



**Professor, Mechanical Engineering**

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**Degrees, Dates and Institutions Where Awarded:**

1. Ph.D. in ME Dec. 1980, University of Pittsburgh (Thesis: Two-Phase Upflow in Vertical Channels)
2. MSME in ME Dec. 1975, American University in Beirut, Beirut-Lebanon (Thesis: Computer Simulation of a Domestic Solar Water Heater-Thermosiphon Effect)
3. BSME in ME July 1972, American University in Beirut, Beirut-Lebanon

**Employment History:**

1. 1984-present UNLV, currently Full Professor in the ME Dept. @ UNLV
2. 1981-1984 Senior Research Engineer, Air Product & Chemicals, Allentown, PA
3. 1976-1980 Research Assistant in ME @ University of Pittsburgh
4. 1977-1980 Teaching Assistant in ME @ University of Pittsburgh
5. 1972-1975 HVAC engineer worked in consulting, contracting and technical sales Beirut-Lebanon

## **Employment Details:**

1. I teach and do research in the general area of Thermal Sciences. My areas of interest are energy conservation, HVAC systems simulation, high level nuclear waste canister thermal issues, transmutation energy research, high temperature hydrogen production using nuclear/solar energy, residential air duct leakage methods focusing on their measurement and characterization. I have graduated over 26 MS students and have one Ph.D. and two MS students working with me. I also managed four postdoctoral researchers over the last 5 yrs. Recent courses taught: undergraduate thermodynamics and heat transfer, graduate heat conduction and convection courses and two undergraduate/graduate courses in HVAC system design.
2. I performed experimental research in the area of synthetic fuels i.e., coal liquefaction processes such as SRC-I (solvent refined coal process I). The experiments involved looking at two phase and three phase hydrodynamic flow simulation in vertical tube reactors and heat exchangers involved in the SRC-I process (1981-1984).
3. Performed experimental and theoretical research in the area of 2 phase flow in vertical rectangular channels using in-house built optical fiber probes to measure void fraction and axial gas velocity and using hot film anemometers to measure liquid axial velocities.
4. Worked simultaneously with 13 Algerian students as a resident counselor who were sponsored by their government and were finishing their BS degrees in ME at the University of Pittsburgh (1977-1980).
5. Was involved in various aspects of the HVAC industry mainly in field and installation work (distributor of Chrysler AirTemp products) as well as performing design and consulting work and field supervision of the contractors' work. Finally, I was involved in technical sales with Fedders Air Conditioning Co. Regional representative in the Middle East stationed in Beirut Lebanon (1972-1975).

## **Research Publications**

### **Articles in refereed journals**

1. Saraei, A., Moujaes, S.F. "The effects of exhaust air vent location on thermal comfort inside a residential building equipped with an evaporative cooling system." *Build. Simul.* 14, 1063–1075 (2021). <https://doi.org/10.1007/s12273-020-0741-z>.
2. Samad Gharehdaghi, Samir F. Moujaes, Alireza Mahdavi Nejad, "Thermal-fluid analysis of a parabolic trough solar collector of a direct supercritical carbon dioxide Brayton cycle: A numerical study," *Solar Energy*, Volume 220, 2021, Pages 766-787, ISSN 0038-092X, <https://doi.org/10.1016/j.solener.2021.03.039>.
3. "Computational Fluid dynamics simulation of heat enhancement in internally helicalgrooved tubes"; Sogol Pirstastami, Samir F. Moujaes, Samad Gharehdaghi; *Int'l Communications in Heat and Mass Transfer*, 2016, Vol. 73, p. 25-32
4. "Testing of a Novel Portable Body Conditioner Using a Thermal Mannikin"; D. Heller, A. Heller, S. Moujaes, S. Williams, R. Hoffmann, P. Sarkisian, K. Khalili, U. Rockenfeller, T. Browder, D. Kuhls, J. Fildes; *J. of Biomedical Instrumentation and Technology*, September/October 2016; pp. 338-350.
5. "CFD Performance Prediction of a Parallel-Counterparallel Flow Heat Exchanger Used for the Treatment of Hypothermia. Moujaes, S. and Heller, A. (2016)" *J. Energy Eng.*, 10.1061 Y.1943-7897.0000289, 04015034

6. "CFD simulation of leak in residential HVAC ducts", S. Moujaes, R. Gundavelli, *Energy and Buildings*, 54 (2012) p.534-539.
7. "Improved Delta-Q Measurement Technique for Estimating the Total and Local Leakages in Residential Buildings" N. Nassif, S. Moujaes, *J. of Energy Engineering*, June 2011 issue, Vol. 137, no. 2, p.76-87.
8. "Experimental and Simulation Study on Wind Affecting particle Flow in a Solar Receiver", K. Kim, S. Moujaes, G. Kolb, *Solar Energy*, 2010, v.84, p. 263-270.
9. "A Study of Solid particle Flow Characterization in a Solar Receiver" K. Kim, N. Siegel, G. Kolb, V. Rangaswamy, S. Moujaes, *Solar Energy*, 2009, v 83, n 10, p 1784-1793.
10. "CFD Predictions and Experimental Comparisons of Pressure Drop Effects of Turning Vanes in 90 degree Duct Elbows", S. Moujaes, S. Aekula, *J. of Energy Engineering*, 2009, v. 135, n 4, p 119-126.
11. "Measurement techniques for Estimating Local and Total Duct Leakages in Residential Buildings", N. Nassif, S. Moujaes, R. Gundavelli, D. Selvaraj, K. Teeters, 2009, *J. of Energy Engineering*, vol. 135, no.1, pp. 3-11.
12. "Self-tuning dynamic models of HVAC system components". N. Nassif, S. Moujaes, M. Zaheeruddin, *Energy and Buildings* v. 40, 2008, pp. 1709-1720.
13. "Comparison of Simulation and Experimental Data of a Zero Energy Home in an Arid Climate", R. Madeja, S. Moujaes, *J. of Energy Engineering*, 2008, Vol. 134, no. 3, pp.102- 108.
14. "Development and Validation of a new Field Measurement Technique for Estimating the Local and Total Air Duct Leakage in Residential Buildings", N. Nassif, S. Moujaes, *J. of Energy Engineering*, 2008, Vol. 134, no.3, pp.87-94.
15. "3-D CFD Predictions and Experimental Comparisons of Pressure Drop in a Ball Valve at Different Partial Openings in Turbulent Flow", S. Moujaes, J. Rayavarapu, *J. of Energy Engineering*, 2008 Vol. 134, Issue 1, pp. 24-28.
16. "A New Operating Strategy for Economizer Dampers of VAV System", Nassif, N. and S. Moujaes, *Energy and Buildings* 2008, Volume 40, Issue 3, Pages 289-299.
17. "3D CFD Predictions and Experimental Comparison of Pressure Drop of Some Common Pipe Fittings in Turbulent Flow," S. Moujaes, S. Deshmuck, 2006, *J. of Energy Engineering* vol. 132, n2, pp. 61-66.
18. "Effect of Envelope on residential Cooling Load Coupled with Use of Solar/ Photovoltaic Panels," S. Moujaes, R. Madeja, *J. of Energy Engineering*, 2006, vol. 132 n2, pp.74-80.
19. "An Evaluation of a Residential Energy Conserving HVAC System and a Residential Energy Demand/Management System" S. Moujaes, S. Deshmukh, *Energy Engineering: The J. of the A. of Energy Engineers*, vol. 102, No. 6, pp. 39-57, 2005.
20. "Preliminary Commissioning and Energy Audit of a UNLV Building", S. Moujaes, K. Teeters, Y. Baghzouz, R. Brickman, R. Madeja, *Energy Engineering: Energy Engineering: Journal of the Association of Energy Engineering*, v 103, n 1, January 2006, p 27-58.
21. "CFD Study of Section Characteristics of Formula Mazda Race Car Wings", S. Moujaes, W. Kieffer, N. Armbya, *J. of Mathematical and Computer Modeling*, Volume 43, Issue 11-12, June 2006, p. 1275-1287.
22. "Thermal Performance Analysis of a Highly Reflective Coating on a Residence in a Hot and Arid Climate," S. Moujaes, R. Brickman, *Journal of Energy Engineering* August 2003 vol. 129, no. 2, pp.42-55.
23. "Numerical Heat Transfer Attic Model Using a Radiant Barrier System", S. Moujaes, N.

- Alsaiegh, Journal of Energy Engineering, Vol. 126, No. 1, pp. 32-51. 2000.
24. "Effect of a Radiant Barrier on the Cooling Load of a Residential Application in a Hot and Arid Region-Attic Duct Effect" S. Moujaes, R. Brickman, International Journal of HVAC&R Research, Vol. 4, No. 3 pp.231-244, 1998.
  25. "Use of Passive Radiation Barriers in Ventilated Attics" S. Moujaes, ASHRAE Transactions, vol 102,1, p. 307-314,1996.
  26. "Treatment of Hypothermia in Trauma Victims: Thermodynamic Considerations" L. Gentilello, S. Moujaes, Journal of Intensive Care Medicine, vol. 10, no. 1, p. 5-16, 1995.
  27. "Simulation and Evaluation of Passive Energy Technology in Residential Space", S.Moujaes, R. Brickman, Energy Sources, vol 17, no. 2, p. 153-160, 1995.
  28. "Optimal Design of a Cold Sea Water Chiller", A. Bhargava, M. Trabia, S. Moujaes, ASHRAE Transactions, p.122-130, 1994.
  29. "Numerical Modeling of Heat Transfer in a Residential Room Space Configured with Reflective Insulation and Coatings", R. Brickman, S. Moujaes, ASHRAE Transactions, Vol 101, 2, p.32-42, 1995.
  30. "Comparative Predictions of a Computer Simulation to Experimental Data of a Thermosiphon Driven Domestic Solar Heater" S. Moujaes, C. Willems, International Journal of Energy Environment and Economics, Vol 2 No. 4, p.289-304, 1994.
  31. "Effect of Axial Spacing Variation on Underground Pipe Loop on Condenser Heat Transfer", S. Moujaes, R. Crowley, ASHRAE Transactions, Vol. 94, Pt. 2. pp. 46-56,1988.
  32. "Experimental Measurements of Local Axial Gas Velocity and Void Fraction in Simulated PWR Steam Generator Rod Bundles" S. Moujaes, R.S. Dougall, The Canadian Journal of Chemical Engineering, Vol. 68, April,1990, pp. 211-219.
  33. "Testing of a Spherical Dual Tipped Optical Fiber Probe for Local Measurements of Void Fraction and Gas Velocity in Two Phase Flows", S.F. Moujaes, The Canadian Journal of Chemical Engineering, Vol. 68, June 1990, pp. 504-510 (1990).
  34. "A Cyclic Simulation of a Model Describing Heat Transfer from a Ground Coupled Water Source Heat Pump Considering Transient Effects on Both Soil and Water Sides" International Journal of Refrigeration, Vol. 13 No. 5 Sept. 1990, pp. 330-335.
  35. "Continuous Arterio Venous Rewarming: Experimental Results and Thermodynamic Model Simulation of Treatment for Hypothermia", L. Gentilello, S. Moujaes, Journal of Trauma vol. 30 No. 12., p. 1436-1449, 1990.
  36. "Two Phase Upflow in Rectangular Channels", S. Moujaes, R.S. Dougall, International Journal of Multiphase Flow Vol. 11 No. 4 pp. 503-513, 1985.
  37. "Measurement of Slurry Concentration and Flow Rates in Shell and Tube Slurry Heat Exchangers", S. Moujaes, The Canadian Journal of Chemical Engineering, Vol. 62, pp.62-67, 1984.
  38. "Experimental Investigation of Concurrent Two Phase Flow in a Rectangular Channel", S. Moujaes, R.S. Dougall, The Canadian Journal of Chemical Engineering, Vol. 65, pp.705-715(1987).

### **Book chapters or parts of books**

"Hypothermia and Injury: Thermodynamic Principles of Prevention and Treatment" Larry Gentilello, Gregory Jurkovich and Samir Moujaes. Book title: "Perspectives in General Surgery" Quality Medical Publishing, Inc. St. Louis Missouri 1991. Volume 2, No.1 p. 25-53.

### **Articles in refereed conference proceedings**

1. Experimental measurement of the Hydrodynamics and Thermal Behavior of Airflow in a Flex Duct Air Distribution System"; S. Gharehdaghi, S. Moujaes, ASHRAE Conference paper (LV-17-C060). Las Vegas, NV January 2017.
2. "Effect of Groove Dimension on Thermal Performance of Turbulent Fluid Flow in Internally grooved Tube", S. Pribastami, S. Moujaes, IMECE2016-66236. Phoenix, 7pages.
3. "Conceptual Modeling and Analysis of a Solar Receiver for Thermochemical Hydrogen Generation"; S.F. Moujaes, D. Tagouchi, paper 23, 10<sup>th</sup> International Conference on Thermal Engineering: Theory and Application, February 24-26, 2017, Muscat Oman.
4. "A CFD model for air flow vs. Pressure loss coefficient in HVAC circular ducts with a motorized damper", S. Moujaes, A. Pallavi; paper 21, 10<sup>th</sup> International Conference on Thermal Engineering: Theory and Application, February 24-26, 2017, Muscat Oman.
5. "A Numerical Prediction of the Thermal Environment of a Room Heated with a Hydronic Heating System", S. Moujaes, S. Gurram, ECOS 2015 conference, Pau, France June 29-July3, 2015.
6. "3D CFD Simulation of an Air Channel Solar Heater", S. Moujaes, J. Pattil, paper 15, ICSEng conference, Aug. 21-23, 2014 Las Vegas.
7. "Suggested Simulation of The First Copper-Chlorine Reactor Step for Solar Hydrogen Generation Process", S. Moujaes, M. Yassin, paper 90, ICSEng Conference, Aug. 21-23, 2014 Las Vegas.
8. "Numerical Characterization of the Hydrodynamics and Thermal Behavior of Air Flow in Flexible Air Distribution System" S. Gharehdaghi; S. Moujaes, no. 54, 5 pages, 11th International Conference of Numerical Analysis and Applied Mathematics ICNAAM, Sept. 2013, Rhodes Greece.
9. "CFD Analysis of Deformed Ducts in Residential HVAC Systems", S. Moujaes, D. Selvaraj, paper no. 703, 11 pages, June 2013, CLIMA conference Prague Czech Republic.
10. "Findings of Field Survey for Thermal Comfort and Ventilation in US Office Buildings" T. Tan, S. Moujaes; Proceedings of the 10th International Healthy Buildings Conference 2012, Paper no. 10E.6, Brisbane Australia, July 8-12, 2012, 7 pages.
11. "CFD simulation of leak in residential HVAC ducts", S. Moujaes, R. Gundavelli, ECOS2011 conference, Novi Sad, Serbia, July 4-7, 2011, p. 1742-1750.
12. "A Three Dimensional CFD Analysis of Air Mixing in an Air Handling Unit", S. Moujaes, U. Vadlamani, CLIMA 2010 R4-TS52-PP02, May 2010.
13. "Field Measurements of a New Duct Leakage Method in Residential Homes in Las Vegas" S. Moujaes, N. Nassif, U. Vadlamani, Proceedings of the EERB-PEBP May 2009, paper no. T02-O-07, Guilin China.
14. "Evaluation of Normal and High Strength Concrete Designs of a Green Infrastructure under Structural and Thermal Loading", S. Ladhkany, S. Moujaes, IECC'5 conference, August 2008, Los Angeles, 8 pages, Distinguished classification at that conference.
15. "Field Testing and Verification of a Technique for Measuring the Local and Total Air Duct Leakage in Residential Buildings", N. Nassif, S. Moujaes, 2008, Indoor Air Conference, Copenhagen, paper ID 648, 8 pages.
16. "Particle Attrition Analysis in a High Temperature Rotating Drum", B.R. Vijayarangan, S. Moujaes, M. Flores, 2008, ICSE conference Las Vegas, paper ID 122, 7 pages.

17. "New Protocol of Field Survey for Thermal Comfort and Ventilation in Office Buildings", S. Moujaes, L. Tan, X. Hu, L. Stetzenbach, and D. Novosel, session A04, ROOMVENT 2007 conference, 10 pages, Helsinki June 2007.
18. "Analysis of Falling Particles in Solid Particle Solar Receiver", B.R. Vijayarangan, S.F. Moujaes, AIChE- Annual Meeting, November 4-9 (2007), Salt Lake City, Utah, USA.
19. "Solid Particle Receiver Flow Characterization Studies", N. Siegal, G. Kolb, K. Kibum, B.R. Vijayarangan and S. Moujaes, ASME-Energy Sustainability International Conference, June 24-27 (2007), Long Beach, California, USA.
20. "Experimental and Numerical Analyses of Friction Factors in Offset Strip Fin Heat Exchangers\_", A. Wang, S. F. Moujaes, Y. Chen, V. Ponyavin, FEDSM2007-37482, 5th Joint ASME/JSME Fluids Engineering Conference, San Diego, CA, USA, July 30-August 2, 2007.
21. "Experimental Preparation and CFD Simulation of Offset Fin High Temperature Heat Exchanger Model", S.F. Moujaes and S. Aekula, WORLDCOMP'07 Conferences, International Conference on Scientific Computing, June 25-28, 2007, Las Vegas, p.62-67.
22. "CFD Simulation of Offset Fin High Temperature Heat Exchanger Model", S.F. Moujaes, S. Aekula, 2007 STAR America's Conference, June 25th-26th in Detroit, p.7.
23. "Estimation of Drag Coefficient in Solid Particle Solar Receiver," Vijayarangan, B. R. and S.F. Moujaes, 2006 Proceedings of the 1st ASME-Energy Nano Technology International Conference, Massachusetts Institute of Technology, Cambridge, USA, 26-28 June, pp-8, ENIC2006-19050.
24. "An Experimental study for Thermal Comfort in Office Building Environments", S. Moujaes, L. Annavarapu, T. Tan, D. Novosel, Proceedings of the 17th Air conditioning and Ventilation Conference, May 2006, Prague, Czech Republic, p.231-236.
25. "3D Transient CFD Simulation of Air Supply Strategies in Office Rooms", S. Moujaes, L. Annavarapu, D. Novosel, Proceedings of the 17th Air conditioning and Ventilation Conference, May 2006, Prague, Czech Republic, p. 225-229.
26. "Wear Characteristics of Early-Opening-To-Traffic Portland Cement Concrete," N. Ghafoori, M. Tays, S. Ladkany, S. Moujaes, accepted to the CEIS Conference June 2006.
27. "Thermal Loading Evaluation of Alternate Structural Designs Using Normal and High Strength Concrete", S. Moujaes, S. Ladkany, N. Ghafoori, R. Madeja, accepted to the CEIS Conference June 2006.
28. "3-D Thermalhydraulics Flow Effects on Wall Concentration Gradient Profiles of Corrosion/Precipitation Phenomena in LBE Loop Fittings", N. Armbya, S. Moujaes, Y. Chen, G. Li, Nuthos-6 international conference on thermal hydraulics in nuclear reactors, Nara Japan, October 2004.
29. "HVAC: A Suggested Alternative way to teach It", S. Moujaes, K. Castro, M. Hodges, W. Kieffer, ASEE conference Summer 2004.
30. "3-D CFD Simulations of Various LBE Fittings", N. Armbya, S. Moujaes, N. Li, presented at the ANS conference, Madison Wisconsin, April 2004.
31. "Study of Geometry Effects on Local Corrosion Rates for LBE Loop", C. Wu, K. Dasika, Y. Chen, S. Moujaes, J. Zhang and N. Li, ANS National Conference San Diego June 2003.
32. "Simulation Considerations in Lead-Bismuth Transmutation Loops: Corrosion Concentration, velocity and Temperature Profiles of LBE Loops", S. Moujaes, Y. Chen, K. Dasika, C. Wu, N. Li, J. Zhang, 2003 NURETH10-conf. S. Korea Oct. 5-9.
33. "Modeling of Corrosion and Precipitation in the LBE Flow Loop and Study of Geometric Effects on Local Corrosion Rates", ANS Student Conference Berkley April 2003, K. Dasika,

C. Wu, S. Moujaes, Y. Chen.

34. "A Comparison of Computer Simulation Predictions to Experimental data Taken Side-by-Side of a Residential Home Configured with a Radiant Barrier Shield", S. Moujaes, R. Brickman. IMECE conf. New Orleans, Nov. 2003. paper no. IMECE2002-33884.
35. "Modelling Corrosion in Oxygen Controlled LBE Systems with Coupling of Chemical Kinetics and Hydrodynamics", K. Dasika, C. Wu, S. Moujaes, Y. Chen, ANS Conference Reno, November 2001.
36. "Modeling of Oxygen Controlled Surface Reaction Kinetics and Hydrodynamics", K. Dasika, C. Wu, S. Moujaes, Y. Chen, IYNC Conference in Seoul S. Korea April 2002.
37. "Numerical Modeling of Lead Oxidation in Controlled Lead Bismuth Eutectic Systems: Chemical Kinetics and Hydrodynamic Effects", K. Dasika, C. Wu, S. Moujaes, Y. Chen, ICAPP Conference, Hollywood Florida, ANS, June 2002.
38. "The UNLV Solar Dish-Stirling Project" C. Halford, R. Hurt, R. Boehm, Y. Baghzouz, S. Moujaes, D. Pepper, Proceedings of Solar Forum 2002, ASES.
39. "Alternative ways to teach HVAC and Other related Subjects Through Actual Project Involvement-Three case Studies", S. Moujaes, paper No. 2002-147 session 2793 ASEE Conference in Montreal (electronic form) no. of p. 12, Canada-June 2002.
40. "A Fully developed Two-Phase Flow Model in Vertical Channels for Bubbly and Slug Flow Regimes", S. Moujaes, E. Sleight, IMECE 2000, HTD-vol. 366-4, pp. 211-220.
41. "A Thermal Simulation Model in a Ventilated Residential Attic Using a Reflective Coating", S. Moujaes, N. Alsaiegh, Renewable and Advanced Energy Systems for the 21st Century Conf., Lahaina, Maui, April 10-14, RAES 7625 pp. 1-7,1999.
42. "Part I-Experimental Hydrodynamic Study of the Slurry Distribution in a Vertical Slurry heat Exchanger", S. Moujaes, C. Shih, Proceedings of the 24th International Technical Conference on Coal Utilization & Fuel Systems (ASME-FACT) pp. 1057-1066, Clearwater Fl, March 8-11, 1999.
43. "Part II-Computational Simulation of Flow Through a Vertical Slurry Heat Exchanger", S. Moujaes, J. Francis, B. Nassersharif, Proceedings of the 24th International Technical Conference on Coal Utilization & Fuel Systems (ASME\_FACT) pp. 1067-1073, Clearwater Fl, March 8-11, 1999.
44. S. Moujaes, J. Sparks. "Local Variables and Characterization of Two-Phase Flow of Air- Water in Vertical Rectangular Channels", IEMEC ASME conference proceedings in Anaheim, CA Nov. 1998. Vol. 5, pp.281- 288. 1998.
45. "Thermal Performance of a Two-Pass Infusate Heat Exchanger", S. Moujaes, D. Oliver. Published in the IEMEC ASME conference in Anaheim, CA Nov. 1998 Vol. 3, pp. 303-314. 1998.
46. "A Two-Phase Flow Hydrodynamics Experiment to Demonstrate Basic Features of Two- Phase Heat Transfer", S. Moujaes, J. Sparks, 1997 ASME National Heat Transfer Conference, Baltimore, MD, August 1997, vol. 6, pp.61-66.
47. "Radiation and Convection Effects in a Drift Emplaced Nuclear Waste Container with Backfill", S. Moujaes, A. Bhargava, Vol. 3, p. 259-266, Proceedings of the ASME-JSME Thermal Engineering Joint Conference, Maui 1995.
48. "Thermal Considerations in Vertically Emplaced Nuclear High-Level Nuclear Waste Containers", S. Moujaes, Y. Lei, Proceedings of the 5th International Conference on Radioactive Waste Management and Environmental Remediation, Berlin Germany, Sept.1995,

p. 867-871.

49. "Simulation of Heat Transfer Around Canisters Placed Horizontally in a Drift", S. Moujaes, A. Bhargava. High Level Radioactive Waste Management Conf., May 1994, vol 2, p.801-808.
50. "Heat Transfer Effects in vertically Emplaced High Level Nuclear Waste Containers", S. Moujaes, Y. Lei. High Level Radioactive Waste Management Conf., May 1994, vol 2, p. 816-822, Las Vegas.
51. "Potential Renewable Energy Production Technologies for the Sun Rich Middle East", S. Moujaes, H. Braun. Proceedings of the 1st Jordanian Mechanical Engineering Conference. June 1995. p.306-322.
52. "Heat Transfer in Vertical Concentric Cylinders in a High Level Nuclear Waste Repository", S. Moujaes, Y. Lei, Vol II, 1790-1797, High Level Radioactive Waste Management Conference, Las Vegas, Nevada, April 1993.
53. "A Detailed Heat Transfer Model for Different Energy Conserving Technologies Including The Attic in a Residence in the Arid Southwest", S. Moujaes, R. Brickman. Published in the proceedings of the First International Thermal Energy Congress ITEC-93 Marrakesh, June 1993.
54. "Experimental Data on the Effects of Attic Radiant Barrier Systems and Outside Wall and Roof Coatings on the Inside Room Space Temperature, S. Moujaes, Richard Brickman, Proceedings of the 2nd International Conference on Refrigeration and Air conditioning, Amman, Jordan April 1992, p. 102-117.
55. "Status Report on Performance Testing of a Solar Aided Multi-Function Vapor Compression Heat Pump", S. Moujaes, Bassel Abed El Noor. Proceedings of the 1992 International Renewable Energy Conference June, Amman, Jordan, p. 379-392.
56. "A Parametric Study of the Effects of Roof and Attic Barrier Radiant System (ARBS) Emmissivities, Roof Orientation and Wind Speed on Ceiling Cooling Load Through Modeling" S. Moujaes, International Symposium ECOS'92 Zaragoza-Spain, Advanced Energy Systems Division ASME, June 1992. pp.689-696.
57. "A Heat Transfer in a Residential Room Space Using Passive Energy Technologies, Part-I Model Development." S. Moujaes, Richard Brickman. Third International Conference on Renewable Energy Sources. Cairo-Egypt, Dec. 1992- 3 Jan. 1993. Vol. 2, p. 643-660.
58. "A Heat Transfer Model in a Residential Room Space Using Passive Energy Technologies, Part II-Model Validation & Survey of Passive Technologies Potentials" S. Moujaes, Richard Brickman, Proceedings of the 3rd Cairo International Symposium on Renewable Energy Sources Cairo, Egypt, Dec. 1992. Vol. 2, p.661-668.
59. "Thermal and Metallurgical Considerations of a Novel Design for the High Level Nuclear Waste Container", S. Moujaes, R. Skaggs, Y. Lei and V. Veeramachaneni, Proceedings of Focus 91' for Nuclear Waste Packaging, Las Vegas NV 1991. p.153-159.
60. "Comparative Cooling Loads in an Attic Using an Attic Radiant Barrier System Implicit Numerical Scheme" S. Moujaes, Proceedings of the 7th Annual International Engineering Systems Simulations Conference, Las Vegas Nevada July 1990, p. 634-641.
61. "Dynamic Simulation Considerations for a Buried Vertical Water Loop Rejecting Condenser Heat: Conduction /Convection on Water Loop", S. Moujaes Proceedings of the 23rd IECEC conference in Denver, CO. 1988 pp. 39-44.
62. "Performance of a Transient Model to Simulate Heat Transfer in a Water Source Ground Coupled Heat Pump Using Experimental Data as a Forcing Function", S. Moujaes,



Proceedings of the 1st International Conference on Refrigeration & Airconditioning 1988 Amman, Jordan p.78-85. ASHRAE co-sponsor.

63. "A Comparison of Two-Models Simulating Transient Heat Transfer in a Water Source Ground Coupled Heat Pump", S. Moujaes, CLIMA 2000 conference in Sarajevo, Yugoslavia (August 1989) vol. 5, p 430-435. ASHRAE co-sponsor.
64. "Computer Simulation of an Attic Radiant Barrier System Including Thermal Storage", S.F. Moujaes, Proceedings of the 24th IECEC conference Washington D.C. August 1989, pp. 1707-1712.
65. "Comparative Predictions of a Computer Simulation to Experimental Data of a Thermosiphon Driven Solar Heater" S. Moujaes C. Willems. 9th Miami International Congress on Energy and Environment, Miami Beach Florida, Dec. 1989, Energy and Environmental Progress-I, Vol. B pp.17-32.
66. "Effect of Spacing on Heat Rejection from a Vertical Ground Coupled Water Cooled Loop Including Thermal Leakage Between Pipes", S. Moujaes, the 22nd IECEC conference in Philadelphia 1987. paper No. 879096 pp. 1167-1171.
67. "Theoretical and Experimental Considerations in SRC-I Solidification", S. Moujaes Proceedings of 19th IECEC conference in San Francisco, CA, August 1984 p.1258-1265.
68. "Solid Dispersion Modeling in Coal Liquefaction Dissolvers", S. Moujaes, D.H.S. Ying, R. Subramanian, 1982, Paper No. 82CH1789, 7th Proceedings IECEC 1982 of the 17th Intersociety Energy Conversion Engineering Conference, Los Angeles, CA v2, p. 850-853.
69. "Experimental Simulation of Solids Distribution in Coal Liquefaction Dissolvers", S. Moujaes, R. Sivasubramanian, D.H.S. Ying, 5th Annual APCI Technology Symposium, December 1981, Allentown, PA.
70. "Numerical Model for a Solar Water Heater". Sfeir, A.; Menguy, G.; Moujaes, S.; Giessereitechnik Heliotech and Dev, Proc of the Int Conf Nov 2-6, 1975, v 2 1976 Dhahran, Saudi Arabia, Dev Anal Assoc Cambridge, Mass p.38-52.

### **Funded Research Grants, Projects, Commissions, and Contracts (% effort)**

Completed:

1. "Performance Experimentally of a PCM Material in an Arid Environment", Infiniti R, \$11,360; June –November 2016, S. Moujaes PI.
2. "Characterization of a Conditioning Hypothermic/ Hyperthermic Portable Device for use in Field Installations", US Army Office, University of Reno School of Medicine, November 13-Jan. 2015, \$52,000.
3. "Task 06-08: Field Test for Duct Leakage Assessment in Residential and its Effect on Overall Thermal Performance of the HVAC System", \$300K +30% cost sharing, S. Moujaes, funded by NCEMBT, \$347K (07/01/07-04/30/09).
4. "TASK 5-11: Duct Leakage Measurements in Residential Buildings", 2006-2007, funded by the NCEMBT, \$350K + 30% cost sharing (90%).
5. "High temperature Heat Exchanger Design for High Temperature Thermochemical Hydrogen Production Using Nuclear Energy", funded by DOE, \$415K + 20% cost sharing (01/05- 09/07).
6. "Development of Protocols for Thermal Comfort Studies in Office buildings and Field testing", 2004-2005, funded by NCEMBT, app. \$1M (with several other UNLV faculty) (30%).
7. "Zero Demand Energy House" proposal with R. Boehm and Y. Baghzouz, for app. \$265,000

- and a matching fund from Pinnacle Homes for about \$150,000 (Sept. 03).started in Sp 04.
8. "Modeling Corrosion in Oxygen Controlled LBE Systems with Coupling of Chemical Kinetics and Hydrodynamics-Phase III", DOE TRP/UNLV Transmutation of Nuclear Waste, S. Moujaes PI, Y. Chen Co-PI, app. \$109,000 (1 yr) started Sept. 1, 2003 (2 graduate students)(50%).
  9. "Modeling Corrosion in Oxygen Controlled LBE Systems with Coupling of Chemical Kinetics and Hydrodynamics-Phase I", DOE AAA/ADT Transmutation of Nuclear Waste, S. Moujaes PI, Y. Chen Co-PI, app. \$109,000 (1 yr) starting Sept. 1, 2001 (2 graduate students)(50%).
  10. "Modeling Corrosion in Oxygen Controlled LBE Systems with Coupling of Chemical Kinetics and Hydrodynamics-Phase II", DOE AAA/ADT Transmutation of Nuclear Waste, S. Moujaes PI, Y. Chen Co-PI, app. \$109,011 (1 yr) Sept. 1, 2002-Aug. 31, 03 (2 graduate students)(50%).
  11. "Energy Assessment Center" Nevada Power, S. Moujaes PI, R. Brickman Co- PI, (2 undergraduate students), app. \$72,000, (1yr) started Sept. 1, 2001 (100%).
  12. "Solar Dish Concentrator Project", (S. Moujaes, Co-PI, R. Boehm, PI, Y. Baghzouz Co-PI, D. Pepper, Co-PI) DOE, \$200,000(1yr.) Started April 2001, (11 undergraduate students)(25%).
  13. "National Center for Energy Management and Building Technologies" proposal work funded by EMI, Total funds \$400,000 (out of which the applicant's group has \$155,000-Two faculty from UNLV, one FT professional and one undergraduate student in ME) April 1-November 30, 2002 (app. 40%).
  14. "Energy Audits for Institutional Buildings at UNLV", with several other faculty members, work is starting in coordination with Tom Hagge (Vice President of Facilities-UNLV). A job per fee based project. Funding at \$15K.
  15. "Nevada Solar Dish Project", \$50,000, continuation funding from DOE with R. Boehm PI, Y. Baghzouz, D. Pepper (8/2002-3/2003).
  16. "UNLV/DOE Cooperative Agreement", (Co-PI with seven other faculty from CE and ME Depts.), \$1.5M from 90-95, (supervised 2 graduate students)(1/7 of total effort).
  17. "Performance Analysis of Reflectix Radiant Barrier on the Heating and Cooling Loads of Homes in the Southwest", \$25,000 Reflecx Corp. 1997. S. Moujaes, R. Brickman (50% total effort).
  18. "Development of the Arid Regions Building Laboratory", R. Boehm, S. Moujaes, \$19,320, ARI project, 1997 (50%).
  19. "Establishment of a Test Facility for Energy Conservation Studies at UNLV", S. Moujaes, R. Boehm, app. \$50,000, 92-94 (65%).
  20. "Performance Analysis of Radiant Barriers on Heating and Cooling Loads of Homes in the Southwest and Southeast United States", \$11,500, Fi-Foil Company, FI, 2000, S. Moujaes, R. Brickman (50%)
  21. "Performance Analysis of Thermoshield Technology. Reflective Coating in a Desert Climate", \$6,420, Thermoshield Corp. 2001, S. Moujaes, R. Brickman (45%).
  22. "A Comparison of Computer Simulation Predictions to Experimental Data Taken from Side-by-Side Residential Homes Configured with a Radiant Barrier", \$8,100, Louisiana- Pacific Corp., 2000, S. Moujaes, R. Brickman (45%).
  23. "Comparative Study Between the Application of a 2-Deck Versus a 3-Deck Multi-Zone Rooftop HVAC Unit for a Clark County School District Application", \$8,500, CCSD, S. Moujaes, R. Jones, 2001 (75%).
  24. "Thermal Performance of Radiance Technology Applied to the Underside of a Residential

- Roof in the Sacramento Region", \$5,300, S. Moujaes, R. Brickman, 2001 (45%).
25. "Thermal Analysis of the Application of Kool-Ply Technology. To A Residential Attic-Attic Duct Effect", S. Moujaes, R. Brickman, \$7,000, 1995 (45%).
  26. "Thermal Performance Determination of a Solar Assisted Evaporator Vapor Compression Refrigeration Cycle", S. Moujaes, B. Abdel Noor, \$25,000 (total expenditure by Thermotaxis Co., L.V., NV), 1991 (50%).
  27. "Thermal Performance of a Two-Stage Evaporative Cooler in Las Vegas", \$15,000, Governor's Energy Office, S. Moujaes, 1985 (100%).
  28. "Internal funding for two small projects from the University research Council app." \$6,000 (100%).
  29. "Experimental Testing on Millgard Windows in Las Vegas", S. Moujaes, B. Boehm, \$12,000, Millgard Co., Las Vegas, 1998 (75%).
  30. "Heat Transfer Computer Model for a Novel Biomedical Heat Exchanger", S. Moujaes, \$5,200 LEVEL 1 Sims Medical Systems, Rockford MA, 1997 (100%).
  31. "Study of Indoor Air Quality Problems at UNLV Harrah's Building", \$5,500, O&M office at UNLV (support for graduate student for \$3,000 P. Murray), 1997 (45%).
  32. "High Temperature Hydrogen production from Thermochemical Processes Using Concentrated Solar Energy Receivers", funded by DOE \$365K (10/1/04-03/31/09).

### **Service:**

#### **University**

1. Voted to the Special Hearings Panel Committee (2010-2011)
2. Voted Senator from the COE to the faculty senate starting Fa06 (3 yr term, 2006-2009)
3. Voted Senator representing COE at the UNLV Faculty Senate starting Fa03 (3 yrs term completed, 2003-2006)
4. Member of the Faculty Senate Committee (FSC) on Special Hearings, 2001-03
5. Faculty Senate representative on the committee of Academic Freedom and Ethics Fa03(1 yr)
6. Member of the FSC on Appeals and Tenure (2001-2003)(completed chairing on appeals case)
7. FSC for Subordinate evaluations 95-96
8. FSC appeals and promotion 93-94 (chaired several cases for P&T as part of the total responsibility)
9. Internal Review Committee of the Graduate Program in the Math Department, Chairman 10. 1993
11. Special hearings committee 97-98
12. University admissions committee 89-90
13. FSC University benefits and salary 89-91
14. Senate appeal committee 87-88
15. University admissions 87-88
16. Team taught a course with Dr. Jones in Hotel Management on Mechanical Systems with a field trip (the Rebuild America Program/DOE)
17. Science judging for Clark County School District (2000-2001)

#### **College**

1. Voted ME dept. representative for the College Affairs Committee (08-10)
2. College lead technical person for the Lead-Bismuth Eutectic loop with the AAA/UNLV

2005-2006

3. Member of three search committees for CEE professors 1999, 2000, 2001
4. Engineering college affairs committee 92-93
5. Departmental representative on college merit review committee 90-91
6. High schools relations committee 84-85, 87-88
7. College Fair, 88-present

### **School/Department**

1. Member of the Dept. undergraduate curriculum committee (Jan. 2010-present)
2. Helped establish and was founding faculty advisor of the ANS (American Nuclear Society) student chapter at UNLV (May 2002-2006)
3. Established and am presently founding faculty advisor of the ASHRAE/NSPE Student Chapter at UNLV (1997-present)
4. Established (1986) and was founding faculty -90 of the ASME Student Chapter at UNLV
5. Have secured several scholarships for our students from ASHRAE (\$500/student) and some from the NSPE society (\$1,000/student). This year we had four students obtain these scholarships (ASHRAE) from UNLV/ME Dept. and two from the Community College
6. Member of the ABET 2000 department committee
7. Participated in offering refresher courses for the EIT 2000, 2001, 2002, 2003
8. Seminar Program Chairman ME Dept., 91 and 95
9. Chairman of dep.'s graduate committee 91-96
10. ABET 2000 Dept. coordinator
11. Professional and Youth Building A Commitment-PAYBAC program 1993 CCSD
12. Have offered over the last three summers, as a service to several students requests in ME, CE and EE depts., summer offerings of MEG311&314 Helped establish and am presently faculty advisor of the ANS student chapter at UNLV (May 2002-2006)

### **Professional and learned societies**

1. Invited as a session chair for the ICSEng conference in Las Vegas August 2014.
2. Invited as a Keynote speaker to the Second IASTED International Conference on Power and Energy Systems and Applications (PESA 2012) November 12-14, 2012, Las Vegas, USA
3. Chaired a session in the CLIMA 2010 conference in Antalya, Turkey (May 2010)
4. Member of the ASME society (81-present)
5. Member of ANS society (2002-2007)
6. Member of the ASHRAE society (84-present)
7. Member of the ASEE society (2002-2007)
8. Registered Professional Engineer in the State of Nevada (86-present) No. 7215
9. Voting member of the TC4.4 committee for ASHRAE (serving a three-year term)
10. Currently an Associate editor to the Journal of Energy Engineering (96-present)
11. Have chaired several sessions in the IECEC conference and organized one session
12. Upgraded the ASME group in Southern Nevada to the Silver State Chapter of the ASME society in Southern Nevada. The budget increased from about \$100/yr. to over a \$1,000/yr. (86)
13. Education chairman for the Southern Nevada Professional chapter of the ASHRAE (98-present)
14. Attended two Clark County Workshops (Nov. and Dec. 02) one concerning Building

Envelope and the second Load Management: Flattening the Peak.

### **Service awards and recognition**

1. Distinguished Alumnus Award, May 2010 Faculty of Engineering and Architecture, American University in Beirut, Beirut Lebanon
2. Honorable Mention for "Distinguished College Researcher", 2007-2008 Honors Convocation.
3. Letter of appreciation from ASHRAE to the Dean of COE on efforts for participation in the TC4.4 committee August, 03
4. Nominated to the Rudolf Gunnerman Award offered by DRI August 2002 (\$25,000)
5. certificate of appreciation from ASME for efforts as the Silver State Chapter President 86-91
6. Nominated for the HRC research Award for the year 2003 (\$25,000)
7. Membership development Achievement Award 87-89(ASME) for surpassing quota set for our section by 267% as suggested by Region IX
8. Certificate of appreciation from ASME for efforts with the student chapter 88-89

### **Outreach or other activities**

1. Invited talk in July 2011 to the FEA @ AUB faculty in Beirut, Lebanon
2. Reviewer of proposals for DOE for energy conservation/renewables area (3 proposals in 03)
  - Reviewer of Proposals for NSF on energy conservation research area (3 proposals in 03)
3. Reviewer of papers for ASHRAE, ASME, IJR, JEE and others (more than 45 papers were reviewed over 20 years).
4. Have consulted in the area of energy conservation to numerous companies nationally
5. Have consulted as an expert witness over the years to over 15 law firms in the Las Vegas area (over 20 cases)
6. Have consulted with a biomedical company from Massachusetts on writing a computer code that would help analyze the performance of a new design for heat exchangers of blood re-warming techniques for hypothermic patients (summer of 97)
7. Was an invited speaker to the Reflective Insulation Manufacturers Association (RIMA) in their yearly meeting (February 1997). The talk was about the potential uses of a computer code that was developed by the applicant/R. Brickman RESHEAT used for energy conservation comparative calculations.
8. I have given five invited technical talks during my previous visits to Damascus Syria (summer 93-95-96,99) to the Association of Syrian Engineers/ University of Damascus on various research work I was involved in.
9. Was a member of a panel of speakers (energy conservation) during a visit to attend and present a paper (June 1995) at the University of Jordan in Amman/Jordanian Syndicate of Engineers.
10. An invited technical talk to the ME dept. in Al Ittihad University June 04, 2005, Al-Ein, Abu Dhabi, UAE.

### **Languages:**

1. Fluent in Arabic
2. Fluent in English
3. Fair in French
4. A little bit of spoken Armenian