

**Research Activities
of
Dr. Esmail M. A. Mokheimer**

List of Publications

a. Papers in Refereed Journals

1. F. Al-Sulaiman B.S. Yilbas, F. C. Karatas, M. Ahsan, and **E.M.A. Mokheimer**, "Laser hole cutting in Kevlar: modeling and quality assessment", **Accepted for Publication**, The International Journal of Advanced Manufacturing Technology, 2007.
2. Mokheimer, Esmail M.A and Maged A.I. El-Shaarawi, Correlations for maximum possible induced flow rates and heat transfer parameters in open Vertical eccentric annuli. International Communications in Heat and Mass Transfer, Online November 10, 2006.
3. **Mokheimer, E. M. A. and Sami S.**, Conditions for Pressure Build-up due to buoyancy effects on Forced Convection in Vertical Eccentric Annuli under Thermal Boundary Condition of First Kind, Heat and Mass Transfer, Online, 03 March 2006.
4. Al-Sulaiman F. A., **Mokheimer, E. M. A.** and Al-Nassar Y., Prediction of the Thermal Conductivity of the Constituents of Fiber Reinforced Composite Laminates, Heat and Mass Transfer, Vol. 42 (5), March 2006, pp. 370-377.
5. Al-Sulaiman F. A., Al-Nassar Y. and **Mokheimer, E. M. A.**, Numerical Prediction of the Thermal Conductivity of Fibers, Heat and Mass Transfer, Vol. 42 (5), March 2006, pp. 449-461.
6. Faleh Al-Sulaiman, Yaagoub N. Al-Nassar, and **Esmail M. Mokheimer**, Prediction of the Thermal Conductivity of the Constituents of Fiber-Reinforced Composite Laminates: Voids Effect, Journal of Composite materials, Vol. 40, No. 9, May 1st, 2006, pp. 797-814
7. El-Shaarawi, M. A. I., Mokheimer, E. M. A. and **Jamal, A.**, "Conjugate Effects on Steady Laminar Natural Convection Heat Transfer in Vertical Eccentric Annuli", International Journal for Computational Methods in Engineering Science and Mechanics, Vol. 6, No. 4, pp. 235-250, (2005).
8. **Mokheimer, E. M. A.** and El-Shaarawi M. A.I., "Maximum Possible Induced Flow Rates in Open-Ended Vertical Eccentric Annuli with Uniform Heat Flux", International Journal of Numerical Methods of Heat and Fluid Flow, International Journal of Numerical Methods for Heat and fluid flow, Vol. 15(2), 2005, pp. 161-182.
9. M. A. Habib, H. M. Badr, S. A. M. Said, **E. M. A. Mokheimer**, I. Hussaini, M. Al-Sanaa, 2003, "Characteristics of flow field and water concentration in a Horizontal Deadleg", Heat and Mass Transfer, Vol. 41(4), February 2005, pp. 315-326.
10. **Mokheimer, E. M. A.** and M. A. I. El-Shaarawi, "Developing Mixed Convection in Vertical Eccentric Annuli", Heat and Mass Transfer, Vol. 41(2), December 2004, pp. 176-187.
11. **Mokheimer, E. M. A.** and El-Shaarawi M. A.I., "Critical Values of Gr/Re for Mixed Convection in Vertical Eccentric Annuli with Isothermal Adiabatic Walls",

- ASME Transactions, J. Heat Transfer, ASME Journal of Heat Transfer, Vol. 126, June 2004, pp. 479-482.
12. **Mokheimer, E. M. A.**, "Heat Transfer From extended Surfaces Subject to Variable Heat Transfer Coefficient", Heat and Mass Transfer, Vol. 39, (2003), pp. 131-138.
 13. **Mokheimer, E. M. A.**, Abd El-Aziz, N. M, Amin, H. M. and Salem I. M., " Freezing Time Calculations for Various Products", International Journal of Energy Research, Vol. 27, Issue 12, (10 October 2003), pp. 1117-1130.
 14. **Mokheimer, E. M. A.**, " Performance of Annular Fins with Different Profiles Subject to Variable Heat Transfer Coefficient", International Journal of Heat and Mass Transfer, Vol.45 (No. 17), (2002), pp. 3631-3642.
 15. **Mokheimer, E. M. A.**, Antar, M. A., Farooqi, J., and Zubair, M. S., "A Spreadsheet Solution for Transient Conduction in Composite Fins", International Journal of Energy Research, Vol. 26, (2002), pp. 383 – 397
 16. Antar, M. A. and **Mokheimer, E. M. A.**, " Spreadsheet Modeling of Transient-Three-Dimensional Heat Conduction with Various Standard Boundary Conditions", International Journal of Mechanical Engineering Education, Vol. 30 (No.1), (January 2002). 17-34.
 17. **Mokheimer, E. M. A.**, "A Simplified Solution for Developing Laminar Forced Flow Between Two Parallel Plates", International Journal of Energy Research, Vol. 26, (2002), pp. 399 – 411.
 18. El-Shaarawi, M. A. I. , **Mokheimer, E. M. A.**, and Abualhamayel, H. I., " Limiting Values for Free-Convection Induced Flow Rates in Vertical Eccentric Annuli with An Isothermal Boundary" Numerical Heat Transfer, Part A, Vol. 39, (2001), pp. 611-630
 19. **Mokheimer, E. M. A.** and Antar, M. A., "On the Use of Spreadsheets in Heat Conduction Analysis", International Journal of Mechanical Engineering Education, vol. 28, No. 2, (2000), pp. 113-139.
 20. **Mokheimer, E. M. A.**, "Spreadsheet Numerical Simulation for Developing Laminar Free Convection Between Vertical Parallel Plates", Computer Methods in Applied Mechanics and Engineering, Vol. 178, No-3-4 (1999), pp. 393-412.
 21. El-Shaarawi, M. A. I. and **Mokheimer, E.M.A.** , "Developing Free Convection in Open-Ended Vertical Eccentric Annuli with Isothermal boundary" , ASME Transactions, J. Heat transfer, Vol. 121, (1999), pp. 63-72.
 22. **Mokheimer, E. M. A.**," Application of Spreadsheet Simulation for the Solution of Developing Laminar Forced Convection Between Two Parallel Plates", Sci. Bull. Fac. Eng. Ain Shams Univ., Vol. 34, No. 2(1999), pp. 225-255.
 23. El-Shaarawi, M. A. I. and **Mokheimer, E.M.A.**, "Free Convection in Vertical Eccentric Annuli with Uniformly Heated Boundary" International Journal of Numerical Methods in Heat and Fluid flow, Vol. 8, No. 5-6(1998), pp. 488-503.
 24. El-Shaarawi, M.A.I. , Abualhamayel, H. I. and **Mokheimer, E. M. A** "Developing Laminar Forced Convection in Eccentric Annuli" , Heat and Mass Transfer, Vol. 33 (1998), pp. 353-362 .
 25. El-Shaarawi, M. A. I. , Abualhamayel, H. I. and **Mokheimer, E. M. A.**, "Developing Laminar Flow in Eccentric Annuli" ASME Journal of Fluid Engineering, Vol. 119 (1997), pp. 724-728.
 26. **Mokheimer, E. M. A.**, Antar, M. A., Farooqi, J. and Zubair, M. S., "Analytical and Numerical Solution along with PC Spreadsheet Modeling for a Composite Fin", Warme - und Stoffubertragung (Heat and Mass transfer), Vol. 32(1997), pp. 229-238.

27. El-Shaarawi, M. A. I. and Mukheimer, I.*, “Unsteady Conduction in Eccentric Annuli ”, Heat and Mass Transfer, Vol. 30 (1995), pp. 249-257.
28. El-Shaarawi, M. A. I. and Mokheimer, E.M.A., “Transient Conduction in Eccentrically Hollow Cylinders.”, International Journal of Heat and Mass Transfer, Vol. 38, No. 11, (1995), pp. 2001-2010.

b. Papers in Refereed Conference Proceedings

29. **Mokheimer, E. M. A.** and Said S.A.M, Performance Enhancement of a DX AC unit, Accepted for publications in MEMC 2007, Bahrain, Nov. 4-7, 2007.
30. Jamal, A., El-Shaarawi, M. A. I., and **Mokheimer, E. M. A.**, “Effect of thermal boundary conditions on conjugate natural convection flow in vertical eccentric annuli”, Proceedings of the 13th International Conference on Computational Methods and Experimental Measurements, Prague, Czech Republic, 2 - 4 July, 2007.
31. **Mokheimer, E. M. A.** and Said S.A.M, Potential of using Plate and Frame Heat Exchangers in Residential Air Conditioners, Accepted for publications in the Fourth Saudi Technical Conference & Exhibition (STCEX2006), held in Riyadh, Saudi Arabia, December 02-06, 2006.
32. El-Shaarawi, M. A. I., **Mokheimer, E. M. A.** and Jamal, A., “Geometry Effects on Critical Conductivity Ratio and Wall Thickness for Conjugate Natural Convection in Eccentric Annuli”, Accepted in the 13th International Heat Transfer Conference, Sydney, Australia, (2006).
33. El-Shaarawi, M. A. I., **Mokheimer, E. M. A.** and Jamal, A., “Numerical Investigation of Conjugate Natural Convection Heat Transfer in Vertical Eccentric Annuli”, Proceedings of the 4th International Conference on Computational Heat and Mass Transfer, Paris-Cachan, FRANCE, Vol. 1, (2005).
34. **Mokheimer, E. M. A.** and Rached Ben Mansour, Flow and Heat Transfer Characteristics for a Rotating Cylinder in Crossflow with High Reynolds Numbers, Al-Azhar Engineering eighth International Conference, Dec. 24-27, 2004.

Reviewed papers for the following Journals and Conferences

1. Two paper for International Journal of Thermal sciences, 2007
2. One Paper for ITERM2008 Conference, Florida, USA 2008
3. Two paper for the *ASME Journal of Heat transfer*
4. Six papers for *International Journal of eat and Mass Transfer*
5. Six paper for *Heat and Mass Transfer*
6. Five papers for the *International Journal of Energy Research*
7. One paper for *Heat transfer Engineering, An International Journal*

8. One paper for the *International Journal of Pressure Vessels and Piping, ASME*.
9. Four papers for the *AJSE*
10. Three papers for the *Workshop on Energy Conversion in Industrial applications, KFUPM*, Dhahran , Saudi Arabia (Feb. 12-14, 2000).
11. Number of papers for the *Scientific Bulletin, Faculty of Engineering, Ain Shams University*, Cairo, Egypt.
12. Four papers for the **First Symposium of Energy Conservation & Management in Buildings, KFUPM**, Dhahran, Saudi Arabia (Feb. 5-6, 2002).
13. Two papers for the **Six Saudi Engineering Conference, KFUPM**, Dhahran, Saudi Arabia (Oct. 21-23, 2002).

Ph.D. Dissertation and Master Thesis Supervision

I served as a main advisor, co-advisor and committee member in the following Ph.D. dissertations and Master theses:

1. **Design and Construction of A liquid Incinerator, A Novel Method for fast Chemical Measurements and Feedback Control, Ph. D. Dissertation** by Pasl Abdel Jalil, **KFUPM**, May 1998. (Committee member, I supervised the student during the design and construction of the incinerator: I guided the student in and reviewed the thermodynamics, combustion and heat transfer aspects of the design. I also shared in supervising and guiding the student during writing his dissertation. I shared in examining the student in the internal and public defense of his dissertation).
2. **Design and Performance Evaluation of Refrigeration Systems Using Thermodynamic Models, M.Sc. Thesis** by Jameel Ur Rehman Khan, **KFUPM**, November 1997 (Committee member, I reviewed the student thesis and shared in examining him in the internal and public defense of his thesis).
3. **Numerical Investigation of Pulsating Flows in Abrupt Expansion Pipes, M.Sc. Thesis** by Mohammad Owais Iqbal, **KFUPM**, June 1998 (Committee member, I shared in supervising the student during the problem formulation and writing his literature survey, reviewed the student thesis and shared in examining him in the internal and public defense of his thesis).
4. **The Parameters Affecting The Rate of Cooling Inside Freezing Tunnels. M.Sc. Thesis**. By Hossam Eldin Mohamed Amin, Ain Shams University, Cairo, Egypt, 2001, (Committee member, I shared in supervising the student during the problem formulation and writing his literature survey, developing his mathematical model, developing his numerical code, testing his computer code

developed to run his numerical models, analyzing the results, reviewed the student thesis and attended his public defense of the thesis)

5. **Conjugate Free Convection Heat Transfer in Eccentric Annuli, M.Sc. Thesis** by Ahmad Jamal, KFUPM, November 2002 (Co-Advisor, I shared in supervising the students in all stages of his thesis).
6. **Optimization of a Packaged Air Conditioning Unit Performance Using an Experimentally Validated CFD Model M.Sc. Thesis** by Adel M. H. Al-Naser, KFUPM, June 2003.
7. **Transient Impulsive Flow about a Sphere in a Gas Stream M.Sc. Thesis** by Fayez H. M. Al-Ghamdi, KFUPM, March 2004.
8. **Entropy Generation Around a Solid Sphere in a Gas Stream M.Sc. Thesis** by Mohammed Gyazullah, KFUPM, December 2004.
9. **Heat Transfer in Vertical Channels, M.Sc. Thesis** by Shaik Samivullah, KFUPM, (main advisor), May 2005 (042)).
10. **Turbulent Flow in abrupt contraction, M.Sc. Thesis** by Ehsanu Al-Kabeer, KFUPM, June 2005 (Committee member).
11. **Prediction of Turbulent Heat Transfer in a Rotating Narrow Rectangular Channel (AR = 10) Oriented at 120° from the direction of Rotation, M.Sc. Thesis** by Mehboob Basha N. B., KFUPM, October 2005 (Committee member).
12. **Heat Transfer in rotating concentric annuli M.Sc. Thesis** by Mohamed Shible, KFUPM, October 2006 (Committee member).
13. **Development of Overall Thermal Transfer Value of Commercial Buildings in Saudi Arabia M.Sc. Thesis** by Moneer Al-Qadhi, KFUPM, In Progress (Co-Advisor).
14. **Bio-Fouling on the pads of Evaporative cooling systems M.Sc. Thesis** by Abdul-Moomen Nouh, KFUPM, In Progress (Committee member).
15. **Buoyancy Effects on Entropy Generation in Vertical Channels, M.Sc. Thesis** by Ali Salim Al-Hassan, KFUPM, In Progress (Main advisor), expected June 2008.

List of Projects at KFUPM & KACST

1. **Principal Investigator** of a KFUPM Fast Track Project (# FT 2000-20) entitled: Mixed Convection in Eccentric Annuli. (December 2000 – June 2002), **Finished**.
2. **Principal Investigator** of a KFUPM Fast Track Project (FT/2002/10) entitled: Maximum Possible Flow and Heat Transfer Rates by Free

Convection in Vertical Eccentric Annuli (**Duration 20-1-2003 : 19-7-2004**) (**Finished**).

3. **Principal Investigator** of a SABIC Project (**SAB/2005-21**) entitled: **Modification of a 10-TR DX A/C Unit into a 10-TR Chiller (Duration 12-1-2005 : 9-1-2007). Is being Finalized**
4. **Principal Investigator** of Study of RI-KFUPM Project (CER02321) entitled: Energy Efficient Technologies for Residential Air Conditioning and Refrigeration Technologies: **completed**, December 2007.
5. **Principal Investigator** of Study of KFUPM Project (IN070350) entitled: Techno-Economic Feasibility Study for Implementing Efficient Air Conditioning Technologies for Local Manufacturers of Small Central Air Conditioners. **Running**
6. Co. Investigator of a KACST Project (**10-23-ت/1**), entitled Investigating the Cost Effectiveness and Energy Efficiency of Domestic and Greenhouse Evaporative Cooling Using Local Fiber Pads (**Duration 10-1-2004 : 10-1-2007**). **Is being Finalized**
7. Co. Investigator of a KACST Project (**83-23-ت/1**), entitled **Feasibility and Performance of Ground-Source Heat Pump in the Kingdom of Saudi Arabia: (Duration 9-1-2004 : 9-1-2007). Completed.**
8. Co. Investigator of a SABIC Project # Sabic 2004/27 entitled: Performance Evaluation of Different A/C Systems Based on Air Diffusion and Energy Consumption for The Eastern Province of Saudi Arabia (**Duration 10-1-2004 : 10-1-2007**). **Is Being Finalized.**