

## HASSAN, Y. A.

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1. Yang, S.; Seo, J. and Hassan, Y. A., "Thermal hydraulic characteristics of unstable bubbling of direct contact condensation of steam in subcooled water", International Journal of Heat and Mass Transfer, Vol. 138, pp.580-596.
2. Busco, G.; Merzari, E. and Hassan, Y. A., "Invariant Analysis of the Reynolds Stress Tensor for a Nuclear Fuel Assembly with Spacer Grid and Split Type Vanes," International Journal of Heat and Fluid Flow, Vol. 77, pp. 144-156, 2019.
3. Alwafi, A.; Nguyen, T. D.; Hassan, Y. A.; Anand, N. K., "Time-resolved particle image velocimetry measurements of a single impinging jet in the upper plenum of a scaled facility of high temperature gas-cooled reactors," International Journal of Heat and Fluid Flow, Vol.76, pp.113-129, 2019.
4. Quintanar, N. K.; Nguyen, T. D.; Vaghetto, R.; Hassan, Y. A., "Natural circulation flow distribution within a multi-branch manifold," International Journal of Heat and Mass Transfer, Vol. 135, pp.1-15, 2019.
5. Nguyen, T. D.; Muyschondt, R.; Hassan, Y. A.; Anand, N. K., "Experimental investigation of cross flow mixing in a randomly packed bed and streamwise vortex characteristics using particle image velocimetry and proper orthogonal decomposition analysis," Physics of Fluids, Vol. 31 (2), 2019. Designated as a "Featured Article" by the journal editors.
6. Nguyen, T.D.; B Maher, B. and Hassan, Y.A., "Effects of Nozzle Pressure Ratio and Nozzle-to-Plate Distance to Flowfield Characteristics of an Under-Expanded Jet Impinging on a Flat Surface," Aerospace 6 (4), 1-28, 2019.
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12. Han, L.; Anand, N. K.; Hassan, Y. A.; Nguyen, T. D., "Large Eddy Simulation of the Turbulent Flows of Twin Parallel Jets," International Journal of Heat and Mass Transfer, Vol. 129, pp. 1263-1273, 2019.
13. Lai, J. K.; Merzari, E.; Hassan, Y. A., "Large Eddy Simulation of the Flow Behavior in a Simplified Helical Coil Steam Generator," Journal of Fluids Engineering, Vol. 141 (2), 021401, 2019.
14. Nguyen, T. D.; Goth, N.; Jones, P.; Vaghetto, R.; Hassan, Y. A., "Stereoscopic PIV measurements of near-wall flow in a tightly packed rod bundle with wire spacers," Experimental Thermal and Fluid Science, Vol. 92, 420-435, 2018.
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7. Hassan, Y. A., "Multiphase Flow Measurements Using Multiparticle Image Velocimetry," chapter 36, pp. 36.1-36.15, in The Handbook of Fluid Dynamics, CRC Press LLC, editor-in-chief Johnson, R.W., 1998.
8. Hassan, Y. A. and Blanchat, T. K., "Measurement of Two-Phase Interfacial Drag in Stratified Flow with Pulsed Laser Velocimetry," chapter 24, pp. 283, Imaging in Transport Processes, edited by Sideman, S. and Hijikata, K., published by Begell House Inc., New York, 1993.

#### Ph.D. Students and Dissertation - Texas A&M University

1. Lai, J. – Ph.D., May 2019, "Quantification of Turbulent Characteristics Using High Fidelity Computational Fluid Dynamics for Heat Exchanger Applications."
2. Botha, G. – Ph.D., May 2019, "Quantification of Turbulence Statistics for the Near-Wall Region in Unstructured Pebble Beds Using Direct Numerical Simulation."
3. Quintanar, N. – Ph.D., May 2019, "Temperature and high resolution velocimetry measurements of natural circulation flow in a scaled water reactor cavity cooling system (WRCCS)."
4. Yang, S. – Ph.D., May 2019, "Experimental investigation on multifluid, multiphase flow phenomena for computer code validation."
5. Childs, M. – Ph.D., May 2019, "Full field reconstruction and uncertainty quantification of particle image velocimetry measurements in a 5x5 rod bundle with mixing vane spacer grids."

6. Goth, N. – Ph.D., December 2018, “Analysis of Experimental Velocity Measurements on a Matched-Index-of-Refractive 61-pin Wire-Wrapped Bundle.”
7. Brockmeyer, L. – Ph.D., December 2018, “Fluid-Structure Interaction Simulation in Application for Nuclear Engineering.”
8. Sarikurt, F. – Ph.D., August 2017, “Multi-Scale CFD Simulations of Momentum and Buoyancy Driven Flows in Nuclear Reactor Systems.”
9. Carasik, L. B. – Ph.D., May 2017, “Investigation of Solution Verification and Validation of Nuclear Thermal Hydraulics Computational Fluid Dynamics using Twin Rectangular Turbulent Jets.”
10. Fick, L. H. – Ph.D., May 2017, “Direct Numerical Simulation of Incompressible Flows in Domain of Close Packed Spheres.”
11. Chu, C.H. – Ph.D., May 2017, “Application of the Fictitious Domain Method to Flow Problems with Complex Geometries.”
12. Park, J.H. – Ph.D. (Co-Chair), August 2016, “Natural Circulation in the Upper Plenum of a Scaled Model of a Very High Temperature Reactor in the event of Loss-of-Coolant Accident.”
13. Wang, H. – Ph.D., December 2015, “Experimental Study of the Turbulent Mixing of Two Parallel jets for Benchmarking Numerical Models.”
14. Sulaiman, S. – Ph.D., August 2015, “Experimental Investigations of Flow Behavior inside the Upper Plenum of TAMU-Air-Cooled Reactor Cavity Cooling System.”
15. Yoo, J., May 2015, “Experimental Study on the Subcooled Boiling Flow via Optical Measurements Techniques.”
16. Estrada-Perez, C.D., December 2014, “Multiscale Experiments in Turbulent Subcooled Boiling Flow through a Square Channel with a Single Heated Wall.”
17. Lee, S. – Ph.D., December 2014, “Pressure Drop and Filtration through Fibrous Porous Media on the Sump Strainer of Light Water Reactors.”
18. Vaghetto, R. – Ph.D., December 2013, “Experimental and Computational Study of a Scaled Reactor Cavity Cooling System.”
19. Frisani, A. – Ph.D., December 2012, “Direct Forcing Immersed Boundary Methods: Finite Element versus Finite Volume Approach.”
20. Wei, H. – Ph.D., December 2012, “CFD Analyses of Flow Structures in Air-Ingress and Rod Bundle Problems.”
21. Kanjanakijkasem, W. – Ph.D., December 2012, “Preliminary Study of Bypass Flow in Prismatic Core of Very High Temperature Reactor Using Small-Scale Model.”
22. Kassab, A. – Ph.D., December 2012, “High Resolution Study of Micrometer Particle Detachment and Resuspension on Different Surfaces.”
23. Capone, L. – Ph.D., August 2012, “CFD Analysis of Nuclear Fuel Bundles and Spacer Grids for PWR Reactors.”
24. Salpeter, N. – Ph.D., May 2012, “Development of Spatio-Temporal Wavelet Post Processing Techniques for Application to Thermal Hydraulics Experiments and Numerical Simulations.”
25. Amini, N. – Ph.D., December 2011, “Turbulent Flow Analysis and Coherent Structure Identification in Experimental Models with Complex Geometries.”
26. Kang, S. – Ph.D., December 2010, “Immersed Boundary Methods in the Lattice Boltzmann Equation for Flow Simulation.”
27. Muddu, R.M.G. – Ph.D., December 2010, “Three Dimensional Simulation of Rayleigh-Benard Convection for Rapid Microscale Polymerase Chain Reaction.”
28. Dominguez-Ontiveros, E.E. – Ph.D., May 2010, “Non-Intrusive Experimental Investigation of Multi-Scale Flow Behavior in Rod Bundle with Spacer-Grids.”
29. Goldmann, A. S. – Ph.D., December 2009, “Experimental and Numerical Investigation of Aerosol Scavenging by Sprays.”
30. Longmire, P. – Ph.D., May 2007, “Computational Fluid Dynamics (CFD) Simulations of Aerosol in a U-Shaped Steam Generator Tube.”

31. Vijay, V.K. – Ph.D., December 2006, “Numerical Modeling of Species Transport in Turbulent Flow and Experimental Study on Aerosol Sampling.”
32. Gutierrez Torres, C. C. – Ph.D., August 2004, “Modification of Turbulent Structure in Channel Flows by Microbubble Injection Close to the Wall.”
33. Jimenez Bernal, J.A.– Ph.D., August 2004, “Microbubble Drag Reduction Phenomenon Study in a Channel Flow.”
34. Hari, S. – Ph.D., December 2003, “Computational Fluid Dynamics (CFD) Simulations of Dilute Fluid-Particle Flows in Aerosol Concentrators.”
35. Todd, Donald, R. – Ph.D., December 2002, “Methodologies for Analyzing PIV and SIV Results from a Two-Phase Air/Water Experiment.”
36. Barsamian, H.R. - Ph.D., August 2000, “New Near-Wall Models with Dynamic Subgrid Scale Closure for Large Eddy Simulation in Curvilinear Coordinates for Complex Geometries.”
37. Troshko, A.A. – Ph.D., August 2000, “A Two-Equation Multidimensional Model of Turbulent Bubbly Flows.”
38. Randorf, J. A. – Ph.D., May 2000, “Designing and Implementing a Practical Reuse Framework for Six Degree-of-Freedom Missile Simulations with Concurrency.”
39. Ortiz-Villafuerte J. –Ph.D., December 1999, “Three-Dimensional Experimental Investigation of the Shape and Dynamics of a Rising Bubble in Stagnant Water with Particle Tracking Velocimetry.”
40. Banerjee, S. – Ph.D., December 1999, “The Development of a Multiblocked Strongly Conservative Finite Volume Solver with Chimera Grid Capabilities for Flows in Complex Geometries.”
41. Schmidl, W.D. – Ph.D., May 1999, “Three-Dimensional Experimental Investigation of Two-Phase Flow Structure in a Bubbly Pipe Flow.”
42. Ibrahim, W.A. - Ph.D., May 1999, “Improvements in the Large-Eddy Simulation Technique for Complex-Geometry Turbulent Flows.”
43. Philip, O.G. - Ph.D., May 1996, “Investigation of the Interaction between Fluid Flow and Fluid Free Surface Movement Using Particle Image Velocimetry.”
44. Davis, F.J., Jr. - Ph.D., May 1992, “A Two-Dimensional Finite Element Method Large Eddy Simulation for Application to Turbulent Steam Generator Flow.”
45. Lee, S.Y. - Ph.D., December 1992, “A Study and Improvement of Large Eddy Simulation (LES) for Practical Application.”
46. Blanchat, T.K. - Ph.D., December 1991, “Development of Pulsed Laser Velocimetry Techniques for Measurement of Two-Phase Interfacial Drag in a Horizontal Stratified Flow.”

#### **M.S. Students and Thesis - Texas A&M University**

1. Headley, W., MS, May 2019, “Pressure drop measurements and friction factor calculations for a 5x5 PWR rod bundle with spacer grids.”
2. Orea, D., MS, May 2019, “Flow mixing effects in cold leg of pressurized water reactor for CFD-UQ benchmark.”
3. Lee, K. MS, May 2019, “Experimental investigation on steam-water direct contact condensation using laser-induced fluorescence (LIF).”
4. Kappes, E. D. – MS, December 2018, “design, development and Execution of PIV Measurements on a Randomly packed Pebble Bed Experimental facility Using Matched Index of Refraction.”
5. Neptune, K. – MS, August 2018, “Thermal-Hydraulic and Fuel Performance Code Coupling for Multi-physics Industrial Applications.”
6. Delgado, M. – MS, May 2018, “High resolution Measurements of Shell-Side Velocity Fields in Helical Coil Steam Generators Using Particle Image Velocimetry.”
7. Mulloy, J. – MS, May 2018, “Simulation of Cold Leg Mixing Using Star-CCM+ Computer Code.”
8. Jones, Phillip – MS, December 2017, “Pressure Measurements in a Wire-Wrapped 61 Pin Hexagonal Fuel Bundle.”
9. Krueger, A. M. – MS, December 2017, “Estimation of Discretization Error for Three Dimensional CFD Simulations Using a Taylor Series Modified Equation Analysis.”

10. Bani Ahmad, M. – MS, December 2017, “Computational Fluid Dynamics Analysis of Isothermal and Non-Isothermal Twin Jets.”
11. Goth, N.E. – MS, May 2017, “Design and PIV Measurements on a Wire-Wrapped 61-Rod Hexagonal Fuel Assembly Experimental Facility.”
12. Fullerton, C. T. – MS, August 2017, “Characterization of Aluminum Corrosion Precipitation in Support of GSI-191 Head Loss Testing.”
13. Silberberg, M.B. – MS, May 2017, “Design and Preliminary Measurements inside of a Simplified High Temperature Gas-Cooled Reactor Building.”
14. Crook, T.M. – MS, May 2017, “Importance of Alternative Reactor Vessel Flow Paths during Loss-of-Coolant Accident Scenarios with Debris-Induced Core Blockage.”
15. Beck, S.H. – MS, May 2017, “Spatial and Temporal Tracking of Pathogenic Bioaerosols in Beef Slaughter Facilities Using Dynamic Monitoring Techniques.”
16. Childs, M.P. – MS, December 2016, “Quantification of Boric Acid Concentration and Losses due to Vaporization in the PASTA facility.”
17. Williams, T. – MS, December 2016, “The Effect of DC Voltage on Fibrous Debris bypass Through a Containment Sump Strainer.”
18. Kyriakopoulos, V. – MS, December 2016, “Effect of Chemical Injections on Pressure Drop Through a Fibrous Debris Bed.”
19. Budd, J. – MS, May 2016, “Comparison between Particle Image Velocimetry and Laser Doppler Velocimetry Measurements inside the TAMU Reactor Cavity Cooling System Experimental Test Facility.”
20. Blowe, T. – MS, December 2015, “RANS CFD Methodologies for a PWR Fuel Rod Assembly.”
21. Alwafi, A. – MS, December 2015, “Investigation of the flow of the Upper Plenum of a Scaled Very High Temperature Reactor during a Depressurization Cooldown Conduction Accident.”
22. Gorman, M. – MS, August 2015, “Characterization of the Thermal Hydraulics Behavior of an Experimental Reactor Cavity Cooling System with Water.”
23. Kappes, M. – MS, August 2015, “Particle Size Distributions of Debris Upstream and Downstream of the Containment Sump Strainer in a Light Water Reactor.”
24. Galegar, N. – MS, May 2015, “Evaluation of Instantaneous Pressure Measurements on a Rod Surface in a 5x5 Bundle and Validation through CFD.”
25. Sarikurt, F. – MS, May 2015, “CFD Simulations of Erosion of a Stratified Layer by a Buoyant Jet in a Large Vessel.”
26. Cook, W. – MS, December 2014, “Multi-Dimensional Nodalization of a Pressurized Water Reactor Core Using RELAP5-3D.”
27. McVay, K – MS, August 2014, “Experimental Design and Flow Visualization for the Upper Plenum of a Very High Temperature Gas Cooled reactor for Computer Fluid Dynamics Validation.”
28. Alhashimi, T. – MS, December 2014, “Measurement of Temperature Profile in the Reactor Cavity Cooling System.”
29. Goumnerov, H. – MS, August 2014, “Validation of a Three Dimensional Particle Tracking Velocimetry Software.”
30. Abdulsattar, S. – MS, May 2014, “Head Loss through Fibrous Debris Bed with Different Types of Perforated Strainers.”
31. Ward, P. – MS, May 2014. “Direct Numerical Simulation of the Flow in a Pebble Bed.”
32. Wu, H. – MS, August 2013, “Heat Transfer Simulation of Reactor Cavity Cooling System Experimental Facility Using RELAP5-3D and Generation of View Factors Using MCNP.”
33. Wang, H. –MS, December 2012, “CFD Analysis of Core Bypass Flow and Crossflow in the Prismatic Very High Temperature Gas-Cooled Nuclear Reactor.”
34. Di, Y. – MS, December 2012, “Experimental Observation and Measurements of Pool Boiling Heat Transfer Using PIV, Shadowgraphy and RICM Techniques.”
35. Rodriguez, O. A. – MS., August 2012, “RELAP3-D Thermal Hydraulics Computer Program Analysis Coupled with DAKOTA and STAR-CCM+ Codes.”

36. Khan, A.R. – MS., August 2012, “Bubbly Flow Experiment in Channel Using an Optical Probe and Tracking Algorithm.”
37. Hartley, J. – MS., August 2011, “Double Ended Guillotine Break in a Prismatic Block VHTR Lower Plenum Air Ingress Scenario.”
38. Gandhir, A. – MS., August 2011, “Computational Analysis of Fluid Flow in Pebble Bed Modular Reactor.”
39. Kim, D. – MS., August 2011, “Isothermal Gas-Liquid Flow using the Lattice Boltzmann Method.”
40. Rodolfo, V. – MS., May 2011, “Experimental Study of the Thermal Hydraulic Phenomena in the Reactor Cavity Cooling System and Analysis of the Effects of Graphite Dispersion.”
41. Kang, C. – MS., August 2010, “Pressure Drop in a Pebble Bed Reactor.”
42. Salpeter, N.O. – MS., May 2010, “Large Eddy Simulation of Dual Jet Flow Mixing within Rod Bundles.”
43. Frisani, A. – MS., May 2010, “Loss of Flow Circulation Accident Analysis for the Reactor Cavity Cooling System of VHTR using CFD Codes.”
44. Estrada-Perez, C. E. – MS., May 2009, “Experimental Two-Phase Flow Characterization of Subcooled Boiling in a Rectangular Channel.”
45. Kim, J. – ME, August 2009, “Wall Pressure Analysis of Test Channel of Rod Bundle.”
46. Barner, R.B. – MS., December 2006, “Power Conversion Unit Studies for the Next Generation Nuclear Plant Coupled to a High-Temperature Steam Electrolysis Facility.”
47. Anderson, N. – MS., August 2006, “Coupling RELAP5-3D and FLUENT to Analyze the Outlet Plenum of the VHTR.”
48. Moore, Eugene, J. T. – MS., May 2006, “RELAP5-3D Model Validation and Benchmark Exercises for Advanced Gas Cooled Reactor Applications.”
49. Maroni Veiga, A.G. – MS., May 2005, “Analysis and Identification of Vortices within a Turbulent Channel Boundary Layer Flow.”
50. Estrada-Perez, C.E. – MS., December 2004, “Analysis Comparison and Modification of Various Particle Image Velocimetry (PIV) Algorithms.”
51. Zhen, L. – MS., December 2004, “Wavelet Analysis Study of Microbubble Drag reduction in a Boundary Channel Flow.”
52. Cocheme, F.G. – MS., December 2004, “Assessment of passive Decay Heat Removal in the General Atomic Modular Helium Reactor.” Co-Chair.
53. Liao, C. – Master in Engineering, December 2004, “Particle Transport in Fluid Flow Simulated by Using Computational Fluid Dynamics FLUENT Code.”
54. Ontiveros, Elvis, E. D. – MS., August, 2004, “Wall-Pressure and PIV Measurements and Analysis for Microbubble Drag Reduction Investigation.”
55. Vasudevamurthy, G. – MS., December 2003, “Optimized Profile Extraction and Three Dimensional Reconstruction Technique Applied to Bubble Shapes.”
56. Yesilyurt, G. – MS., May 2003, “Numerical Simulation of Flow Distribution for Pebble Bed High Temperature Gas Cooled Reactors.”
57. Pratt III, P. P. – M.S., May 2003, “A Three Dimensional Simulation of a Thermal Experiment Conducted on an Accelerator Driven System Target Concept.”
58. Reza, S. M. – M.S., December 2002, “Simulation of Subcooled Boiling at Low Pressure Conditions with RELAP5-3D Computer Program.”
59. Furukawa, T. – M.S., December 2002, “Three-Dimensional Reconstruction of Bubble Distribution in Two-Phase Bubble Flows with the Dynamic Programming Method.”
60. Rezvyi A. – M.S., December 2002, “Flow Instabilities in the Core and Coolant Circuit of Advanced Low-Boiling Light Water Reactor: Classification of Causes and Development of Simulator for Future Analysis.”
61. Yilmaz, F. – M.S., August 2002, “Reactor Materials Study of EBR-II and BN350.”
62. Helton, D.M. – M.S., August 2002, “Calculation of Unsteady Turbulent Flow around Obstacles Using the Large Eddy Simulation Turbulence Model.”
63. Clarno, K. T – M.S., August 2001, “Development of RELAP-3D Three-Dimensional Model of the VVER-1000 Nuclear Power Plant for Analysis of a Large-Break Loss-of-Coolant-Accident.”

64. Fu, C. - M.S., May 2000, "RELAP5/MOD3.2 Analysis of a VVER-1000 Reactor with UO<sub>2</sub> Fuel and MOX Fuel."
65. Moscalu, D.R. – M.S., May 1999, "Simulation of Operational Transients in a VVER-1000 Nuclear Power Plant Using the RELAP5/MOD3.2 Computer Program."
66. Hari, S. – M.S., December 1998, "Analysis of a Research Reactor under Anticipated Transients Without Scram Events Using the RELAP5/MOD3.2 Computer Program."
67. Yang, Y.H. - M.S., August 1998, "Experimental Study on Bubble Collapse in Subcooled Water with Three-Dimensional Particle Image Velocimetry."
68. Luedeke, T.P. - M.S., August 1997, "A Midloop Operation Benchmark Test of the RELAP5/MOD3.2 Code."
69. Troshko, A.A. - M.S., December 1996, "Simulation of the Loss of the Residual Heat Removal of an Integral Test Facility Using Computer Code CATHARE."
70. Reyes, J.P. - M.S., May 1996, "Simulation of Condensation in the Presence of Non-Condensable Gases Using the French Thermal Hydraulic Computer Code CATHARE."
71. Yoon, C. - M.S., May 1996, "Development of a Genetic Algorithm Tracking Technique for the Particle Image Velocimetry and Comparison with Other Tracking Models."
72. Cuevas Vivas, G.F. - M.S., May 1995, "Analysis of the Simplified Boiling Water Reactor Using the Code RAMONA-4B."
73. Faust, C.R. - M.S., May 1995, "Advanced Nuclear Reactor Safety Analysis: The Simulation of a Small Break Loss-of-Coolant Accident in the Simplified Boiling Water Reactor Using RELAP5/MOD3.1.1."
74. Ibrahim, W.A.H - M.S., May 1995, "Turbulence Prediction in Two- and Three-Dimensional Bundle Flows Using Large Eddy Simulation."
75. Saleh, H.H. - M.S., May 1995, "Numerical Simulation of Intermediate Heat Exchanger of the Liquid Metal Fast Breeder Reactor Using COMMIX-1B."
76. Johns, R.C. - M.S., August 1995, "Enhancement of Two-Phase Flow Images Obtained Using Dynamic Neutron Radiography."
77. Smith, S.G. - M.S., August 1995, "Dynamic System Characterization of an Integral Test Facility of an Advanced PWR."
78. Piper, R.B. - M.S., December 1995, "The Simulation of a 1-Inch Break Loss-of-Coolant Accident at the ROSA-IV/AP600 Test Facility Using RELAP5/MOD3.2."
79. Barsamian, H.R. - M.S., December 1994, "Turbulence Prediction Using the Large Eddy Simulation Method in Staggered and Inlined Bundles."
80. Carlisle, B.S. - M.S., August 1994, "An Evaluation of the Neutron Radiography Facility at the Nuclear Science Center for Dynamic Imaging of Two-Phase Hydrogenous Fluids."
81. Banerjee, S.S. - M.S., May 1994, "RELAP5/MOD3 Simulation of the Loss of Residual Heat Removal during Midloop Operation Experiment Conducted at the ROSA-IV Large Scale Test Facility."
82. Cebull, P.P. - M.S., May 1994, "Simulation of the SPE-4 Small Break Loss-of-Coolant Accident Using RELAP5/MOD3.1."
83. Costes, S.V.L - M.S., December 1994, "Analysis of a Three-Dimensional Particle Image Velocimetry Algorithm and Analysis of Synthetic and Experimental Flow in Three-Dimensions."
84. Martinez, R.S. - M.S., December 1994, "Flow Visualization around Cylinders in a Channel Flow Using Particle Image Velocimetry."
85. Philip, O.G. - M.S., August 1993, "Development of a High-Speed Fluorescent Particle Image Velocimetry Technique to Study Steam Bubble Collapse."
86. Seeley, C.H., Jr. - M.S., December 1992, "Neural Network Approaches to Tracer Identification as Related to PIV Research."
87. Bott, C.P. - M.S., May 1992, "Simulation of a Small Break Loss-of-Coolant Accident Conducted at the BETHSY Integral Test Facility."
88. Pruitt, J.M. - M.S., May 1992, "Large Eddy Simulation of Turbulence within Heat Exchangers."
89. Raja, L.L. - M.S., May 1992, "Simulation of Condensation Systems in the Presence of Non-Condensable Gases."

90. Schmidl, W.D. - M.S., August 1992, "Development and Application of a High Speed Digital Data Acquisition Technique to Study Steam Bubble Collapse Using Particle Image Velocimetry."
91. Delahunte, K.E. - M.S., May 1991, "Full Field Automated Flow Analysis of a Spray Using Digital Pulsed Laser Velocimetry."
92. Rais, O.- M.S., May 1990, "Two-Phase Flow Interfacial Drag for Once through Steam Generators."
93. Sloan, S.M. - M.S., August 1990, "A Study of RELAP5/MOD 2 and RELAP5/MOD3 Predictions of a Small Break LOCA Simulation Conducted at the ROSA-IV Large Scale Test Facility."
94. Blanchat, T.K. - M.S., December 1990, "New Tube Bundle Heat Transfer Correlations and Flow Regime Maps for a Once-Through Steam Generator."
95. Canaan, R.E. - M.S., December 1990, "Full-Field Velocity Measurements of Single and Two-Phase Flows Using Digital Pulsed Laser Velocimetry."
96. Chavez, H.L. - M.S., December 1990, "Convective Flow Measurements in a Heated Cavity Using Pulsed Laser Velocimetry with Digital Image Processing."
97. Grant, S;E. - M.S., December 1990, "Modified Heat Transfer Coefficient in the Presence of Non-Condensable Gas for RELAP5/MOD2 Computer Code."
98. Bagwell, T.G. - M.S., December 1989, "Examination of Steam Generator Turbulence by Large Eddy Simulation."
99. Gangadharan, A. - M.S., December 1989, "Modeling of Reactor Components Using FIDAP - A Finite Element Computer Code."
100. Hild, R.D. - M.S., December 1989, "Single Phase Flow Visualization Using Digital Pulsed Laser Velocimetry."
101. Salim, P. - M.S., December 1989, "Modeling and Small-Break Loss-of-Coolant Accident Analysis of Commanche Peak Steam Electric Station Using RELAP5/MOD2."
102. Kalyanasundaram, M. - M.S., August 1989, "U-Tube Steam Generator Experiments: Steady-State and Transient Analysis Using RELAP5/MOD2."
103. Vinedon, I. - M.S., August 1989, "Simulation of Space Particle Bed Reactors."

## REPORTS:

1. Hassan, Y. A., "Experimental and CFD Studies of Coolant Flow Mixing within Scaled Models of the Upper and Lower Plenums of NNGP Gas-Cooled Reactors," NEUP Project No. 12-3759, Final Report, 2015.
2. Hassan, Y. A., "Full-Field Measurements of Turbulent Bubbly Flow using Innovative Experimental Techniques," CASL Technical Report CASL-U-2014-0209-000, September 30, 2014.
3. Hassan, Y. A., "Experimental Investigation of Subcooled Flow Boiling," CASL Technical Report CASL-U-2013-0214-000, September 30, 2013.
4. Hassan, Y. A., "CFD Model Development and Validation for High Temperature Gas Cooled Reactor Cavity Cooling System (RCCS) Applications," NEUP Project No. 09-817, Final Report, 2013.
5. Hassan, Y. A., "Investigation on the Core Bypass Flow in a Very High Temperature Reactor," NEUP Project No. 09-840, Final Report, 2013.
6. Hassan, Y. A., "Study of Air Ingress Across the Duct During the Accident Conditions," NEUP Project No. 09-841, Final Report, 2013.
7. Hassan, Y. A., "Investigation on the core bypass flow in a very high temperature reactor," Battelle Energy Alliance, LLC, Issue. 09-840, 2013.
8. Hassan, Y. A.; Ugaz, V.M., "Experimental and CFD Analysis of Advanced Convective Cooling Systems," Texas Engineering Experiment Station, Issue 07-058-3, 2013.



9. Yan, J., Yuan, P., Xu, Y., Karoutas, Z., Popov, E., Pannala, S., Stagg, A.K., Lucas, S., Zhang, H., Brewster, R., Baglietto, E., Dominguez-Ontiveros, E. and Hassan, Y. A., "Thermal Hydraulic Validation Report," CASL Technical Report: CASL-U-2012-0037-000, March 31, 2012.
10. Bolotnov, I., Estrada-Perez, C. and Hassan, Y. A., "ITM Simulations of Subcooled Flow Nucleate Boiling Experiment at TAMU," CASL Technical Report: CASL-U-2012-0012-000, January 31, 2012.
11. Hassan, Y. A. – "Experimental Investigation of Simultaneous Temperature and Velocity Fields in Water-Based Nanofluids for Water Cooled Reactors," – Nuclear Engineering Education Research Program, Final Report: DOE, 2009.
12. Ugaz, V. and Hassan, Y. A. —"Experimental and CFD Analysis of Advanced Convective Cooling Systems, II Nuclear Energy Research Initiative (NERI)," Award Number DE-FC07-07ID14824. Progress Report, 2008.
13. Hassan, Y. A. "Multiphase Flow Studies through Packed Beds Using Combined Particle Image Velocimetry and Laser Induced Fluorescence," NASA – Glenn Research Center, Cleveland, Ohio, Progress Report, 2007.
14. Ugaz, V. and Hassan, Y. A., "Nanofluid Technology for advanced High-Efficiency Industrial Applications and Bioassay Development," Progress Report, State of Texas Higher Education, 2007.
15. Hassan, Y. A. "Multiphase Flow Studies through Packed Beds Using Combined Particle Image Velocimetry and Laser Induced Fluorescence," NASA – Glenn Research Center, Cleveland, Ohio, Progress Report, 2006.
16. Hassan, Y. A., "Comparison of MAAP and RELAP Predictions," Progress Report, EPRI, 2006.
17. Hassan, Y. A. "Multiphase Flow Studies through Packed Beds Using Combined Particle Image Velocimetry and Laser Induced Fluorescence," NASA – Glenn Research Center, Cleveland, Ohio, 2004.
18. Hassan, Y. A. and Ortiz-Villafuerte, J., "Experimental Study of Drag Reduction Using Particle Image Velocimetry," DARPA/ATO, Contract MDA972-01-C-0040, 2003.
19. Schultz, R. R., Hassan, Y. A., Johnson, R. W., McIlroy, H., and Vilim, R., 2009, "Experimental and Analytic Studies on the Core Bypass Flow in a Very High Temperature Reactor," INL/EXT-09-16745, September 2009.
20. Hassan, Y. A., McFarland, A. R. and Phares, D., "Evaluation and Assessment of the Global Collection Efficiency of IMS Air Sampling Systems," Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO), Vienna International Centre, Vienna, Austria, November 2002.
21. Hassan, Y. A. and Ortiz-Villafuerte, J. "Experimental Study of Drag Reduction Using Particle Image Velocimetry," DARPA/ATO, Contract MDA972-01-C-0040, 2002.
22. Hassan, Y. A., "Full-Volume, Three-Dimensional Transient Measurements of Bubbly Flows Using Particle Tracking Velocimetry Coupled with Pattern Recognition Techniques," Department of Energy, DOE/ID/13638, November 2001.
23. Hassan, Y. A. and Chun, F. "RELAP5/MOD3.2 Analysis of a VVER-1000 Reactor with UO<sub>2</sub> Fuel and MOX Fuel," Oak Ridge National Laboratory, TEES 5566A, Progress Report, September 2000.
24. Petlin S. and Hassan, Y. A., "Computer Codes Development and Improvement for Safety Analysis – Safety Analysis Research," Final Report of the Project No. 3411-96-710008; US-SLO 95/2-03, Ljubljana, Slovenia, July 1999.
25. Hassan, Y. A. and Moscalu, D. R, "Simulation of VVER-1000 Nuclear Plant Using RELAP5/MOD3.2 Program," Oak Ridge National Laboratory, TEES 98-409, Progress Report, October 1999.
26. Hassan, Y. A., "Large Eddy Simulation and Experimental Studies of Turbulent Flow in Steam Generator," Nuclear Regulatory Commission, Grant No. NRC-04-94-094, Report 45920-NE, December 1997.
27. Hassan, Y. A. and Troshko, A., "CATHARE Simulation of ISP 38 Test and Range of Applicability of Tee Junction Phase Separation Model," Section 2.17 on pp. 8 and 17.1-17.14 of the Report of "Minutes of the 20<sup>th</sup> CATHARE User's Club Meeting," Grenoble, December 2<sup>nd</sup>, 1997, Published by Institut de Protection et de Surete Nucleaire (IPSN), No: IPSN/DRS/SEMAR/LECTA 98/13, March 1998.
28. Hassan, Y. A., "BETHSY Test 6.9C: Loss of Residual Heat Removal System During Mid-Loop Operation - Pressurizer and S.G.1 Outlet Plenum Manways Open," ISP 38, OECD/NEA/CSNI International Standard Problem No. 38, preliminary report, pp. 461-508, October, 1996.

29. Hassan, Y. A., "Development of Condensation Models with and without Non-condensable Gases for System Codes," Nuclear Regulatory Commission, Grant No. NRC-04-93-091, Report 43850-NE, November 1995.
30. Hassan, Y. A., "Simulation of a Loss-of-Coolant Accident without High Pressure Injection But with Secondary Side Bleed and Feed," Results of the Fourth Standard Problem Exercise on the simulation of loss of coolant accidents, report of the International Atomic Energy, report No. IAEA-TECDOC-848, pp. 318-325, November 1995.
31. Hassan, Y. A., "Large-Eddy Simulation of Turbulence within Heat Exchangers," to be published as Electric Power Research Institute report.
32. Hassan, Y. A., "RELAP5/MOD3 Assessment Using MIST," a part of U.S. Nuclear Regulatory Commission Report, NUREG/CR-5818, EGG-2665, entitled, "Uncertainty Analysis of Minimum Vessel Liquid Inventory During a Small-Break LOCA in a B&W Plant- An Application of the CSAU Methodology Using the RELAP5/MOD3 Computer Code," prepared by M. G. Ortiz and L.S. Chan, December 1992.
33. Hassan, Y. A., "Simulation of a Loss of Coolant Accident with Rupture in the Steam Generator Hot Collector-Results of the third standard problem on the simulation of loss of coolant accidents," chapter 4.20 entitled, "Analytical Models," from the International Atomic Energy Agency document No. IAEA-TECDOC-586, pp. 120, March 1991.
34. Hassan, Y. A., "Large-Eddy Simulation on Supercomputer," EPRI-NP-7041, Electric Power Research Institute, Palo Alto, CA, November 1990.
35. Hassan, Y. A., "A Three-Dimensional Thermal and Fluid Mixing Analysis Using the Mass-flow-Weighted Skew-Upwind Differencing Scheme," EPRI-NP-3870, Electric Power Research Institute, Palo Alto, CA, February 1985.
36. Hassan, Y. A. and Meerbaum, M.I., "Implementation of a Mass-Flow-Weighted Skew-Upwind Differencing Scheme in COMMIX-1A," EPRI-NP-3518, Electric Power Research Institute, Palo Alto, CA, May 1984.
37. Hassan, Y. A., "Interpretation of OTIS Conductivity Probe Data and Void Fraction Model Development for MIST Data Analysis," NRC-04-83-168; RP 2399-1, May 10, 1985.
38. Hassan, Y. A., "Restart Natural Circulation Analysis, Part I - Ideally Volumetric Scaled Model," BAW-1689, Babcock & Wilcox, Lynchburg, Virginia, August 1981.
39. Hassan, Y. A., Jones, B.G. and Adrian, R.J., "Two-Point Stochastic Structure in Turbulent Pipe Flow," Nuclear Thermal-Hydraulic Report No. 2, UILU-ENG 87-5302, 1987, University of Illinois, Urbana, IL.
40. Hassan, Y. A., and Jones, B.G., "Fluid Mechanics of Virtual Impactor Aerosol Separator," Final Report, US Argonne 31-109-38-3771 SBC, ANL-AP-1, UICU-Eng-5503, 1977.

**KEYNOTE ADDRESSES, INVITED SPEAKER, SEMINAR SPEAKER OR OTHER PRESENTATIONS:**

1. Hassan, Y. A., invited talk entitled, "Challenges in Safety and Severe Accident R&D," at a Panel at the International Workshop on Nuclear Safety and Severe Accidents, September 7-8, Beijing, China organized by Shanghai Jiao Tong University, Korea Advanced Institute of Science and Technology, the University of Tokyo and hosted by State Nuclear Power Research Institute (SNPRI) and in cooperation with IAEA, 2012.
2. Hassan, Y. A., invited presentation entitled, "Measurement of Subcooled Flow Boiling using Particle Tracking Velocimetry and Infrared Thermographic Technique," at the Japan-US Seminar on Two-phase Flow Dynamics, Sponsored by Faculty of Marine Technology, Tokyo University of Marine Science and Technology and co-sponsored by US National Science Foundation, June 7-12, 2012, Tokyo, Japan.
3. Hassan, Y. A., invited presentation entitled, "Computational Fluid Dynamics in Safety of Nuclear Applications: Challenges and Opportunities," at the Symposium on Nuclear Safety and Risk: Challenges and Opportunities, Organized by Hong Kong Nuclear Society and City University of Hong Kong, September 15, 2012.
4. Hassan, Y. A., presented two lectures entitled, "Experimental Methods for Single-Phase and Two-Phase Turbulent Flows," and "Numerical Predictions of Turbulent Flows," at KAPL Laboratories, Troy, NY,

- September 22, 2011 at KAPL short course on Multiphase Flow Boiling Heat Transfer: Modern Approach and Recent Advances, September 19-23, 2011.
5. Hassan, Y. A. presented a lecture on micro-scale velocity measurements within a packed bed at HZDR, Rossendorf Institute, Dresden, Germany, September 13, 2011.
  6. Hassan, Y. A., Presented invited seminar entitled, "Computational Fluid Dynamics Simulation and Experimental Validation for Advanced Nuclear System Components: Multi-scale Flow Structure Measurements," at University of Vienna, Austria, September 2, 2011.
  7. Hassan, Y. A. presented a talk at the working group of the Nuclear Reactor Integrated Simulation Project (NURESIP) of the European Commission, June 14-18, 2011, France.
  8. Hassan, Y. A. presented an invited talk on "Temperature and velocity measurements using particle image Velocimetry and laser induced fluorescence," at ETH, The Swiss Federal Institute of Technology, Zurich, February 9, 2011.
  9. Hassan, Y. A. presented two lectures entitled, "Computational Fluid Dynamics for Natural Circulation Needs and Verification and Validation- I&II," at the International Atomic Energy Agency (IAEA) Natural Circulation Phenomena and Passive Safety Systems in Advanced Water-Cooled Reactors Course, at Harbin University, China, July 11-15, 2011.
  10. Hassan, Y. A. presented two lectures entitled "Application of CFD in Nuclear Industry," at the 3D SUNCOP workshop, Royal Institute of Technology (KTH), Stockholm, Sweden, October 2009.
  11. Hassan, Y. A. presented a plenary lecture entitled, "Experimental Needs for Computational Fluid Dynamics (CFD) Validation," at the 13<sup>th</sup> International Topical Meeting on Nuclear Reactor Thermal Hydraulics, Kanazawa, Japan, September 27-October 2, 2009.
  12. Hassan, Y. A., invited to present a Plenary lecture entitled, "Multiscale Flow Structure Measurements for Nuclear Safety Components Using PIV," at the symposium entitled 'What, Where, When: Multi-dimensional Advances for Industrial Process Monitoring' at the University of Leeds, UK, June 22-24, 2009.
  13. Hassan, Y. A. delivered two lectures on CFD Verification and Validation at the International Atomic Energy Agency (IAEA) Natural Circulation in Water-Cooled Nuclear Power Plants Course, Pisa, Italy, June 22-26, June 2009.
  14. Hassan, Y. A., invited to present a lecture entitled, "PIV Measurements in Fuel Bundle," at the Workshop on Nuclear Fuel Assembly Modeling and Experiments, July 9-10, 2009, Royal Institute of Technology (KTH), Stockholm, Sweden, 2009.
  15. Hassan, Y. A. invited seminar at the School of Nuclear Science and Engineering of Shanghai Jiao Tong University, May 2009.
  16. Hassan, Y. A., invited to present a seminar at Seoul National University related to the measurements in pebble bed gas cooled reactors, March 20, 2009.
  17. Hassan, Y. A. delivered a Plenary Lecture entitled, "Simulation and Experimental Validation for Advanced Nuclear System Components: Multiscale Flow Structure Measurements," at the 7<sup>th</sup> International Topical Meeting on Nuclear Reactor Thermal Hydraulics, Operation and safety, Seoul, Korea, October 5-9, 2008.
  18. Hassan, Y. A. invited to present keynote lecture entitled, "Single Phase CFD Simulation and Experimental Validation for Advanced Nuclear System Components," at the Experiments and CFD Code Applications to Nuclear Reactor Safety sponsored by OECD/NEA and IAEA and hosted by CEA, Grenoble, France, September 10-12, 2008.
  19. Hassan, Y. A. invited to present a lecture entitled, "Turbulent Subcooled Boiling Flow Visualization Experiments through a Rectangular Channel," at International Workshop on Two-Phase Convective Boiling Modeling sponsored by Société Hydrotechnique de France (SHF) and the International Association of Hydraulic Engineering and Research (IAHR), September 8-9, 2008, Grenoble, France.
  20. Hassan, Y. A. invited to present a lecture entitled, "Experimental Needs for CFD Validation: A Case Study," at the 1<sup>st</sup> International Verification and Validation for Nuclear Systems Analysis Workshop, July 21-25, 2008, Idaho Falls, ID.

21. Hassan, Y. A. invited to present the keynote lecture entitled, "High-Resolved Temporal Dynamics PIV Measurements of Subcooled Bubbly Flows," at the International Workshop on Passive Safety Systems in Advanced PWRs, Shanghai Jiao Tong University, Shanghai, China, April 26, 2008.
22. Hassan, Y. A. presented an invited presentation at the International Workshop on Thermal-Hydraulics of Innovative reactor and Transmutation Systems at Karlsruhe Institute of Technology, Karlsruhe, Germany, April 14-16, 2008.
23. Hassan, Y. A., delivered seminar entitled, "Experimental and Numerical Simulation of Flow Field in a Complex Tube Bundle with Inlet Jets and Cross Flow," at Korea Advanced Institute of Science and Technology, Daejeon, Korea, March 25, 2008.
24. Hassan, Y. A., invited to deliver a presentation entitled, "Education in Nuclear Engineering," at the Symposium of Global Nuclear Education and Research, Tokyo, Japan, December 5- 6, 2007.
25. Hassan, Y. A., delivered a presentation entitled, "Future Trends in Nuclear Thermal Sciences," at the session of new horizon in nuclear engineering at the Symposium of Global Nuclear Education and Research, Tokyo, Japan, December 5- 6, 2007.
26. Hassan, Y. A., presented a seminar at the workshop of nuclear energy, University of Tokyo, Japan, December 6, 2007 entitled, "Is CFD good enough?," December 6, 2007.
27. Hassan, Y. A. presented a lecture entitled, "Towards Multiscale Flow Structure in Pebble Bed Reactors: Time Resolved Dynamic PIV Measurements," at the International Atomic Energy Agency Technical Meeting on Safety Aspects of Modular High Temperature Gas Reactors at the Institute of Nuclear and New Energy Technology, Tsinghua University, Beijing, China, October 23-26, 2007.
28. Hassan, Y. A., presented a talk entitled, "computational fluid dynamics application in nuclear industry" at the International Atomic Energy Agency Topical Meeting on Advanced Safety Assessment Methods for Nuclear Reactors, Daejeon, Korea, October 30-November 2, 2007.
29. Hassan, Y. A., delivered two lectures entitled, "Computational Fluid Dynamics for Natural Circulation: Needs & Verification and Validation," at the workshop on Natural Circulation in Water in Water Cooled Nuclear Power Plants. This course is sponsored by International Atomic Energy Agency, June 25-29 2007, Italy
30. Hassan, Y. A., delivered a seminar entitled, "Drag Reduction via Microbubbles," at Nuclear Engineering Department, Seoul National University, February, 23, 2007.
31. Hassan, Y. A. delivered a seminar at Korea Atomic Energy Research Institute (KAERI), December 2006.
32. Hassan, Y. A., presented a talk at the CFD4NRS- Benchmarking of CFD codes for Application in Nuclear Reactor Safety, a meeting organized by OECD Nuclear Energy Agency, Germany 5-7 September 2006.
33. Hassan, Y. A., delivered a seminar on Computational Fluid Dynamics in Nuclear Industry at International Conference on Nuclear Engineering (ICONE-13), Florida, 2006.
34. Hassan, Y. A. invited as lecturer at von Karman Institute for Fluid Dynamics, Belgium, 2005.
35. Hassan, Y. A., presented a talk entitled, "Challenges for CFD in Nuclear Applications, at the Advanced Simulations: A Critical Tool for Future Nuclear Fuel Cycles Workshop at Lawrence Livermore National Laboratory, December 14-16, 2005.
36. Hassan, Y. A., delivered a tutorial on "Experimental Techniques in Single and Multiphase Flows" at Fluid Engineering Division Summer Meeting, Houston, Texas, August 2005.
37. Hassan, Y. A., delivered a seminar on Computational Fluid Dynamics in Nuclear Industry at International Conference on Nuclear Engineering (ICONE-12), Peking, China, May 2005.
38. Hassan, Y. A. invited as key lecture speaker at the Third International Symposium on Two-Phase Flow Modeling and Experimentation, September 2004, Pisa, Italy, 2004
39. Hassan, Y. A., invited as key note speaker at the 6<sup>th</sup> International Topical Meeting on Nuclear Reactor Thermal Hydraulics, Operation and Safety - October 4-8, 2004, Nara, Japan, 2004.
40. Hassan, Y. A., invited speaker at IAHR/SHF workshop on Refined Modeling of Two-Phase Flows, Lyon, France, November 24-26, 2004.
41. Hassan, Y. A. invited as key lecture speaker at the Tenth International Topical Meeting on Nuclear Reactor Thermal Hydraulics (NURETH10), Seoul, Korea, October 2003.

42. Hassan, Y. A., invited seminar at IPN, Mexico, March 2003.
43. Hassan, Y. A., invited seminar at University of Tokyo, October 2003.
44. Hassan, Y. A., "Experimental Investigation of the Microbubble / Turbulence Interaction Mechanism in the Boundary Layer," Friction Drag Technology Principle Investigator Review Meeting, San Diego, March 2003
45. Hassan, Y. A., invited as key lecture speaker at the Third International Symposium on Two-Phase Flow Modeling and Experimentation, September 2004, Pisa, Italy, 2004
46. Hassan, Y. A., invited as key note speaker at the 6<sup>th</sup> International Topical Meeting on Nuclear Reactor Thermal Hydraulics, Operation and Safety - October 4-8, 2004, Nara, Japan, 2004.
47. Hassan, Y. A., invited speaker at IAHR/SHF workshop on Refined Modeling of Two-Phase Flows, Lyon, France, November 24-26, 2004.
48. Hassan, Y. A. attended 2003 RELAP5 International Users Seminar, Montana, August 27-29, 2003.
49. Hassan, Y. A. invited speaker at the DOE Workshop on Thermal-Hydraulic and Safety Analysis Tools for Generation IV Nuclear Energy Systems, March 18-19, 2003, Idaho Falls.
50. Hassan, Y. A. invited to Attend and participate at NASA Workshop on Two-Phase Flow, Fluid Stability and Dynamics: Issues in Power, Propulsion, and Advanced life Support Systems, December 2003, NASA Glenn Research Center, Ohio.
51. Hassan, Y. A., invited speaker at the Institute of Industrial Science (IIS), University of Tokyo Symposium on Particle Image Velocimetry---Its Application and Development--- Tokyo, August 26-29, 2002.
52. Hassan, Y. A., "Three-Dimensional Large Eddy Simulation of Turbulent Flows in Tube Bundles, presented at 10<sup>th</sup> International Meeting of the IAHR Working Group on Advanced Nuclear Reactors Thermal Hydraulics, July 17-19, 2001, Obninsk, Russia.
53. Hassan, Y. A., "Working Group of Advanced Nuclear Reactors Thermal Hydraulics, IAHR," Chair presentation at 10<sup>th</sup> International Meeting of the IAHR Working Group on Advanced Nuclear Reactors Thermal Hydraulics, July 17, 2001, Obninsk, Russia.
54. Hassan, Y. A., "Experimental Investigation of the Microbubble / Turbulence Interaction Mechanism in the Boundary Layer," Friction Drag Technology Principle Investigator Kick-off Meeting, March 19-22, 2001, Newport Beach, CA, sponsored by DARPA.
55. Hassan, Y. A., invited member of the panel entitled, "The Latest Developments in Experimental Methods for Two-Phase," at The 4<sup>th</sup> International Multiphase Flow Conference, New Orleans, May 2001.
56. Hassan, Y. A. invited a keynote lecture at the 4<sup>th</sup> International Symposium on PIV, Gottingen, Germany, September 17-19, 2001.
57. Hassan, Y. A. invited to deliver a keynote lecture at the 3<sup>rd</sup> International Symposium on Measurement Techniques for Multiphase Flows, August 1 – 3, 2001, Fukui, Japan.
58. Hassan, Y. A., "Assessment of the RELAP5-3D Subcooled Boiling Models for Low Pressure Conditions," presented at 2000 RELAP5 International User Seminar, Jackson Hole, Wyoming, September 12-14, 2000.
59. Hassan, Y. A., "Turbulence Modeling with Large Eddy Simulation Technique in Industrial Applications," presented at GlobeEx 2000 Conference, International Energy Conference, July 23-28, 2000, Las Vegas, Nevada, 2000.
60. Hassan, Y. A., "Large Eddy Simulation Approaches for Single- and Two-Phase Flows," presented at AMIF-ESF Workshop of Computing Methods for Two-Phase Flow, Aussois, France, January 12, 2000.
61. Hassan, Y. A., "Three-Dimensional velocity Measurement of a Bubble Wake Using Particle Image Velocimetry Technique," presented at the Institute of Multifield Science and Technology (IMuST) Second Annual Meeting, Santa Barbara, California, March 18-20, 1999 and published in the proceedings, pp. IV-65: 67.
62. Hassan, Y. A., "Migration and Dispersal of Particulate Plutonium," presented at the Plutonium Contamination Colloquium at Los Alamos national Laboratory, February 5, 1999.
63. Hassan, Y. A., "PIV Measurements of Various Flows: From Free Surface Movement to Bubbly Flows," invited presentation at Breaking Wave Workshop, sponsored by NSF, Cornell University, October 14-15, 1999.

64. Hassan, Y. A., "Modifications to the Critical Heat Flux Correlations of RELAP5/MOD3.2 for Annular Fuel Elements," presented at 1999 RELAP5 International Users Seminar, Park City, July 28-30, 1999.
65. Hassan, Y. A., "Application of Computational Fluid Mechanics and Thermal hydraulic Codes in Advanced Water Cooled Reactors," Invited presentation at the Technical Committee Meeting of International Atomic Energy Agency, Paul Scherrer Institute, Villigen PSI, Switzerland, September 14-17, 1998.
66. Hassan, Y. A., "Operational Transient Simulations in a WWER-1000 Plant Using RELAP5/MOD3.2," presented at the 1998 RELAP5 User Meeting, Chicago, Illinois, September 21-23, 1998.
67. Hassan, Y. A., "Analysis of Australian HIFAR Research Reactor Under ATWS Events Using RELAP5/MOD3.2 Computer Code," presented at the 1998 RELAP5 User Meeting, Chicago, Illinois, September 21-23, 1998.
68. Hassan, Y. A., "Turbulence Flow Modeling Including Wall and Particle Effects," Invited tutorial at the American Association for Aerosol Research at the 1998 Annual Meeting, Cincinnati, June 22-26, 1998.
69. Hassan, Y. A., "Three-Dimensional Turbulent Bubbly Flow Measurement Using Particle Image Velocimetry Technique," presented at the Institute of Multifield Science and Technology (IMuST) Annual Meeting, Santa Barbara, California, February 26-28, 1998.
70. Hassan, Y. A., "Simple Law of the Wall for Turbulent Bubbly Boundary Layer and its Applicability in Thermal Hydraulic Codes," Invited presentation at the 5<sup>th</sup> CATHARE International Seminar, CEA, Grenoble, France, Published in CATHARE Proceedings of the 5<sup>th</sup> International Seminar CD-ROM, Section 6, December 3-5, 1997.
71. Hassan, Y. A., "CATHARE Simulation of ISP38 Test at BETHSY Facility and the Deficiency of Tee Junction Phase Separation Model at Low Pressure," Invited presentation at the 20<sup>th</sup> CATHARE User's Club, CEA, Grenoble, France, December 2, 1997.
72. Hassan, Y. A., "Application of Large Eddy Simulation in Subchannel Analysis," Invited presentation at the Fourth International Seminar on Subchannel Analysis (ISSCA-4), Tokyo Institute of Technology, Tokyo, Japan, September 24 -27, 1997.
73. Hassan, Y. A., "Large Eddy Simulation of Crossflow Tube Bundle Using an Improved Dynamic Subgrid Model," Invited presentation at the Seminar on, "Recent Advances in Turbulence Modelling," at the IAHR Congress, San Francisco, CA, August, 1997.
74. Hassan, Y. A., "Three-Dimensional Bubbly Flow Measurements Using PIV," Keynote speaker at the Second International Workshop on PIV'97-Fukui, Japan, July 8 - 11, 1997.
75. Hassan, Y. A., "Multiparticle Imaging Velocimetry Measurements in Two-Phase Flow," invited presentation at the OCED/CSNI Specialist on Advanced Instrumentation and Measurement Techniques, held at Santa Barbara, CA, March 17-20, 1997.
76. Hassan, Y. A., "Predictions of the Loss-of-Residual Heat Removal Systems during Mid-Loop Operation Using CATHARE and RELAP Computer Programs," presented at OCED/NEA/CSNI International Standard Problem No. 38 Final Workshop, London, UK, April 8 - 9, 1997.
77. Hassan, Y. A., "Multiparticle Imaging Techniques in Two-Phase Flow Measurements," invited presentation at the 8<sup>th</sup> Workshop on Two-Phase Flow Predictions, March 26 - 29, 1996, Martin-Luther-Universität Halle-Wittenberg, Merseburg, Germany, 1996.
78. Hassan, Y. A., "Flow Visualization Techniques in Fluid Flows," invited seminar at Department of Nuclear Engineering, North Carolina State University, Raleigh, North Carolina, February 15, 1996.
79. Hassan, Y. A., "Experimental Study of Steam Bubble Collapse Phenomena with Three-Dimensional Particle Image Velocimetry," presentation at the 2<sup>nd</sup> European Thermal-Sciences and 14<sup>th</sup> UIT National Heat Transfer Conference, Rome, Italy, May 29-31, 1996.
80. Hassan, Y. A., "Overview of CATHARE Computer Code Use at Texas A&M University," invited presentation at the CATHARE Users Club Meeting, Grenoble, France, December 7-8, 1995.
81. Hassan, Y. A., "Simulation of the PMK-2 Test Facility Using RELAP5 and CATHARE2 Computer Codes," invited presentation at "Thermophysics'95" the International Conference on Thermophysical Aspects of WWER-Type Reactor Safety, Obninsk, Russia, November 21-24, 1995.

82. Hassan, Y. A., "Multiphase Measurements Using Multi-particle Imaging Technique," invited presentation at International Workshop on PIV-Fukui 95 at Fukui, Japan, organized by the Visualization Society of Japan and the Center for Cooperative research in Science & Technology of Fukui University, July 2-5, 1995.
83. Hassan, Y. A., "Multiphase Measurements Using Particle Image Velocimetry," invited seminar at University of Osaka, Japan, April 28, 1995.
84. Hassan, Y. A. invited speaker at the International Workshop on PIV-Fukui'95 at the International Conference Hall in Fukui Chamber of Commerce and Industry, Fukui, Japan, July 1995.
85. Hassan, Y. A., "Measurements of Two-Phase Flow with Digital Particle Image Velocimetry," invited paper at the Experimental and Computational Aspects of Validation of Multiphase Flow CFD Codes Symposium at The Fluids Engineering Division Summer Meeting of ASME, Nevada, June 19-23, 1994.
86. Hassan, Y. A., "Simulation of the Loss of Residual Heat Removal During Midloop Operation Using RELAP5/MOD3 Code," presented at Josef Stefan Institute, Ljubljana, Slovenia, June 14, 1994, during the International Atomic Energy Agency (IAEA) two-week mission, 1994.
87. Hassan, Y. A., "Two-Phase Flow Measurements Using Pulsed Laser Velocimetry," presented at Josef Stefan Institute, Ljubljana, Slovenia, June 10, 1994, during the IAEA two-week mission, 1994.
88. Hassan, Y. A., "Analysis of SPE-4 Using RELAP5/MOD3.1," presented the Final Meeting of the International Atomic Energy Agency's Fourth Standard Problem Exercise (SPE-4), Budapest, Hungary, May 16, 1994.
89. Hassan, Y. A., "A Perspective on The Application of Large Eddy Simulation to Subchannel Analysis," presented at the Second International Seminar on Subchannel Analysis, November 19, 1993, Palo Alto, California, sponsored by Electric Power Research Institute.
90. Hassan, Y. A., "RELAP5 Thermal-Hydraulic Code Applications at Texas A&M University," Keynote address at 1993 RELAP5 International Users Seminar, Boston Massachusetts, July 6-9, 1993.
91. Hassan, Y. A., "Multi-phase Flow Measurements Using Pulsed Laser Velocimetry," Invited lecture at Department of Mechanical Engineering, Fukui University, Japan, May 17, 1993.
92. Hassan, Y. A., "American Educational Systems and Students' Daily Life Aspects," Invited lecture at Fukui University, Japan, May 18, 1993.
93. Hassan, Y. A., "Two-Phase Studies Using Pulsed Laser Velocimetry," Invited keynote speaker at the Imaging Sessions of the 6<sup>th</sup> International Symposium on Transport Phenomena in Thermal Engineering (ISTP-6), Seoul, Korea, May 9-13, 1993.
94. Hassan, Y. A., "Simulation of Loss of RHR during Midloop Operations and the Role of Steam Generators in Decay Heat Removal," seminar presented at Nuclear Fuel Industries, Ltd., PWR Fuel Division, Osaka, Japan, May 19, 1993.
95. Hassan, Y. A., "Two-Phase Flow Measurements Using Pulsed Laser Velocimetry," Invited lecture at Bettis Atomic Power Laboratory, West Mifflin, Pennsylvania, January 28, 1993.
96. Hassan, Y. A., "Two-Phase Flow Measurements Using PIV," Invited key speaker at the Advanced International Workshop in Particle Image, Speckle and Holographic Velocimetry held at Heriot-Watt University, Scotland, September 23-25, 1991.
97. Hassan, Y. A., "Thermal-hydraulic Research in Nuclear Engineering," seminar at Department of Mechanical Engineering, Texas A&M University, College Station, Texas, December 1991.
98. Hassan, Y. A., "Thermal-Hydraulics Analysis Using RELAP5 Computer Calculations and Two-Phase Flow Measurements Using State-of-the-art Laser Velocimetry," Invited Speaker at Sandia National Laboratories, Albuquerque, New Mexico, December 4, 1990.
99. Hassan, Y. A., "RELAP5/MOD2 Computer Calculations and Comparison with Experimental Data," Invited Speaker at Idaho National Laboratory, Idaho Falls, Idaho, May 25-27, 1988.
100. Hassan, Y. A., "Flow Pattern Predictions in the Cold Leg and Downcomer of Pressurized Water Reactors," invited speaker; presented at the 728 Research and Design Institute, Shanghai, People's Republic of China, October 29, 1984.
101. Hassan, Y. A., "Computational Investigation of Fluid and Thermal Mixing Experiments," Invited seminar, Hong Kong University, Hong Kong, October 26, 1984.

102. Hassan, Y. A., "Multidimensional Computational Fluid Mechanics in Reactor Safety Applications," seminar presented at Taipower Company; Taiwan, Republic of China, October 20, 1984.
103. Hassan, Y. A., "Reduction of Numerical Diffusion in Multidimensional Codes," invited speaker at EPRI/NRC Fluid and Thermal Mixing Seminar for Pressurized Thermal Shock; Creare R&D Inc., Hanover, New Hampshire, October 6-7, 1983.
104. Hassan, Y. A., "Scheme for Reducing Numerical Diffusion in COMMIX Code," presented at Electric Power Research Institute Workshop on Pressurized Thermal Shock Fluid and Thermal Mixing, Creare R&D Inc., Hanover, New Hampshire, October, 1982.
105. Hassan, Y. A., "COMMIX-1A Applications at Babcock & Wilcox Company," Invited speaker at COMMIX-1A Workshop at Argonne National Laboratory, September 8-10, 1982. See also NUREG/CR- 2892, ANL-82-25, Vol. II, pp. 74-76.