# CURRICULUM VITAE AFZAL HUSAIN

## **PERSONAL INFORMATION**

## **AFZAL HUSAIN, PhD**

Assistant Professor Department of Mechanical and Industrial Engineering Sultan Qaboos University Mailing Address College of Engineering, PO Box 33, Al-Khoudh, PC-123 Sultanate of Oman Tel: +968-2414-1322 (Office) GSM: +968-93982173 Fax: +968.2414.1316 E-mail: afzal19@squ.edu.om



## EDUCATION AND EMPLOYMENT INFORMATION EDUCATIONAL

Feb. 2006 – Feb. 2010:	Ph.D. in Mechanical Engineering (Thermodynamics and Fluid Mechanics), Inha University Incheon, South Korea
Dissertation:	Numerical Analysis and Design Optimization of Pressure- and Electroosmotically-Driven Microchannel Heat Sinks
July 2003 – Dec. 2005:	M. Tech. in Mechanical Engineering (Thermal Sciences), Aligarh Muslim University Aligarh, India
Dissertation:	Rotating Rayleigh-Benard convection in large aspect-ratio enclosures.
July 1999 – June 2003:	B.E. in Mechanical Engineering, Aligarh Muslim University Aligarh, India
July 1996 – June 1999:	D.E. in Mechanical Engineering, Aligarh Muslim University Aligarh, India

## **EMPLOYMENT HISTORY**

Oct. 2012 – Present:	Assistant Professor, Department of Mechanical and Industrial Engineering, College of Engineering Sultan Qaboos University, Muscat, Sultanate of Oman
Sep. 2012 – Oct. 2012:	Visiting Faculty, Department of Mechanical and Industrial Engineering, College of Engineering Sultan Qaboos University, Muscat, Sultanate of Oman
Mar. 2010 – Aug. 2012	: Lecturer, Department of Mechanical Engineering, Inha University, Incheon, South Korea,

Mar. 2006 – Feb. 2010: Graduate Research Assistant, Department of Mechanical Engineering, Inha University, Incheon, South Korea

July 2004 – June 2005: Teaching Assistant, Department of Mechanical Engineering, Aligarh Muslim University, India

## AWARDS AND RECOGNITION

#### Awards:

- 1. Inha University Best Research Award 2009
- 2. Jungseok International Doctoral Fellowship, 2006 2010
- 3. MHRD (Govt. of India) Masters Fellowship, 2003 2005
- 4. Wakf Board India Undergraduate Scholarship, 1997-1999

#### **Recognition:**

1. Among the Marquis Who's Who in the World 2011 and 2014

## **TEACHING, ADVISING, AND COURSE DEVELOPMENT**

Lead the group for developing following courses including course outline, selection of text and reference books, design of lab experiments and preparing lab manuals:

- 1. Design of Thermal Systems
- 2. Computational Fluid Dynamics
- 3. Fundamentals of Turbomachinery
- 4. Computational Turbulence Modeling

#### **Courses Taught (Graduate level):**

- 1. Computational Fluid Dynamics
- 2. Computational Turbulence Model

#### **Courses Taught (Undergraduate level):**

Fluid Mechanics, Design of Thermal Systems, Advanced Engineering Mathematics, Applied Numerical Methods

Thermodynamics, Fundamentals of Turbomachinery

Name of the student	Title of the thesis	Date	Role
Malik Said Salim Al Shereiqi	Designing, implementing and testing of single phase pipeline network hydraulic analysis program	Sept. 24, 2014	Nabeel Al-Rawahi*, Afzal Husain
Ali Khodae	Modeling and optimization of organic Rankine Cycle using generalized property correlations	June 15, 2016	Nasser Al-Azri*, Nabeel Al- Rawahi, Afzal Husain

### M.Sc. Thesis/Project Supervision:

#### \*Main Advisor

No.	Name	Title of application	Year	Role
1.	Nasser Khalifa Nasser Al-Kindi	Investigation of heat transfer efficiency using zinc oxide (ZnO) and aluminum oxide (Al <sub>2</sub> O <sub>3</sub> ) nanoparticles based fluid	2013	Internal Examiner
2.	Kifah Sulaiman At-Tobi	Application of capacitive resistance model for reservoir characterization in an Omani oil field	2014	External Examiner
3.	Abdulkareem Abubakar	An experimental study on the effect of polymer additives in oil-water flow in horizontal and inclined pipes	2014	External Examiner (PhD)
4.	Ahmed Zayed Al- Shaqsi	Towards Smart Grid Transformation a Case Study in Oman	2015	Chair
5.	Zainab Abdul Aziz Al-Ani	Desulfurization of Liquid Fuel by Deep Eutectic Solvent Using Small Channels	2016	External Examiner
6.	Ms. Thuraya Nasser Al Kharusi	Adsorption and wettability alteration of surfactant and polymer in alkaline-surfactant- polymer application	2016	Chair

### **M.Sc./PhD. Examination Committee:**

## **Undergraduate Final Year Project Supervision:**

No.	Title of application	Supervision	Year	No. of Students
1.	Design of Single-Phase and Phase Change Cooling Model for Heat Dissipating System	Afzal Husain*	2016	4
2.	Design of a hybrid jet impingement heat sink	Afzal Husain*	2015	5
3.	Design of liquid cooling system for high-end electronics	Afzal Husain*	2015	4
4.	Design and Fabrication of Flying Vehicle (SQU-FV-1)	R. Zaier*, A. Al Yahmedi, Afzal Husain*	2015	3
5.	Design of Inpipe Inspection Robot IIR-3	R. Zaier*, J. Abdo, Afzal Husain	2015	3
6.	Design and performance analysis of cold plate heat sink	Afzal Husain*	2014	3
7.	Computational Performance analysis of abrasive-jet perforating via coiled tubing for oil well completion	Afzal Husain*	2014	3

\*Main Supervisor

### **Students Advising:**

• Cohort 2013 (Mechanical Engineering) 24 Students

#### **Teaching Activities outside the Classroom:**

Conducted several workshops and tutorials on the Computational Fluid Dynamics Using ANSYS CFD including Design modeler, Mesh generation, Model setup, Post processing etc.

## SERVICES

### Administrative Positions:

- 1. Chair, Final Year Project Committee, Mechanical Engineering Department (2015 to present)
- 2. Member, Peer review of Teaching Committee, Mechanical Engineering Department (2014 to present)
- 3. Member, Textbook and Library Committee, Mechanical Engineering Department (2014 to present)
- 4. Chair, Seminar Committee, Mechanical Engineering Department (2014 to 2015)
- 5. Member, Publication and Web Committee, Mechanical Engineering Department (2013 to 2015)
- 6. Member, Final Year Project Committee, Mechanical Engineering Department (2015 to present)
- 7. Coordinator, Final year Design Competition, Mechanical Engineering Department (2015 to present)

#### **Professional Services:**

Chief Advisory Committee, The Second Indian National Conference on Science, Technology, Engineering, Mathematics and Sustainability, <u>https://sites.google.com/site/stemsconference2015/</u>

Co-guest Editor, The Second Indian National Conference on Science, Technology, Engineering, Mathematics and Sustainability, <u>https://sites.google.com/site/stemsconference2015/</u>

International Advisory Board, International conference on Recent Advances in Mechanical Engineering, RAME-2016.

#### **Reviewer Services:**

Reviewed several research articles for the following international journals:

- Applied Thermal Engineering
- Journal of Thermophysics and Heat Transfer
- Heat and Mass Transfer
- Microfluidics Nanofluidics
- The Journal of Engineering Research
- Geosystem Engineering
- Sustainable Technologies and Assessments
- International Journal of Marine Engineering
- Microsystem Technologies
- Engineering Applications of Computational Fluid Dynamics
- Journal of Mechanical Science and Technology
- Engineering with Computers

- Chemical Engineering Communications
- Progress in Computational Fluid Dynamics

Reviewer for regional and International Conferences

### **Professional Society Membership:**

- American Society for Mechanical Engineers (ASME)
- International Association of Engineers (IAENG)
- American Society for Engineering Education (ASEE)
- Member of IEOM society
- Oman Society of Engineers (OSE)

#### Services in Conferences:

- Member of International Advisory Board, international Conference on Recent Advances in Mechanical Engineering, India, 2016
- Member of Chief Advisory Committee, The First Indian National Conference on Science, Technology, Engineering, Mathematics and Sustainability 2015
- Member of Chief Advisory Committee, The Second Indian National Conference on Science, Technology, Engineering, Mathematics and Sustainability 2015
- Member of Chief Advisory Committee, The Third Indian National Conference on Science, Technology, Engineering, Mathematics and Sustainability 2016.

## SCHOLARLY ACHIEVEMENTS

### Summary:

I have been working in multidisciplinary area including development of heat-transfer enhancement techniques for electronics cooling using micro-channel technology, electrokinetic flow, micro-jet impingement, microfluidics, micromixing technology, artery blood flow, turbomachines and windcatchers.

- 1. Published more than 40 articles in International and National Journals, 39 full articles and 5 Abstracts in refereed conferences, and 2 technical reports for funded projects.
- 2. Established computational facility and leading the Computational Fluid Dynamics research group in MIE Department at Sultan Qaboos University.
- 3. Research collaborations with Prof. Kim at Inha University South Korea, Dr. Abdus Samad at IIITM India, Dr. Emad Elnajjar at UAEU AUE, Dr. Mohamed O. Hamdan at AUS UAE.

### **Refereed Journal Papers (Accepted/Published):**

- 1. P. Halder, F. A. Varghese, Afzal Husain, A. Samad, A numerical analysis of casing groove parameters on the performance of wave energy conversion device, Int. J. of Aerodynamics (In Press)
- 2. S. A. I. Bellary, **Afzal Husain**, Abdus Samad, Effect of design parameters on the performance of centrifugal pump delivering crude oil, The Journal of Engineering Research, (In Press)

- 3. **Afzal Husain**, F. A. Khan, N. Huda, M. A. Ansari, Mixing performance of split and recombine micromixer with offset inlets, Microsystem Technologies (2017), https://doi.org/10.1007/s00542-017-3516-4
- 4. P. Halder, **Afzal Husain**, M. Zunaid, A. Samad, Afzal Husain, Newtonian and Non-Newtonian Pulsatile Flows through an Artery with Stenosis, The Journal of Engineering Research, Vol. 14(2) (2017), 191-205
- 5. **Afzal Husain**, M. Ariz, Thermal performance of jet impingement with spent flow management, International Journal of Engineering, Vol. 30(10) (2017), 1599-1608
- 6. M. Zunaid, **Afzal Husain**, N.A. Ansari, A. Jindal, A. Gupchup, Numerical simulation of fluid flow and heat transfer in a wavy micro-channel at different Reynolds number. International Journal of Advanced Production and Industrial Engineering, Vol. 601, 2017, 01-03 [
- 7. **Afzal Husain**, M. Ariz, N.Z.H. Al Rawahi, M.Z. Ansari, Thermal performance analysis of a hybrid micro-channel, -pillar and jet-impingement heat sink. Applied Thermal Engineering, Vol. 102, 2016, pp 989-1000. [Q1]
- 8. **Afzal Husain**, A. Sonawat, S. Mohan, A. Samad, Energy efficient design of a jet pump by ensemble of surrogates and evolutionary approach. International Journal of Fluid Machinery and Systems, 9(3), 2016, 265-276. [Q3]
- 9. Mohd. Ariz, Noorul Huda, **Afzal Husain**, Thermal performance analysis of jet impingement with effusion scheme, Procedia Engineering, Vol. 127, 2015, 110-117.
- 10. **Afzal Husain**, Nasser A. Al-Azri, Abdus Samad, Kwang-Yong Kim, Performance Analysis of Wall-Unconfined Multiple Micro-Jet Impingement Heat Sink, The Journal of Engineering Research, Vol. 13, No. 1, 2016, 58-71. [Q3]
- 11. **Afzal Husain**, N.A. Al-Azri, N.Z. Al-Rawahi, A. Samad, Comparative performance analysis of multiple micro-jet impingement cooling models with different spent-flow schemes. Journal of Thermophysics and Heat Transfer, Vol. 30, No. 2, 2016, 466-472. [Q2]
- 12. S. A. I. Bellary, **Afzal Husain**, Abdus Samad, Effectiveness of meta-models for multi-objective optimization of centrifugal impeller, Journal of Mechanical Science and Technology, Vol. 28, No. 12, (2014), 4947-4957 [Q2]
- 13. **Afzal Husain**, Jun-Hee Kim, Kwang-Yong Kim, Performance Characterization of Laminar Flow in Multiple Microjet Impingement Heat Sinks, Journal of Thermophysics and Heat Transfer, Vol. 28, No. 1 (2014), 133-141, DOI: 10.2514/1.T4176 [Q2]
- Afzal Husain, Sun-Min Kim and Kwang-Yong Kim, Performance Analysis and Design Optimization of Micro-Jet Impingement Heat Sink, Heat and Mass Transfer, Vol. 49, No. 11 (2013) pp. 1613-1624. DOI: 10.1007/s00231-013-1202-3 [Q2]
- 15. **Afzal Husain**, Sun-Min Kim and Jun-Hee Kim and Kwang-Yong Kim, Thermal Performance Analysis and Optimization of Multiple Micro-Jet Impingements Cooling of High Power Light Emitting Diodes, Journal of Thermophysics and Heat Transfer, Vol. 27, No. 2 (2013) pp. 235-245, DOI: 10.2514/1.T3931 [Q2]
- Afzal Husain and Kwang-Yong Kim, Design Optimization of a Manifold Micro-channel Heat Sink through an Evolutionary Algorithm Coupled with a Surrogate Model, IEEE Trans. on TCPT, Vol. 3, No. 4, 2013, pp. 617-624 [IF: 0.944] DOI: 10.1109/TCPMT.2013.2245943. [Q2]
- 17. Mi-Ae Moon, **Afzal Husain**, Kwang-Yong Kim, Multi-objective optimization of a rotating cooling channel with staggered pin fins for heat transfer augmentation, International Journal for Numerical Methods in Fluids, vol. 68(7) 2012, pp. 922-938. [Q1]

- Shakhawat Hossain, Afzal Husain, Kwang-Yong Kim, Optimization of a micromixer with staggered herringbone grooves on the top and bottom walls, Engineering Applications of Computational Fluid Mechanics, vol. 5. No. 4, pp. 506-516 (2011) [Q2]
- 19. Jin-Hyuk Kim, Kwang-Jin Choi, **Afzal Husain** and Kwang-Yong Kim, Multi-objective optimization of circumferential casing grooves for transonic axial compressor, AIAA Journal of Propulsion and Power, vol. 27, no. 3, pp. 730-733, 2011. [IF: 0.884] [Q1]
- 20. **Afzal Husain** and Kwang-Yong Kim, Thermal transport and performance analysis of pressure- and Electroosmotically-driven liquid flow microchannel heat sink with wavy wall, Heat and Mass Transfer, vol. 47, No. 1, pp. 93-105, 2011. [IF: 0.786] [Q2]
- 21. Danish Ansari, **Afzal Husain**, Kwang-Yong Kim, Optimization and comparative study of obliqueand rectangular-fin microchannel heat sinks, Journal of Thermophysics and Heat Transfer, vol. 24, No. 4, pp. 849-852, 2010. [IF: 0.687] [Q2]
- 22. Jin-Hyuk Kim, Jae-Ho Choi, **Afzal Husain** and Kwang-Yong Kim, Performance enhancement of an axial fan blade through multi-objective optimization techniques, Journal of Mechanical Science and Technology, vol. 24, no. 10, pp. 2059-2066, 2010. [IF: 0.374] [Q2]
- 23. Danish Ansari, **Afzal Husain**, Kwang-Yong Kim, Multi-objective optimization of a grooved microchannel heat sink, IEEE Trans. on TCPT, vol. 33(4), pp. 767-776, 2010. [IF: 0.944] [Q2]
- 24. Mi-Ae Moon, **Afzal Husain**, Kwang-Young Kim, Shape optimization of a rotating cooling channel with pin fins, Transactions of KSME-B, vol. 34 (2010), 703-714. [Q3]
- 25. Shakhawat Hossain, **Afzal Husain**, Kwang-Yong Kim, Shape optimization of a micromixer with staggered-herringbone grooves patterned on opposite walls, Chemical Engineering Journal, vol. 162(2), (2010) 730-737. [IF: 3.074] [Q1]
- 26. Ki-Don Li, **Afzal Husain** and Kwang-Yong Kim, Multi-objective optimization of a Laidback fan shaped film-cooling hole using evolutionary algorithm, International Journal of Fluid Machinery and Systems, vol. 3, No. 2 (2010) 150-159. [Q3]
- 27. Shakhawat Hossain, Mubashshir Ahmad Ansari, **Afzal Husain**, Kwang-Yong Kim, Shape Analysis and optimization of a micromixer with a modified Tesla structure, Chemical Engineering Journal, vol. 158(2-3), (2010) 305-314. [IF: 3.074] [Q1]
- Jin-Hyuk Kim, Jae-Ho Choi, Afzal Husain and Kwang-Yong Kim, Multi-objective optimization of a centrifugal compressor through evolutionary algorithms, Proceedings of the Institution of Mechanical Engineers, Part A: Journal of Power and Energy, vol. 224, Number 5/2010, pp. 711-721, DOI: 10.1243/09576509JPE884. [Q2]
- 29. **Afzal Husain** and Kwang-Yong Kim, Enhanced multi-objective optimization of a microchannel heat sink through evolutionary algorithm coupled with multiple surrogates, Applied Thermal Engineering, vol. 30(13), 1683-1691, 2010. [IF: 1.922] [Q1]
- Afzal Husain, Ki-Don Li and Kwang-Yong Kim, Enhanced multi-objective optimization of dimpled channel using evolutionary algorithm and surrogate methods, International Journal for Numerical Methods in Fluids, vol. 66, pp. 742-759, 2011 (online, DOI: 10.1002/fld.2282). [IF: 0.936]
  [Q1]
- Afzal Husain, Kwang-Yong Kim, Analysis and optimization of electrokinetic microchannel heat sink, International Journal of Heat and Mass Transfer, vol. 52(21-22), pp. 5271-5275, 2009. [IF: 1.947]
  [Q1]
- Afzal Husain, Kwang-Yong Kim, Thermal optimization of a microchannel heat sink with trapezoidal cross-section, Journal of Electronic Packaging, vol. 131, 0210051~6, June 2009. [IF: 0.781]
  [Q2]

- 33. **Afzal Husain**, Kwang-Yong Kim, Electroosmotically enhanced microchannel heat sinks, Journal of Mechanical Science and Technology, vol. 23(3), 2009, pp. 814-822. [IF: 0.374] [Q2]
- Afzal Husain, M. F. Baig, H. Varshney, Turbulent rotating Rayleigh-Benard convection: spatiotemporal and statistical study, Journal of Heat Transfer, vol. 131(2), 022501-1~10, 2009. [IF: 0.959] [Q1]
- 35. **Afzal Husain**, Kwang-Yong Kim, Optimization of a microchannel heat sink with temperature dependent fluid properties, Applied Thermal Engineering, vol. 28(8-9), 2008, pp. 1101-1107. [IF: 1.922] [Q1]
- 36. **Afzal Husain**, Kwang-Yong Kim, Microchannel heat sink with designed roughness: analysis and optimization, Journal of Thermophysics and Heat transfer, vol. 22(3), 2008, pp. 342-351. [IF: 0.687] [Q2]
- Afzal Husain, Kwang-Yong Kim, Shape optimization of micro-channel heat sink for microelectronic cooling, IEEE Transactions on Components and Packaging Technologies, vol. 31(2), 2008, pp. 322-330. [IF: 0.944] [Q2]
- 38. **Afzal Husain**, Kwang-Yong Kim, Multiobjective optimization of a microchannel heat sink using evolutionary algorithm, Journal of Heat Transfer, vol. 130(11), 2008, pp. 114505-1~3. [IF: 0.959] [Q1]
- 39. **Afzal Husain**, Kwang-Yong Kim, Shape optimization of a trapezoidal micro-channel, Transactions of KSME-B, vol. 31(9), 2007, pp. 733-740. [Q3]
- 40. **Afzal Husain**, M. F. Baig, H. Varshney, Investigation of coherent structures in rotating Rayleigh-Benard convection, Physics of Fluids, vol. 18, 125105-1~14, 2006. [IF: 1.638] [Q1]

#### **Conference Proceedings:**

- Husain, A., Zunaid, M., Gautam, R., Microjet impingement with flow extraction, 1<sup>st</sup> International Conference on New Frontiers in Engineering, Science & Technology, New Delhi, India, January 8-12, 2018.
- 2. Zunaid, M., **Husain, A.**, Numerical heat transfer analysis of wavy microchannel at different Reynolds number, In: Proceedings of International Conference on Advanced Production and Industrial Engineering, ICAPIE 2017, DTU, New Delhi, Oct. 6-7, 2017.
- 3. Benkari, N. Kabir, I. F. S. A., **Husain, A**., Design and performance comparison of two patterns of wind-catcher for a semi-enclosed courtyard, In: International Conference on Green Energy and Applications, NUT, Singapore, March 25-27, 2017.
- 4. Safi, A., Hamdan, M.O., Elnajjar, E., **Husain, A.**, Chaotic mixing using vortex in a cylindrical micromixer, In: Proceedings of 10<sup>th</sup> International Conference on Thermal Engineering: Theory and Applications, SQU, Muscat, Oman, Feb. 26-28, 2017
- Halder, P., Husain, A., A numerical analysis of casing groove parameter on the performance of wave energy conversion device, In: Proceeding of 10<sup>th</sup> International Conference on Thermal Engineering: Theory and Applications, SQU, Muscat, Oman, Feb. 26-28, 2017
- Al-Oufi, K.S., Al-Gheilani, H.J., Al-Hinai, A.S., Alyaqhdan, S., Al-Amri, Y.N., Ariz, M., Husain, A., Thermal performance of jet impingement with spent flow management. In: Proceedings of *ICAMIS-Oman-2016 International Conference on Applied Mechanics and Industrial Systems, Muscat, Oman*, 6-8 Dec. 2016.
- 7. Halder, P., Varghese, F.A., Thampi, G.K.B.P., **Husain, A.**, Samad, A. 2016. Effect of casing groove width on the performance of wells turbine. In: *Proceedings of the ICAMIS-Oman-2016 International Conference on Applied Mechanics and Industrial Systems, Muscat, Oman*, 6-8 Dec. 2016.

- 8. Halder, P., **Husain, A.** 2016. Newtonian and non-Newtonian fluid pulsatile flow through artery. In: *Proceedings of the ICAMIS-Oman-2016 International Conference on Applied Mechanics and Industrial Systems, Muscat, Oman*, 6-8 Dec. 2016.
- 9. Fazil, S.A.I., **Husain, A.**, Benkari, N. 2016. Two and four sided windcatchers performance evaluation using numerical analysis. In: proceedings of The *ICAMIS-Oman-2016 International Conference on Applied Mechanics and Industrial Systems, Muscat, Oman*, 6-8 Dec. 2016.
- 10. Khan, F.A., Huda, N., **Husain, A.**, Hamdan, M.O., Ansari M.A. 2016. Split and recombination micromixer with offset inlets. In: *Proceedings of the RAME-2016 Recent Advances in Mechanical Engineering, New Delhi, India*, 14-15 Oct. 2016.
- 11. Zunaid, M., **Husain, A.**, Jindal, A., Gupchup, A. 2016. CFD analysis of wavy edge rectangular micro-channel heat sink at different Reynolds numbers. In: *Proceedings of the RAME-2016 Recent Advances in Mechanical Engineering, New Delhi, India*, 14-15 Oct. 2016.
- 12. Siddique, M.H., Manayilthodiyil, S., **Husain, A.**, Samad, A., Kenyery, F. 2016. Numerical analysis of fluid flow through an electrical submersible pump for handling viscous liquid. In: *Proceedings of the ASME 2016 Fluids Engineering Division Summer Meeting, Washington D.C.*, 10-14 July 2016.
- 13. Husain, A., Ariz, M., Al Rawahi, N.Z.H., and Ansari, M.Z. 2016. Thermal performance analysis of hybrid jet impingement/microchannel cooling for concentrated photovoltaic (CPV) cells. In: *Proceedings of the ASME 2016 14<sup>th</sup> International Conference on Nanochannels, Microchannels, and Minichannels, Washington D.C.*, 10-14 July 2016.
- 14. Al-Azri, N., Al-Rawahi, N., Khodaee, A., **Husain, A.**, Linear regression models for the thermodynamics properties of working fluids in waste heat recovery., 4<sup>th</sup> International Conference on Renewable Energy: Generation and Applications (ICREGA 2016), Belfort, France, 8-10 February 2016.
- M. Tariq, B. Karunanithi, I. Ahmed, Afzal Husain, A. Samad, Sahmsuzzoha, Biodiesel production from various oil sources and their performance and emission analysis in a compression ignition engine, In: Proceedings of 9<sup>th</sup> International Conference on Thermal Engineering: Theory and Applications, Mar. 24-26, 2016, Abu Dhabi, UAE
- 16. Mohd. Ariz, Noorul Huda, **Afzal Husain**, Thermal performance analysis of jet impingement with effusion scheme, ICCHMT, Nov. 30-Dec. 2, 2015, Warangal, India
- 17. **Afzal Husain**, N. A. Al-Azri, A. Samad, S.-M. Kim, K.-Y. Kim, Spent flow effects of multiple micro-jet impingement cooling, Proceedings of ASME-JSME-KSME 2015 Joint Fluids Engineering Conference, AJKFluids2015, July 26-31, 2015, Seoul, Korea, AJKFluids2015-18663.
- Afzal Husain, Jun-Hee Kim, Kwang-Yong Kim, Thermal characterization of multiple micro-jet impingement cooling model, Proc. Of the ASME 2014 4<sup>th</sup> joint US-European Fluids Engineering Division Summer Meeting and 12<sup>th</sup> International conference on Nanochannels, Microchannels, and Minichannels, Chicago, IL, USA, Aug. 3-7, 2014 ICNMM2014-21736.
- 19. **Afzal Husain**, Jun-Hee Kim and Kwang-Yong Kim, Thermal performance of a silicon-based multiple micro-jet impingement heat sink, Proceedings of ASME 2013 International Technical Conference and Exhibition on Packaging and Integration of Electronic and Photonic Microsystems (InterPACK2013), July 2013, Burlingame, CA, USA, InterPACK-2013-73063.
- Sun-Min Kim, Afzal Husain, and Kwang-Yong Kim, Optimization of a multiple micro-jet impingement cooling system, The 14<sup>th</sup> AIAA/ISSMO Multidisciplinary Analysis and Optimization (MAO) Conference, Sep. 2012, Indianapolis, Indiana, USA, AIAA 2012-5638.
- 21. Mi-Ae Moon, **Afzal Husain**, Kwang-Yong Kim, Shape optimization of rotating rectangular channels with pin-fins by Kriging method, Proceedings of the 14<sup>th</sup> International Heat Transfer Conference, IHTC-14, August 2010, IHTC14-22523, Washington D.C., USA.

- 22. Shakhawat Hossain, Mubashshir Ahmad Ansari, **Afzal Husain**, Kwang-Yong Kim, Numerical study on mixing of two fluids with modified Tesla structure, MNHT2009-18117, 2009, Shanghai, China.
- 23. Jin-Hyuk Kim, Jae-Ho Choi, **Afzal Husain**, Kwang-Yong Kim, Design optimization of an axial fan through multi-objective evolutionary algorithm. AICFM0097, Kuala Lumpur Malaysia.
- 24. Jin-Hyuk Kim, Jae-Ho Choi, **Afzal Husain**, Kwang-Yong Kim, Design optimization of a centrifugal compressor by multi-objective genetic algorithm. FEDSM2009-78486, Vail, Colorado USA.
- 25. **Afzal Husain**, Kwang-Yong Kim, Numerical optimization of electroosmotically enhanced microchannel heats inks, IPACK2009-89236, San Francisco, California.
- 26. **Afzal Husain**, Kwang-Yong Kim, Enhanced multi-objective optimization of a microchannel heat sink using multiple surrogates modeling, Seventh international conference on nanochannel, microchannel and minichannels, ICNMM2009-82120, 2009, Pohang, Korea.
- 27. **Afzal Husain**, Kwang-Yong Kim, Optimization of ribbed microchannel heat sink using surrogate analysis, The 5<sup>th</sup> International Conference on Computational Fluid Dynamics, ICCFD5-159, 2008, Seoul, Korea.
- 28. **Afzal Husain**, Kwang-Yong Kim, Design optimization of micro-channel for microelectronic cooling, Fifth international conference on nanochannel, microchannel and minichannels, ICNMM2007-30053, 2007, Puebla, Mexico.
- 29. **Afzal Husain**, Kwang-Yong Kim, Optimization of microchannel heat sink using neural network, ACFD7-No.23, 2007, Bangalore, India.
- 30. **Afzal Husain**, Kwang-Yong Kim, Design of microchannel heat sink with numerical optimization techniques, The 9<sup>th</sup> Asian International Conference on Fluid Machinery, AICFM9-023, 2007, Jeju, Korea.
- 31. Jun-Hee Kim, **Afzal Husain** and Kwang-Yong Kim, Flow analysis and performance evaluation with micro-jet configuration of a silicon-based heat sink, KSME Fluids Engineering Conference, 2013, South Korea.
- 32. K.-Y. Kim, K.-D. Lee, M.-A. Moon, M. W. Heo, H. M. Kim, J. H. Kim, Afzal Husain, Numerical study of turbine blade cooling techniques, ERC Special Session, Korean Computational Fluid Engineering Society, 2010.
- 33. Mi-Ae Moon, **Afzal Husain** and Kwang-Yong Kim, Shape optimization of rotating rectangular channels with pin-fins by Kriging method, KSME Autumn Conference, 2009, Yongpyung Resort, Korea.
- 34. Danish Ansari, **Afzal Husain**, Kwang-Yong Kim, Shape optimization of grooved micro-channel heat sink, KSME Autumn Conference, 2009, Yongpyung Resort, Korea.
- 35. Jin-Hyuk Kim, Jae-Ho Choi, **Afzal Husain**, Kwang-Yong Kim, Design of a centrifugal compressor impeller using multi-objective optimization algorithm. KSME spring conference 2009, Busan, Korea.
- 36. **Afzal Husain**, Kwang-Yong Kim, Heat sing analysis for electronic cooling with variable fluid properties, KSME Micro/Nano Engineering Spring Conference, 2008, Seoul, Korea.
- 37. **Afzal Husain**, Kwang-Yong Kim, Numerical analysis of electroosmotically enhanced microchannel heat sink, KSME Autumn Conference, 2008, Yongpyung Resort, Korea.
- 38. **Afzal Husain**, Kwang-Yong Kim, Shape optimization of a trapezoidal microchannel, KSME conference 2007, Busan, Seoul, Korea.
- 39. **Afzal Husain**, Kwang-Yong Kim, Shape optimization of micro-channel heat sink for microelectronic cooling, KFMA Conference, 2006, Chosun, Korea.

#### **Conference Abstracts (Presentations only):**

- 1. **Husain, A.**, Sonawat, A., Mohan, S., Samad, A., Ensemble of surrogates and evolutionary computing to enhance jet pump performance, Forth International Conference on Numerical Analysis and Optimization, Muscat, Oman, Jan. 2-5, 2017.
- 2. Zunaid, M., **Husain, A.**, Jindal, A., Gupchup, A. 2016. Numerical simulation of fluid flow and heat transfer in wavy channel at different Reynolds number. At: *ICAPIE-2016 International Conference on Advanced Production and Industrial Engineering, New Delhi, India*, 9-10 Dec. 2016.
- 3. Halder, P., **Husain, A.** 2016. Newtonian and non-Newtonian fluid pulsatile flow through artery. At: *ICAPIE-2016 International Conference on Advanced Production and Industrial Engineering, New Delhi, India*, 9-10 Dec. 2016.
- 4. Huda, N., **Husain, A.**, Hamdan, M. O., Ansari, M. A. 2016. Performance of three-dimensional split and recombine micromixer with mixing chamber. At: *The ASME 2016 14<sup>th</sup> International Conference on Nanochannels, Microchannels, and Minichannels, Washington D.C.*, 10-14 July 2016.
- 5. **Afzal Husain**, Kwang-Yong Kim, Enhanced multi-objective optimization of microchannel heat sink, Third International Conference on Numerical Analysis and Optimization, Muscat, Oman, Jan. 5-9, 2014.

#### Keynote Lectures:

- 1. **Husain, A.**, Numerical Optimization of Thermofluids Systems, International Conference on Advanced Production and Industrial Engineering, ICAPIE 2017, DTU, New Delhi, Oct. 6-7, 2017.
- Husain, A., Micro-Scale Heat Transport in Electronics Cooling: How Far We have reached? In: International Conference on Recent Advances in Mechanical Engineering RAME-2016, Oct. 14 & 15, 2016, DTU New Delhi, India.

#### **Guest Lectures:**

1. Husain, A., Electronics Cooling and Micro-Scale Heat Transport, Aligarh Muslim University, Aligarh, India, Aug. 26, 2017

#### **Posters:**

- 1. Afzal Husain, N. Al-Azri, N. Al-Rawahi, Microjet impingements cooling and spent flow management, Linking Oman's Higher education Institutions with the Public and Private Sectors, International exhibition and Convention Center, Oman, May 7-9, 2017.
- 2. Afzal Husain, Thermal performance investigation of micro-jet impingement cooling model, SQU Day Exhibition, May 3-5, 2015.
- 3. A. Samad, A. Sonawat, S. A. I. Bellary, R. Adhav, K. R. Mrinal, A. Goharzadeh, Afzal Husain, Multiphase flow challenges in artificial lifts, Artificial Lift, SPE Middle East Conference & Exhibition, November 26-27, 2014, Manama, Bahrain, 14MEAL-14063.
- 4. **Afzal Husain**, Kwang-Yong Kim, Numerical optimization of electroosmotically enhanced microchannel heats inks, IPACK2009-89236, San Francisco, California.

#### **Technical Reports:**

- 1. Husain, A. 2016. *Developing Enhanced Micro-Scale Heat Transport Designs and Optimization*. Internal Research Grant Technical Report (IG/ENG/MIED/14/03), Sultan Qaboos University, Sultanate of Oman.
- 2. Husain, A. 2017. Numerical Analysis Visualization and Experimental Measurement of Capillary-Driven Blood Flow Micro-channel Mixing. Collaborative Research Grant Technical Report (CL/SQU-UAEU/15/02), Sultan Qaboos University, Sultanate of Oman.

#### **Research Grants:**

- 1. Internal Research Grant (IG/ENG/MIED/14/03), OMR 9650 (27900 USD) on Developing enhanced micro-scale heat transport designs and optimization models, for years 2014-15. (for 2 years duration) (PI)
- External Research Grant (CL/SQU-UAEU/15/02), OMR 20000 (58000 USD) on Numerical Analysis Visualization and Experimental Measurement of Capillary-Driven Blood Flow Micro-channel Mixing. (for 2 years duration) (PI)
- 3. Internal Research Grant (IG/ENG/MIED/15/03), on Evaluation and Design of Wind-catcher in SQU public spaces, for years 2015-18. (Co-PI)
- 4. Internal Research Grant (IG/ENG/MIED/14/03), OMR 9650 (27900 USD) on Investigation of Blood Flow across Stenosis in an Artery, for years 2018-19.

## Others

### **Continuing Education:**

- 1. Attended Seminar on TURNITIN at SQU, March 28, 2017.
- Participated in a 3-day workshop on Introduction to CDIO Initiative by Dr. Juha Kontio, at SQU, May 17-19, 2016
- 3. Participated in workshop on Intellectual Property Rights and Patent Search at SQU, November 2015.
- 4. Attended MENDELEY Workshop at SQU, April 2016.
- 5. Attended Seminar on Moving to the New Version of E-Learning System, SQU, Oman, Aug. 27, 2015.
- 6. Participated in 3-days workshop on "How to Teach Engineering Students Process Skills" by Nikos Mourtos at Sultan Qaboos University, Muscat, Oman, May 26-28, 2015
- 7. Attended seminar on "Designing Teaching to Help Students Learn What You Want by Prof. Daniel Bernstein, SQU, Apr. 16, 2015.
- 8. Attended seminar on "Sharing Teaching Experience" by Dr. Uwe Kruger, SQU, 2014.
- 9. Participated in workshop on using TURNITIN for students' work evaluation to avoid copyright and plagiarism, SQU, January 13, 2014.
- 10. Attended workshop focused on USING TECHNOLOGY IN TEACHING like Moodle and Wiki, SQU, 2013.