuel clad: The first of its kind approach for its investigation in fast reactors, Rosy Sarkar, R. Suresh Kumar, S. Jalaldeen, **Anil Kumar Sharma**, K. Velusamy, International Journal of Pressure Vessels and Piping, 160 (2018) 24–33.
16. Investigation of cross flow mixing on rod bundle safety margins using sub-channel analysis framework, A. Moorthi, **Anil Kumar Sharma**, Nuclear Engineering and Design, 335 (2018) 30–43.
17. Melting and multi-phase flow modelling of nuclear fuel in fast reactor fuel rod, Anuj Dubey and **Anil Kumar Sharma**, International Journal of Thermal Sciences, 125 (2018) 256-272.
18. Laminar fluid flow and heat transfer in non-circular sub-channel geometries of nuclear fuel bundle, A. Moorthi and **Anil Kumar Sharma**, Progress in Nuclear Energy, 103 (2018) 243-253.
19. Thermo-mechanical behaviour of primary system components of future FBR during crash Cooling: A numerical simulation, Rosy Sarkar, Suresh Kumar R, Jalaldeen S, **Anil Kumar Sharma**, Velusamy K, Nuclear Engineering and Design, 326(2018) 162 – 174.
20. Investigation of Molten Fuel Coolant Interaction Phenomena using Real Time X-ray Imaging of Simulated Woods Metal-Water System, Avinash Acharya, **Anil Kumar Sharma**, C.H.S.S. Avinash, Sanjay Das, Lydia Gnanadhas, Basant Kumar Nashine, P. Selvaraj, Nuclear Engineering and Technology, 49 (2017) 1442-1450.
21. Integrated CFD Investigation of Heat Transfer Enhancement using Multi-Tray Core Catcher in SFR, Rakhi, **Anil Kumar Sharma**, K. Velusamy, Annals of Nuclear Energy,

104 (2017) 256–266.

22. Thermal Hydraulic Parametric Investigation of Decay Heat Removal from Degraded Core of a Sodium Cooled Fast Breeder Reactor, Lokesh Verma, **Anil Kumar Sharma**, K. Velusamy, Nuclear Engineering and Design, 313 (2017) 285–295.
23. Conjugate Laminar Natural Convection and Surface Radiation in Enclosures: Effects of Protrusion Shape and Position, Swapnil Patil, **Anil Kumar Sharma**, K. Velusamy, International Communications in Heat and Mass Transfer, 76 (2016) 139–146.
24. Buckling Analysis of Sodium-to-Sodium Heat Exchanger Tubes, G Gupta, **AK Sharma**, Applied Mechanics and Materials 852, 632-638, Trans Tech Publications, 2016.
25. Investigation of Fragmentation Phenomena and Debris Bed Formation during Core Meltdown Accident in SFR Using Simulated Experiments, AmalaM ,**Anil Kumar Sharma**, J. Anandan, B. Malarvizhi, Sanjay Kumar Das, B. K. Nashine, P. Chellapandi, Nuclear Engineering and Design , 292 (2015) 87–97.
26. Numerical Simulations of Periodic Vortex Shedding Formed in the Wake of an Object Placed in V- shaped narrow channel, **Anil Kumar Sharma**, J. Anandan, M. Kumaresan, Lydia Gnanadhas, B.K. Nashine, P. Chellapandi, International Journal on Design & Manufacturing Technologies, Vol. 8 No. 2 (2014) 1-9.
27. Post Accident Heat Removal: Numerical and Experimental Simulation, Sanjay K. Das, **Anil Kumar Sharma**, E. Hemanth Rao, J. Anandan, C. H. S. S. Avinash, R. Kondala Rao, Murthy S. S., Malarvizhi B, Lydia G, KumaresanM, J. Harvey, D. Ponraju, B. K. Nashine and P. Chellapandi, Nuclear Engineering and Design, 265 (2013) 1246–1254.
28. A CFD Based Approach for Thermal Hydraulic Design of Main Vessel Cooling System of Pool Type Fast Reactors, V. Vivek, **Anil Kumar Sharma** and C. Balaji, Annals of Nuclear Energy, 57 (2013) 269–279.
29. Interaction Effects between Laminar Natural Convection and Surface Radiation in Tilted Square and Shallow Enclosures, V. Vivek, **Anil Kumar Sharma** and C. Balaji, International Journal of Thermal Sciences, 60 (2012) 70-84.
30. Laminar Natural Convection in an Open Cylindrical Cavity, Prashant Goyal, Juby Abraham, **Anil Kumar Sharma**, K. Velusamy and P. Chellapandi, International Journal on Design & Manufacturing Technologies, 5(2) (2011) 29 – 41.
31. Transient Heat Transfer Analysis towards a Robust Design of Leak Collection Tray for Sodium Cooled Fast Reactors, **Anil Kumar Sharma**, K. Velusamy, P. Chellapandi and S.C. Chetal, International Journal on Design & Manufacturing Technologies, 5(2)(2011) 6 - 13.

32. PATH – An Experimental Facility for Natural Circulation Heat Transfer Studies Related to Post Accident Thermal Hydraulics, Lydia Gnanadhas, **Anil Kumar Sharma**, B. Malarvizhi, S.S. Murthy, E.V.H.M. Rao, M. Kumaresan, S.S. Ramesh, J. Harvey, B.K. Nashine, P. Chellapandi and S.C. Chetal, Nuclear Engineering and Design, 241(2011) 3839 – 3850.
33. Interaction of Natural Convection Flow in Multiple Open Cavities, **Anil Kumar Sharma**, Arjun Pradeep, K. Velusamy, P. Chellapandi, Annals of Nuclear Energy, 38 (2011) 1906 - 1915.
34. Degradation Behaviour of Limestone Concrete Under Limited Time Sodium Exposure **Anil Kumar Sharma**, Sanjay Kumar Das and F. C. Parida, International Journal on Design & Manufacturing Technologies, 4(2) (2010) 6 - 11.
35. Turbulent Natural Convection of Heat Generating Low Prandtl Fluids in a Cylindrical Enclosure, **Anil Kumar Sharma**, K. Velusamy and C. Balaji, International Journal of Heat and Technology, 28 (1) (2010) 9-17.
36. Experimental Study on Thermo-Chemical Phenomena During Interaction of Limestone Concrete with Liquid Sodium Under Inert Atmosphere, Sanjay Kumar Das, **Anil Kumar Sharma**, F. C. Parida and N. Kasinathan, Construction & Building Materials, 23 (2009) 3375 – 3381.
37. Turbulent Natural Convection of Sodium in a Cylindrical Enclosure with Multiple Internal Heat Sources: A Conjugate Heat Transfer Study, **Anil Kumar Sharma**, K. Velusamy and C. Balaji, International Journal of Heat and Mass Transfer, 52 (2009) 2858 – 2870.
38. Experimental and Numerical Analysis of Natural Convection in Geometrically Modeled Core Catcher of the Liquid Metal Cooled Fast Reactor, **Anil Kumar Sharma**, Sanjay Kumar Das and J. Harvey, Nuclear Technology, 165 (2009) 43-52.
39. Conjugate Transient Natural Convection in Cylindrical Enclosure with Internal Volumetric Heat Generation, **Anil Kumar Sharma**, K. Velusamy and C. Balaji, Annals of Nuclear Energy, 35 (2008) 1502 -1514.
40. Interaction of Turbulent Natural Convection and Surface Thermal Radiation in Inclined Square Enclosures, **Anil Kumar Sharma**, K. Velusamy and C. Balaji, Heat and Mass Transfer, 40 (2008) 1153 - 1170.
41. Turbulent Natural Convection in an Enclosure with Localized Heating from Below, **Anil Kumar Sharma**, K. Velusamy and C. Balaji, International Journal of Thermal Sciences, 46 (2007) 1232 - 1241.

42. Conjugate Turbulent Natural Convection with Surface Radiation in Air Filled Rectangular Enclosures, **Anil Kumar Sharma**, K. Velusamy, C. Balaji and S. P. Venkateshan, International Journal of Heat and Mass Transfer, 50 (2007) 625 - 639.
43. A Numerical Study of Natural Convection from a Localized Heat Source in the Lower Plenum of a Fast Breeder Reactor under Failed Conditions, **Anil Kumar Sharma** and C. Balaji, Heat and Mass Transfer, 40 (2004) 853 - 858.

B. Chapters in book series

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