

Curriculum Vitae

Name Dr. -Ing. Sameer Khandekar
Date of Birth November 10, 1971 (Jabalpur MP, India)
Nationality Indian
Designation Assistant Professor (at IITK, since September 2004)
Present Address Department of Mechanical Engineering
Indian Institute of Technology Kanpur
Kanpur (UP) - 208 016 INDIA
Tel: +91-512-259-7038, Fax: +91-512-259-7408, E-mail: samkhan@iitk.ac.in



Academic qualifications

- Ph. D. University of Stuttgart, Stuttgart, Germany, 2004.
- M. Tech. (Thermo-fluid Sciences) Indian Institute of Technology Kanpur, Kanpur (UP), India, 2000.
- B. E. (Mechanical Engineering) - Government Engineering College, Jabalpur (MP), India, 1993.

Academic achievements

- George Grover Young Scientist Medal from International Heat Pipe Committee, 2007
- Young Scientist Award by the Department of Atomic Energy, Government of India, 2005.
- Doctoral dissertation grade 1 on a scale of 4 (Highest possible grade).
- First position in the M. Tech. Program (batch of Thermo-fluid Sciences), IIT Kanpur, India with CPI = 9.7/10.
- Five university gold medals for various achievements including first position in the undergraduate Mechanical Engineering program of Government Engineering College, Rani Durgavati Vishwavidyalaya, Jabalpur (MP) India.
- National merit scholarship for the entire undergraduate education in India.

Fields of interest

- Energy systems, Two-phase heat transfer, Heat Pipes and Thermosyphons.

Industry experience

- Worked as Marine Power Plant Engineer (July 1994- June 1998) onboard seagoing merchant vessels for about four years (Larsen & Toubro Limited, Mumbai and Barber Ship Management, Malaysia), including one year as a trainee in naval workshop/ dry-docks.

Teaching experience

- Course instructor
 - Boiling and Condensation - (ME742: Postgraduate elective course)
 - Conduction and Radiation - (ME641: Postgraduate compulsory course)
 - Energy Conversion Systems - (ME301: Undergraduate compulsory course)
 - Heat and Mass Transfer - (ME341: Undergraduate compulsory course)
- Course tutor/ Laboratory Instructor
 - Heat Transfer Laboratory - (ME471: Undergraduate compulsory course)
 - Thermodynamics - (ESO202: Undergraduate compulsory course)
 - Communication Skills - (COM200: Undergraduate compulsory course)
 - Introduction to the Profession - (ME100: Undergraduate compulsory course)
- Special Courses
 - Invited Lecture Series (2 weeks) on Heat Pipe Science and Technology delivered at five universities in Thailand during September, 2006
 - Invited Course (Short Term - 24 hrs, 12 Graduate Students) on "Heat Pipe Science and Technology" - Summer Vacation 2005 (8 weeks) at Federal University of Santa Catarina, Florianópolis, Brazil
 - Quality Improvement Program (QIP) short term courses (03)
- Teaching Assistant during M. Tech. Program at IIT Kanpur

M. Tech. theses advising

- Completed: 15 (05 as co-supervisor)
- Ongoing students: 02

Ph.D. theses advising

- Ongoing students: 03 (01 as co-supervisor)

Topic 1: Flow boiling of ethanol-water mixtures in narrow channels

Topic 2: Two-phase passive cooling techniques for nuclear reactors

Topic 3: Droplet dynamics on textured engineered surfaces (in association with Dr. K. Muralidhar)

Reviewer

- ASME Journal of Heat Transfer, International Journal of Heat and Mass Transfer, International Journal of Thermal Sciences, AIAA Journal of Thermophysics and Heat Transfer, Applied Thermal Engineering, Chemical engineering Science, International Heat Pipe Conference, International Heat Pipe Symposium, Indian Society for Heat and Mass Transfer.

Sponsored research experience

- Micro-devices for process applications, sponsored by Department of Science and Technology, Government of India, ongoing since April 2007.
- Design and development of novel pulsating heat pipe based compact heat exchangers, sponsored by Department of Atomic energy, Board of Research in Nuclear Sciences, ongoing since March 2006.
- Development of pulsating heat pipes as space radiators, sponsored by Indian Space Research Organization (ISRO), ongoing since May 2005.
- Dropwise condensation and heat transfer over an inclined plate subjected to a vapor flux, sponsored by Board of Research in Nuclear Sciences, Department of Atomic Energy (BRNS), India, ongoing since May 2005 (along with Dr. K. Muralidhar).
- Development of High Dissipative Modular Electronic Packages, sponsored by European Commission, completed in March 2003 as part of doctoral assignment.

Administrative experience

Institute

- Treasurer of Alumni Association, IIT Kanpur since April 2008
- Nominated member of the academic senate of IIT Kanpur, December 2006 – November 2007.
- Nominated member of the academic senate of Indian Institute of Information Technology Design and Manufacturing Jabalpur (MP) during June 2006 - May 2008
- Chairman of Institute Transport Users Committee since June 2006
- Hostel warden (Hall VII) July 2005-June 2008, Warden-in-charge (March 2007-June 2008)

Department

- Departmental web-page coordinator since 01 September, 2007
- Member of B. Tech. Project Evaluation Committee from 01 June 2006 - 31 May 2007
- Member of Departmental Post Graduate Committee since December 2006
- Departmental Seminar Coordinator from 01 September 2005 - 31 August 2007
- Coordinator of the Heat Transfer and Refrigeration/AC Laboratory w. e. f August 2005
- Coordinator of winter industrial tour for B. Tech. students, December 2004

Short term courses

- Course Coordinator - Short Term course titled Modern Experimental Techniques in Mechanics of Fluids and Solids, IIT Kanpur, May 07-11, 2007 (in association with Dr. V. Venkitnarayanan, Department of Mechanical Engineering)
- Workshop Coordinator - National Workshop titled Fuel Cell Technology: Progress and Prospects, IIT Kanpur (supported by Shastri Indo-Canadian Institute, New Delhi), Kanpur (UP), March 2007
- Workshop Coordinator - National Workshop titled Fuel Cells: Power Device of the Future, IIT Kanpur, February 2006. (in association with Dr. A. K. Saha, Department of Mechanical Engineering)

Academic/Research visits

- Invited professor at Center for Thermal Sciences (CETHIL) at INSA-Lyon, France, May-July 2008 (10 weeks).
- Invited professor at Heat Pipe Laboratory, University of Chiang Mai, Chiang Mai, Thailand, September 2006 (2 weeks).
- Invited professor at the Federal University of Santa Catarina, Florianópolis, Brazil, May-July 2005 (10 weeks).

Conferences/Seminars/Workshops participation

1. 2nd Joint NTUS-IITK Workshop in Mechanical, Aerospace and Industrial Engineering, Kanpur, April 2008.
2. 2nd Research and Challenges (REACH) Symposium, Khajuraho (MP), India, March 2008.
3. 8th ASME/ISHMT Int. Heat and Mass Transfer Conference, Hyderabad, India, January, 2008.
4. International Workshop on Nuclear Thermal-Hydraulics, BARC, Mumbai, January, 2008.
5. 1st Joint NTUS-IITK Workshop in Mechanical, Aerospace and Industrial Engineering, Singapore, July 2007.
6. 14th International Heat Pipe Conference, Florianópolis, Brazil, April 2007.
7. 1st Research and Challenges (REACH) Symposium, Parwanoo (HP), India, March 2007.
8. 7th ASME/ISHMT Heat and Mass Transfer Conference, Guwahati, India January 2006.
9. Introduction to Fuel Cell Technology, two day workshop at IIT Guwahati, India, January 2006.
10. 13th International Heat Pipe Conference, Keynote Speaker, Shanghai, China, November 2004.
11. 5th Minsk Int. Heat Pipes Seminar, Minsk, Belarus, September 2003.
12. Annual Thermodynamic Colloquium, Verein Deutscher Ingenieure, Wernigerode, Germany, October 2002.
13. 12th International Heat Transfer Conference, Grenoble, France, August 2002.
14. 3rd Int. Conf. on Transport Phenomenon in Multiphase Systems, Kielce, Poland, June 2002.
15. 5th ASME/ISHMT Heat & Mass Transfer Conference, Kolkata, India, January 2002.
16. Hydrogen Energy Technology Workshop - IIT, Chennai, India, December 2001.
17. 6th International Heat Pipe Symposium, Chiang Mai, Thailand, November 2000.
18. Vehicle Emissions and Control Technologies Workshop - IIT, Kanpur, India, July 1999.
19. NACOMM'93 - National Conference on Machines and Mechanisms, IIT, Kharagpur, India, December 1993.
20. MECHVIBES'93 - National Mechanical Engineering Seminar, REC Kurukshetra, India, April 1993.
21. National Seminar: Preserve Planet Earth, Institution of Engineers, Jabalpur, India, October 1993.

List of publications

Archival journal publications

1. Rao M. and Khandekar S., **Simultaneously developing flows under conjugated conditions in a mini-channel array: Liquid crystal thermography and computational simulations**, Heat Transfer Engineering Journal, Vol. 30, Issue 10, 2009 (article in press).
2. Yang H., Khandekar S. and Groll M., **Performance Characteristics of Pulsating Heat Pipes as Integral Thermal Spreaders**, Int. J. of Thermal Sciences, May 2008 (available online doi: 10.1016/j.ijthermalsci.2008.05.017).
3. Khandeksar S., Gautam A. P. and Sharma P., **Multiple Quasi-Steady States in a Closed Loop Pulsating Heat Pipe**, Int. J. of Thermal Sciences, May 2008 (available doi:10.1016/j.ijthermalsci.2008.04.004).
4. SoundraPandian K. K., Rao M. and Khandekar S., **Remote Access Real Time Laboratory: Process Monitoring and Control through Internet Protocol**, Int. J. of Mechanical Engineering Education, Vol. 36, No. 2, 2008.
5. Khandekar S., Joshi Y. and Mehta B., **Thermal Performance of Closed Two-Phase Thermosyphon using Nanofluids**, Int. J. of Thermal Sciences, Vol. 47, No. 6, pp. 659-667, 2008.
6. Yang H., Khandekar S. and Groll M., **Operational limit of closed loop pulsating heat pipes**, Applied Thermal Engineering, Vol. 28, No. 1, pp. 49-59, 2008.
7. Khandekar S. and Groll M., **Pulsating Heat Pipes: Attractive Entrants in the Family of Closed Passive Two-Phase Systems**, J. of Energy, Heat and Mass Transfer (Special Issue), ISSN: 0970-9991, Vol. 26, pp. 99-115, 2004.
8. Khandekar S. and Groll M., **An Insight into Thermo-Hydraulic Coupling in Pulsating Heat Pipes**, Int. J. of Thermal Sciences, Vol. 43/1, pp. 13-20, 2004.
9. Charoensawan P., Khandekar S., Groll M., and Terdtoon P., **Closed Loop Pulsating Heat Pipes-Part A: Parametric Experimental Investigations**, Applied Thermal Engineering, Vol. 23/16, pp. 2009-2020, 2003.
10. Khandekar S., Charoensawan P., Groll M., and Terdtoon P., **Closed Loop Pulsating Heat Pipes-Part B: Visualization and Semi-Empirical Modeling**, Applied Thermal Engineering, Vol. 23/16, pp. 2021-2033, 2003.
11. Khandekar S., Dollinger N. and Groll M., **Understanding Operational Regimes of Pulsating Heat Pipes: An Experimental Study**, Applied Thermal Engineering, Vol. 23/6, pp. 707-719, 2003.
12. Groll M. and Khandekar S., **Pulsating Heat Pipes: A Challenge and Still Unsolved Problem in Heat Pipe Science**, Archives of Thermodynamics, Begell House, ISSN 1231-0956, Vol. 23/4, pp. 17-28, 2002.
13. Khandekar S., Schneider M., Schäfer P., Kulenovic R. and Groll M., **Thermofluiddynamic Study of Flat Plate Closed Loop Pulsating Heat Pipes**, Microscale Thermophysical Engineering, Vol. 6/4, pp. 303-318, 2002.

Refereed conference papers and other articles

1. Rao M. and Khandekar S., **Thermo-hydrodynamics of developing flows in a mini-channel array: Liquid crystal thermography and numerical study**, in: Proc. 8th ASME/ISHMT Int. Heat and Mass Transfer Conf., Hyderabad, India, 2008.
2. Khandekar S. and Gupta A., **Embedded Pulsating Heat Pipe Radiators**, in: Proc. 14th International Heat Pipe Conference (IHPC), Florianópolis, Brazil, April 22-27, 2007.
3. Mehta B. and Khandekar S., **Two-phase Closed Thermosyphon with Nanofluids**, in: Proc. 14th International Heat Pipe Conference (IHPC), Florianópolis, Brazil, April 22-27, 2007.
4. Khandekar S. and Groll M., **Insights into the Performance Modes of Closed Loop Pulsating Heat Pipes and Some Design Hints**, in: Proc. 7th ASME/ISHMT Joint International Conference, IIT Guwahati, January 2006.

5. Khandekar S., Manyam S., Groll M. and Pandey M., **Two-phase Flow Modeling of Closed Loop Pulsating Heat Pipes**, in: Proc. 13th Int. Heat Pipe Conf., Shanghai, China, 2004.
6. Yang H., Khandekar S. and Groll M., **Operational Characteristics of Flat Plate Closed Loop Pulsating Heat Pipes**, in: Proc. 13th Int. Heat Pipe Conf., Shanghai, China, 2004.
7. Tang X., Hammel E., Findl W., Schmitt T., Thumfart D., Groll M., Schneider . and Khandekar S., **Study of AlSiC Metal Matrix Composite Based Flat Plate Thin Heat Pipe**, in: Proc. 13th Int. Heat Pipe Conf., Shanghai, China, 2004.
8. Khandekar S., Groll M., Luckchoura V., Findl W. and Zhuang J., **Micro Heat Pipes for Stacked 3D Microelectronic Modules**, in: Proc. of InterPACK'03, ASME Int. Electronic Packaging Technical Conf. and Exhibition, Paper No. 35109, ASME CD-ROM, ISBN 0-7918-3674-6, Hawaii, USA, 2003.
9. Khandekar S., Welte T. and Groll M., **Thermal Management of 3D Microelectronic Modules - Experimental and Simulation Studies**, in: Proc. 12th Int. Heat Pipe Conf., pp. 384-389, Moscow, Russia, 2002.
10. Khandekar S., Cui X. and Groll M., **Thermal Performance Modeling of Pulsating Heat Pipes by Artificial Neural Network**, in: Proc. 12th Int. Heat Pipe Conf., pp. 215-219, Moscow, Russia, 2002.
11. Khandekar S., Groll M., Charoensawan P. and Terdtoon P., **Pulsating Heat Pipes: Thermo-fluidic Characteristics and Comparative Study with Single Phase Thermosyphon**, in: Proc. 12th Int. Heat Transfer Conf., ISBN-2-84299-307-1, Vol. 4, pp. 459-464, Grenoble, France, 2002.

Book/Book chapter/ Book Adaptation

1. Groll M. and Khandekar S., **Micro Heat Pipes** (invited review article), in: G. F. Hewit (Ed.) Heat Exchanger Design Handbook 2002, - Chapter on Microscale Boiling and Condensation, Begell House, ISBN-10: 1567001815, 2002.
2. Book titled **Introduction to Fluid Mechanics** by E. Shaughnessy, I. Katz and J. Schaffer converted from FPS system to SI units, Oxford University Press, ISBN 0-19-567783-8 (Indian Edition), 2005.
3. Book titled **Engineering Thermodynamics** by Lynn D. Russell and George. A. Adebisi converted from FPS system to SI units, Oxford University Press, ISBN 0-19-568905-4 (Indian Edition), 2007.

Keynote lectures/ Invited Talks

International

1. **Roadmap to Realistic Modeling of Closed Loop Pulsating Heat Pipes**, 9th Int. Heat Pipe Symposium, Kuala Lumpur, Malaysia, 2008 (event to be held in November 2008).
2. **Phase-Change Heat Transfer Activities at IIT Kanpur**, CETHIL, Center of Thermal Sciences, INSA de Lyon, France, May 2008.
3. **Understanding Thermo-hydrodynamics of Pulsating Heat Pipes**, Chaing Mai University, Thailand, September 2006.
4. **Emerging Importance of Microscale Heat Transfer**, Federal University of Santa Catarina, Florianopolis, Brazil, June 2005.
5. **Closed and Open Loop Pulsating Heat Pipes**, Proc. 13th Int. Heat Pipe Conf., Shanghai, China, 2004.
6. **State of the Art on Pulsating Heat Pipes**, 2nd ASME Int. Conf. on Minichannels and Microchannels, Rochester (NY), USA, 2004.
7. **On the Definition of Pulsating Heat Pipes: An Overview**, Proc. 5th Minsk Int. Conf. (Heat Pipes, Heat Pumps and Refrigerators), ISBN-985-6456-32-0, pp. 116-128, Minsk, Belarus, 2003.
8. **Pulsating Heat Pipes: Progress and Prospects**, Proc. 3rd Int. Conf. on Energy and Environment, Vol. 1, pp. 723-730, Shanghai, China, 2003.

National

1. **Remote Access Real Time Laboratory via Internet**, QIP short-term course titled Modern Experimental Techniques in Mechanics of Fluids and Solids, IIT Kanpur, May 2007.
2. **Non-Intrusive Temperature Measurement Techniques**, QIP short-term course titled Modern Experimental Techniques in Mechanics of Fluids and Solids, IIT Kanpur, May 2007.
3. **World Energy Resources: Status and Perspectives**, QIP short term course, IIT Kanpur (Course coordinator: Dr. B. P. Pundir), May 2007.
4. **Introduction to Transport Phenomena**, Short Term Refresher Course, Instrument Research and Development Establishment (DRDO), Dehradun, November 2006.
5. **Transport Phenomena in Nanofluids**, QIP short term course on Recent Trends in Advanced Composites (Course coordinator: Dr. J. Ramkumar), November, 2006.
6. **Opportunities for Interdisciplinary Research in Energy Technology**, National Conference of Electrical and Mechanical Engineering, Guru Ramdas Khalsa Institute of Technology, Jabalpur (MP), March 2006.
7. **Introduction to Fuel Cell Technology: Energy Outlook and Research Directions**, National Workshop titled Fuel Cells: Power Device of the Future, IIT Kanpur, Kanpur (UP), February 2006.

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