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Ching-Jen Chen

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Brief Vita

Dr. Ching-Jen Chen is currently the Dean of the College of Engineering and Professor of Mechanical Engineering. Dean Chen received his Ph.D. from Case Western Reserve University in 1967. Professor Chen was named Dean of Engineering for Florida A&M University-Florida State University in August 1992. Prior to his appointment as Dean, he was on the faculty at the University of Iowa since 1967 and served as the Chair of the Department of Mechanical Engineering from 1982 to 1992. Dean Chen received the Alexander von Humboldt Senior United States Scientist Award in 1974 and American Society of Mechanical Engineers (ASME) Fluids Engineering Award (Da Vince Medal) in 2008 for his life time contributions in fluid mechanics. He was Associate Editor of the Journal of Engineering Mechanics (1989-92). He currently serves as US Regional Editor for the International Journal of Visualization (1997-). His research interests are in laminar and turbulent convection, computational methods in fluid flows and more recently applications of nanomagnetic particles, micro devices, effects of magnetic field on cells and bio-magnetic fluid dynamics. His teaching and research have resulted in the completion of thirty-eight Ph.D. dissertations and thirty-three M.S. theses under his direction. Dean Chen is a Life Fellow of ASME and Fellow of ASCE. He is author or co-author of over 100 publications in the form of books, monographs and technical journal papers and has four patents in blood cell separation technology and fabrication of nanomagnetic particles.

Education

1957 Diploma in Mechanical Engineering, Taipei Institute of Technology

1962 M.S. in Mechanical Engineering, Kansas State University

1967 Ph.D. in Mechanical Engineering, Case-Western Reserve University

Experience

1. Assistant Professor, Mechanical Engineering, University of Iowa. 1967-1971
2. Associate Professor, Mechanical Engineering, University of Iowa 1971-1977
3. Alexander von Humboldt US Visiting Senior Scientist, University of Karlsruhe, Karlsruhe, Germany 1974-75
4. Professor, University of Iowa 1977-1992
5. Visiting Professor, East China Institute of Engineering, Nanjing, China 1981-1982
6. Professor Applied Mathematics Program, University of Iowa 1982-1992
7. Chair, Department of Mechanical Engineering, University of Iowa 1982-1992
8. Senior Research Engineer, Iowa Institute of Hydraulic Research, 1972-1992
9. Director, Center for Nanomagnetism and Biotechnology (CNB) 2003-2007
10. Dean of Engineering, Professor of Mechanical Engineering, College of Engineering, Florida A&M University-Florida State University, 1992-present
11. U. S. Regional Editor, International Journal of Visualization 1997-present
Spring 2003-2007

Honors

1. Alexander von Humboldt US Senior Scientist Award (West Germany) (1975)
2. Yosin Foundation Award: Excellence in Teaching & Research (1983-85)
3. Ching-Jen Chen Scholarship established by East China Institute of Technology, Nanjing, China (1986-1995).
4. Fellow, ASME (American Society of Mechanical Engineers) (1990-2003)
5. Big Ten Academic Leadership Fellow, (1991-1992)
6. Commander's Award for Public Service, Department of the Army, USA 2003
7. Fellow, American Society of Civil Engineers (1997-)
8. Eminent Engineer, Tau Beta Pi National Engineering Honor Society, (1999-92)
9. Life Fellow, American Society of Mechanical Engineers, (2003-)
10. Star Certificate, Gemini, Challenger Learning Center Star Foundation (2003)
11. American Society of Mechanical Engineers (ASME) Fluids Engineering Award (DaVince Medal) (2008)

V. Patents

1. Chen, C. J., Haik, Y., Pai, V., “Method for Continuous Magnetic Separation of Components from a Mixture,” US Patent No. 6,129,848, Oct. 10, 2000
2. Chen, C. J., Haik, Y., Pai, V., “System for Continuous Magnetic Separation of Components from a Mixture,” US Patent No. 6,132,607, Oct. 17, 2000
3. Chen, C. J., Haik, Y., Pai, V., “Apparatus for Continuous Magnetic Separation of Components from a Mixture,” US Patent No. 6,036,857, Mar. 14, 2000
4. Chatterjee, J., Haik, Y., Chen, C.J., “Microencapsulation of Magnetic Material Using Heat Stabilization,” U.S. Patent No.6,989,196 B2, January 24, 2006

VI. Professional Societies

1. Honor Fellow, Society of Theoretical and Applied Mechanics, Taiwan
2. ASME (Life Fellow), ASCE (Fellow), ASEE, APS, AIAA (Senior)
3. Tau Beta Pi National Engineering Honor Society, Eminent Engineer
4. Japan Society of Flow Visualization.
5. Society of Photo-Optical Instrumentation Engineering
6. International Association of Hydraulic Research
7. AMIE (Advance Minority Interest in Engineering)

VII. Teaching and Research

Dr. Chen has taught twenty-five different undergraduate and graduate courses. His teaching and research fields are convective heat transfer, turbulence modeling, computational fluid dynamics, biofluid mechanics, flow imaging process, biomedical engineering and magnetic effects on biological cells. He has acted as an investigator for projects supported by NSF, DOD, NASA, ONR, DOE, NRC, NIH, DOH, Jet Propulsion Laboratory, Sandia National Laboratory, Florida Department of Health, Iowa-Illinois Gas and Electric Company and Johnson and Johnson Co. resulted in the completion of thirty eight Ph.D. dissertations and thirty-two M.S. theses under his direction. He is author or co-author of over 100 technical journal papers and publications of books and monographs.

VIII. Supervision of Doctoral Dissertations

- (1) Isa, Ismaila (1971),”On a Two-Dimensional Compressible Laminar Boundary Layer with Pressure Gradients and Variable Free Stream Stagnation Temperature over a Non-Isothermal Surface”
- (2) Pao, Hsien Chung (1971), “A Theoretical and Experimental Study of a Time Dependent Concentric Cylindrical Flow and its Instability”
- (3) Kuzyk, William (1972), “Analytical and Experimental Investigation of Boundary Streamlines Entering a 2-Dimensional Free Turbulent Jet Emitting from a Wall”

- (4) Samra, Raijbir Singh (1972), "On Oscillations of Viscous Plane Shock Wave and Sonic Boom Rise Time"
- (5) Chang, Lang-Mann (1972), "On Unsteady Compressible Laminar Boundary Layer Flow within a Centered Expansion Wave and Behind a Strong Blast Plane Wave"
- (6) Hwang, Robert R-J (1974), "On Hydrodynamic Instability of Stokes First and Second Problems"
- (7) Lee, Chien I. (1974), "On Instability of a Transient Viscous Unbounded Vortex Motion"
- (8) Leutzing, Rudolph Leslie (1976) "The Unsymmetrical Compressible Flow Field in a Rotating Channel"
- (9) Li, Peter (1978) "Finite Differential Methods—Applications of Analytical Solution Techniques to the Numerical Solution of Partial Differential Equations"
- (10) Naseri-Neshat, Hamid (1980), "Finite Differential Numerical Solution of Two-Dimensional Navier-Stokes Equations"
- (11) Chiou, Jenq-Shing (1980), "Turbulent Liquid Metal Heat Transfer in the Pipe Entrance Region"
- (12) Chen, Hamn-Ching (1982), "Development of Finite Analytic Method for Unsteady Three-Dimensional Navier-Stokes Equations"
- (13) Ho, Kuo-San (1983), "Finite Analytic Numerical Method for Laminar Two-Dimensional Flow and Heat Transfer Problems Using Boundary Fitted Coordinates"
- (14) Yoon, Young Hwan (1983), "Finite Analytic Numerical Solutions of Laminar and Turbulent Convective Heat Transfer for Pipe Flows Past a Cavity"
- (15) Yu, Che His (1983), "Finite Analytic Solution of Laminar and Turbulent Flows Past an Axisymmetric Disc Valve"
- (16) Chang, Sen-Ming (1984), "Prediction of Turbulent Internal Recirculation Flows with k-e Models"
- (17) Chen, Wenchung (1984), "Finite Analytic Numerical Solution of Supersonic Flows in Two-Dimensional Non-Symmetric Channels"
- (18) Singh, Kanwerdip (1985), "Development of A Two-Scale Turbulence Model and Its Applications"
- (19) Sheikholeslami, Zahed Mohammad (1986), "Computer Aided Analysis of Two Dimensional Laminar and Turbulent Incompressible Flows."
- (20) Wung, Tzong-shyan (1986), "Measurements of Heat Transfer and Pressure Drop for Non- Standard Arrays of Tubes in Cross Flow"
- (21) Cheng, Wu Sun (1986), "Finite Analytical Solutions of Incompressible Flow Past Inclined Axisymmetric Bodies"
- (22) Obasih, Kemokolam (1987), "Prediction of Laminar and Turbulent Flows Past Single and Twin Airfoils"
- (23) Choi, Seok-Ki (1989), "Numerical Study of Laminar and Turbulent Flows Past Two Dimensional and Axi-symmetric Bodies"
- (24) Bernatz, Richard (Luther Colleg (1991), "Development of the Finite Analytic Method for Turbulent Forced and Convection"

- (25) Jaw, Shenq-Yuh (1991), "Development of an An-isotropic Turbulence Model for Prediction of Complex Flows"
- (26) Chen, Luke J-Chen (1991), "Quantitative and Numerical Flow Visualization of Flow Passing Through a Cubic Chamber with an Offset Inlet and Outlet"
- (27) Bravo, Ramiro H.(1991), "Development of the Three-Dimensional Finite Analytic Method for Simulation of Fluid Flow and Conjugate Heat Transfer"
- (28) Kim, You-Gon (1991), "Development of Digital Vector Velocimetry Method and Its Application to Rotating Flows"
- (29) Tien, Hui-Chun (Applied Mathematics) (1993), "Finite Analytic Method for Two Dimensional Flow with Irregular Boundaries"
- (30) Dai, Weizhong (Applied Mathematics)(1994), "Numerical Solution of Unsteady Navier-Stokes Equations Using Explicit Finite Analytic Scheme."
- (31) Haik, Yousef (1997), "The Development and Mathematical Modeling of Bio-magnetic Fluid Dynamics"
- (32) Lin, Wanlai (1997), "Diagonal Cartesian Method for Modeling of Incompressible Flows of Complex Boundaries"
- (33) Carlson, Kent D. (1997), "Numerical Simulation of Fluid Flow and Conjugate Heat Transfer for Complex Geometries"
- (34) Pai, Vinay M. (1997), "Experimental and Theoretical Study of Biomagnetic Fluid Dynamics"
- (35) Mohammad Kilani (2002) "Development of A Surface Micromachined Spiral-Channel Viscous Pump" (Co-Advisor with Dr. Y Haik)
- (36) Pan Zheng, (2004), "Development of Mini and Micro Magnetic Mechanical Systems", (Co-advisor: Dr. Haik)
- (37) Hang Yuan, (Summer 2005) "Magnetic Effects on Mammalian Cells and Its Application to Cancer Therapy", (Co-advisor: Dr. Haik)
- (38) Saleh Hayek (Summer 2007)"Theoretical and Experimental Study of Magnetic Hyperthermia"

IX. Publications

Research Focus during 1969-1981

- (1) Simulation and Experimental Studies of Melting Ablation
- (2) Free and Forced Convection
- (3) Hydrodynamic Instability Studies
- (4) Condensation Phenomena
- (5) Prediction of Turbulent Buoyant Flows
- (6) Published Book: Vertical Turbulent Buoyant Jets
- (7) Edited Monograph: Gun Barrel Heat Transfer
- (8) Edited Monograph: Fluid Mechanics and Thermodynamics of Recoil Mechanisms

1. Chen, C.J. and Ostrach, S., "Melting Ablation for Two-Dimensional and Axisymmetric Blunt Bodies with a Body Force," Progress in Heat and Mass Transfer, Vol. 2, Pergamon Press, Inc., New York, pp. 195-211, 1969.
2. Chen, C.J., "Free Convection from a Two-Dimensional Horizontal Plate," Transactions of the ASME, Journal of Heat Transfer, Vol. 92, Series 3, No. 3, pp. 548-550, 1970.
3. Chen, C.J. and Ostrach, S., "Low Temperature Simulation of Hypersonic Melting Ablation and the Observed Waves," AIAA Journal, (American Institute of Aeronautics and Astronautics), Vol. 9, No. 6, pp. 1120-1125, June 1971.
4. Ismaila, I. and Chen, C.J., "Steady Two-Dimensional Forced Film Condensation with Pressure Gradients for Fluid of Small Prandtl Numbers," Transactions of the ASME, Journal of Heat Transfer, Vol. 94, No. 1, pp. 99-104, February 1972.
5. Kuzyk, W. and Chen, C.J., "Investigation of Simulated Melting Instability Waves Near Stagnation Region in Hypersonic Flow," AIAA Journal, (American Institute of Aeronautics and Astronautics) Vol. 10, No. 11, pp. 1505-1508, 1972.
6. Chen, C.J. and Chang, L.M., "Flow Patterns of a Circular Vortex Ring with Density Difference under Gravity," Transactions of the ASME, Journal of Applied Mechanics, Vol. 39, pp. 869-872, 1972.
7. Chen, C.J. and Li, P., "Theoretical Error Analysis of Temperature Measurement by an Embedded Thermocouple," Letters in Heat and Mass Transfer, Vol. 1, No. 2, pp. 171-180, 1974.
8. Chen, C.J. and Thomsen, D.M., "On Prediction of Transient Surface Heat Flux on a Hollow Cylinder from an Interior Temperature Response," AIAA Journal, (American Institute of Aeronautics and Astronautics), Vol. 13, No. 5, pp. 697-699, 1975.
9. Rutunaprakarn, O. and Chen, C.J., "Effect of Lighter Non-condensable Gas on Laminar Film Condensation over a Vertical Plate," International Journal of Heat and Mass Transfer, Vol. 18, pp. 993-996, 1975.
10. Chen, C.J. and Danh, T.M., "Experimental Study of Transient Temperature Distortion in a Slab due to Thermocouple Cavity," AIAA Journal, (American Institute of Aeronautics and Astronautics), Vol. 14, No. 7, pp. 979-981, July, 1976.

11. Chen, C.J. and Chiou, J.S., "Prediction of Surface Temperature and Heat Flux from an Interior Temperature Response," Letters in Heat and Mass Transfer, Vol. 3, No. 6, pp. 539-548, November - December 1976.
12. Chen, C.J. and Li, P., "On Minimization of Temperature Distortion in the Thermocouple Cavity," AIAA Journal, (American Institute of Aeronautics and Astronautics), Vol. 15, No. 6, p. 869-871, June 1977.
13. Chen, C.J., "Low Temperature Simulation of Subliming Boundary Layer Flow in Jupiter Atmosphere," AIAA Journal, (American Institute of Aeronautics and Astronautics), Vol. 16, No. 3, March, pp. 259-267, 1978.
14. Chen, C.J. and Nikitopoulos, C., "On the Near Field Characteristics of Axisymmetric Turbulent Buoyant Jets in a Uniform Environment," International Journal of Heat and Mass Transfer, Vol. 22, no. 1, pp. 245-255, 1979.
15. Chen, C.J. and Chen, C.H., "On Prediction and Unified Correlation for Decay of Vertical Buoyant Jets," Journal of Heat Transfer, Vol. 101, No. 3, pp. 532-537, August 1979.
16. Falsetti, H.L., Verani, M.S., Chen, C.J. and Cramer, J.A., "Regional Pressure Differences in the Left Ventricle," Catheterization and Cardiovascular Diagnosis, Vol. 6, pp. 123-134, 1980.
17. Chen, C.J. and Chiou, J.S., "Laminar and Turbulent Heat Transfer in the Pipe Entrance Region for Liquid Metals," International Journal of Heat and Mass Transfer, Vol. 24, pp. 179-197, 1981.

Research Focus During 1981-1989

- (1) Development of Finite Analytic Method
 - (2) Convective Heat Transfer
 - (3) Bio Fluid Dynamics of Heart and Blood Flows
 - (4) Turbulent Flows and Modeling
 - (5) Published a Book Chapter "Finite Analytic Method"
 - (6) Published a Book (Chinese): Fluid Mechanics and Heat Transfer
 - (7) Published a Book (Japanese): Fundamentals and Applications of Turbulence Models
18. Chen, C.J., Naseri-Neshat, J. and Ho, K.S., "Finite Analytic Numerical Solution of Heat Transfer in Two-Dimensional Cavity Flow," International Journal of Numerical Heat Transfer, Vol. 4, pp. 179-197, 1981.

19. Chang, L.M. and Chen, C.J., "Unsteady Compressible Laminar Boundary-Layer Flow within a Moving Expansion Wave," AIAA Journal, (American Institute of Aeronautics and Astronautics), Vol. 19, no. 12, pp. 1551-1557, December 1981.
20. Chen, C.J. and Yoon, Y.H., "Finite Analytic Numerical Solution of Axisymmetric Navier-Stokes and Energy Equations," Journal of Heat Transfer, Vol. 105, No. 3, pp. 639-645, 1983.
Compiègne, France, July 1982.
21. Falsetti, H.L., Carroll, R.J., Swope, R.D., and Chen, C.J., "Turbulent Blood Flow in the Ascending Aorta of Dogs," Journal of Circulation Research, Vol. 17, pp. 427-436, 1983.
22. Chandran, K.B., Yearwood, T.L., Chen, C.J. and Falsetti, H.L., "Pulsatile Flow Experiments on Heart Valve Prosthesis," Journal of Medical and Biological Engineering and Computing, Vol. 21, pp. 529-537, September 1983.
23. Khalighi, B., Chandran, K.B. and Chen, C.J., "Steady Flow Development Past valve Prostheses in a Model Human Aorta - Part I, Centrally Occluding Valves," International Journal of Biomechanics, Vol. 16, No. 12, pp. 1003-1011, 1983.
24. Khalighi, B., Chandran, K.B. and Chen, C.J., "Steady Flow Development Past Valve Prostheses in a Model Human Aorta - Part II, Tilting Disc Valves," International Journal of Biomechanics, Vol. 16, No. 12, pp. 1013-1018, 1983.
25. Chandran, K.B., Ferguson, T.V., Chen, C.J. and Khalighi, B., "Experimental Study of Flow Dynamics Behind Valve Prostheses," ASAIO (American Society for Artificial Internal Organs) Journal, Vol. 6, pp. 146-152, 1983.
26. Chandran, K.B., Khalighi, B., Chen, C.J., Falsetti, H.L., Yearwood, T.L. and Hiratzka, L.F., "Effect of Valve Orientation on Flow Development Past aortic Valve Prostheses in a Model Human Aorta," Journal of Thoracic and Cardiovascular Surgery, Vol. 85, No. 6, pp. 893-901, June 1983.
27. Chandran, K.B., Yearwood, T.L., Chen, C.J., Falsetti, H.L., "Pulsatile Flow Experiments on Heart Valve Prosthesis," in Medical and Biological Engineering and Computing: Journal of the International Federation for Medical and Biological Engineering, 1983, Vol. 21, pp. 529-537, September, 1983.
28. Chandran, K.B., Cabell, G.N., Khalighi, B., and Chen, C.J., "Pulsatile Flow Past Aortic Valve Bioprotheses in a Model Human Aorta," Journal of Biomechanics, Vol. 17, No. 8, pp. 609-619, 1984.

29. Li, W. and Chen, C.J., "Vertical Plane Buoyant Jets in Stratified Environment," ASCE Transaction, Journal of Eng. Mechanics, Vol. 110, No. 2, pp. 224-238, February 1984.
30. Chandran, K.B., Cabell, G.N., Khalighi, B. and Chen, C.J., "Laser Anemometry Measurement of Pulsatile Flow Past Aortic Valve Prostheses," Journal of Biomechanics, Vol. 16, No. 10, pp. 865-873, 1983.
31. Chen, C.J. and Chen, H.C., "Development of Finite Analytic Numerical Method for Unsteady Two-Dimensional Navier-Stokes Equations," Journal of Computational Physics, Vol. 53, No. 2, pp. 209-226, February 1984.
32. Li, W., and Chen, C.J., "On Prediction of Characteristics for Vertical Round Buoyant Jets in Stably Linear Stratified Environment," Journal of Hydraulic Research, Vol. 23, No. 2, pp. 115-128, 1985.
33. Chen, C.J. and Yoon, Y.H., "Prediction of Turbulent Heat Transfer in Flows Past a Cylindrical Cavity," Numerical Methods in Laminar and Turbulent Flow, Vol. 5, pp. 1542-1553, 1987.
34. Hwang, J.C., Chen, C.J., Sheikholeslami, Z.M., and Panigrahi, B.K., "Finite Analytic Numerical Solution for Two Dimensional Groundwater Solute Transport," Water Resources Research, Vol. 21, No. 9, September, pp. 1354-1360, 1985.
35. Chandran, K.B., Khalighi, B., and Chen, C.J., "Experimental Study of Physiological Pulsatile Flow Past Valve Prostheses in a Model Human Aorta I: Caged Ball Valves," Journal of Biomechanics, Vol. 18, pp.763-772, 1985.
36. Chandran, K.B., Khalighi, B., and Chen, C.J., "Experimental Study of Physiological Pulsatile Flow Past Valve Prostheses in a Model Human Aorta II: Tilting Disc Valves Effect of Orientation," Journal of Biomechanics, Vol. 18, pp.773-780, 1985.
37. Chen, C.J., (Invited Handbook Chapter) Finite Analytic Method, Chapter 17, in Handbook of Numerical Heat Transfer, Ed. by W.J. Minkowycz, E.M. Sparrow, R.H. Pletcher and G.E. Schneider, John Wiley and Sons, pp. 723-746, 1987.
38. Chen, C.J., Yu, C.H. and Chandran, K.B., "Finite Analytic Numerical Solution of Unsteady Laminar Flow Past Axisymmetric Disc-Valves," Journal of Engineering Mechanics, ASCE Transaction, Vol. 113, No. 8, pp. 1147-1162, 1987.

39. Chen, C.J. and Chen, W.C., "Prediction of Supersonic Oblique Shock Wave in Arbitrary Internal Passage by Methods of Characteristics," Numerical Methods in Laminar and Turbulent Flow, Vol. 5, pp. 1009-1020, 1987.
40. Chen, C.J., Yu, C.H., and Chandran, K.B., "Steady Turbulent Flow Through a Disc-Type Valve - I: Finite Analytic Solution," Journal of Engineering Mechanics, Vol. 114, pp. 777-796, 1988.
41. Yu, C.H., Chen, C.J., and Chandran, K.B., "Steady Turbulent Flow Through a Disc-Type Valve - II: Parametric Study on Disc Size and Position," Journal of Engineering Mechanics, Vol. 114, No. 5 May, pp. 797-811, 1988.
42. Choi, S.K. and Chen, C.J., "Calculation of Turbulent Wake Past a Flat Plate by Wake Function Method," Journal of Numerical Heat Transfer, Vol. 14, No. 4, pp. 393-413, 1988.
43. Chen, C.J., Sheikholeslami, M.Z., and Bhiladvala, R.B., "Finite Analytic Numerical Method for Two-Point Boundary Value Problems of Ordinary Differential Equations," Journal of Computer Methods in Applied Mechanics and Engineering, Vol. 75, pp. 61-76, 1989.
44. Wung, T.S. and Chen, C.J., "Finite Analytic Solution of Convective Heat Transfer for Tube Arrays in Cross Flow-Part I, Flow Field Analysis," Journal of Heat Transfer, Vol. 111, pp. 633-640, 1989.
45. Chen, C.J. and Wung, T.S., "Finite Analytic Solution of Convective Heat Transfer for Tube Arrays in Cross Flow-Part II, Heat Transfer Analysis," Journal of Heat Transfer, Vol. 111, pp. 641-648, 1989.
46. Li, W., Xie, Q., and Chen, C.J., "Finite Analytic Solution of Flow Over Spillways," Journal of Engineering Mechanics, Vol. 115, No. 12, pp. 2635-2648, 1989.
47. Bernatz, R. A. and Chen, C. J., "Finite Analytic Numerical Solution of Two Dimensional Sea- breeze Flow," Numerical Methods in Thermal Problems, Vol. 6, pp.577-587, 1989.

Research Focus During 1990-1998

- (1) Quantitative Flow Visualization Method and Applications
- (2) Simulation of Complex Flows
- (3) Simulation of Conjugate Heat Transfer
- (4) Modeling Turbulent Flows

- (5) Published Book "Fundamentals of Turbulence Modeling"
 - (6) Edited Monograph: Turbulence Measurements and Flow Modeling
 - (7) Edited Monograph: Flow Modeling and Turbulence Measurements
48. Chen, C.J. and Jaw, S.Y. (**Invited Paper**), "Present Status and Future Approach of Turbulence Modeling," (Japan Society of Civil Engineers) Hydraulic and Sanitary Engineering, II-13, No. 417, pp. 1-20, May, 1990.
 49. Choi, S.K. and Chen, C.J., "A Navier-Stokes Numerical Analysis of a Complete Turbulent Flow Past Finite Axisymmetric Bodies," Journal of AIAA, (American Institute of Aeronautics and Astronautics), Vol. 29, No. 6, pp. 998-1001, 1991.
 50. Chen, C. J. and Bravo, R. H., "Heat Transfer Study of Staggered Thin Rectangular Blocks in a Channel Flow," ASME Transaction, Journal of Electronic Packaging, Vol. 113, pp. 294-300, 1991.
 51. Aksoy, H. and Chen, C. J., "Finite Analytic Numerical Solution of Navier-Stokes Equations Using Non-staggered Grids," Journal of Numerical Heat Transfer, Part B, Vol. 21, pp.287-306, 1992.
 52. Kim, You-Gon, and Chen, C. J., "Development of Digital Vector Velocimetry Method and Its Application to Lid Driven Rotating Flow," Flow Visualization VI, Y. Tanida and H. Miyashiro, eds., Springer-Verlag, pp. 848-852, 1992.
 53. Chen, C. J., Kim, Y. G., and Chen, L. J. Quantitative Flow Visualization of Three Dimensional flow," Flow Visualization VI, Tanida and Miyashiro eds Springer Verlag, pp. 3-11, 1992.
 54. Kim, S.H., Chandran, K.B., and Chen, C. J., "Numerical Simulation of Steady Flow in a Two-Dimensional Total Artificial Heart Model," Journal of Biomechanical Engineering, Vol. 114, pp.497-503, November, 1992.
 55. Walter, J. A. and Chen, C. J., "Visualization and Analysis of Flow in an Offset Channel," Journal of Heat Transfer. Vol. 114, pp.819-826, 1992.
 56. Chen, C. J., Kim, Y.G., and Chen, Luke J., "Quantitative Flow Visualization of Three-Dimensional Flow, (**Special Invited Paper**), Flow Visualization VI (The Sixth International Symposium on Flow Visualization, 5-9 October, Yokohama, Japan), Y. Tanida and H. Miyashiro, eds., Springer-Verlag, pp. 3-11, 1992.
 57. Choi, S. K. and Chen, C. J., "A Navier-Stokes Numerical Analysis of a Complete Turbulent Flow Past Finite Axisymmetric Bodies," AIAA Journal, (American Institute of Aeronautics and Astronautics), Vol. 29, No. 6, pp.998-1001, 1992.

58. Aksoy, H. and Chen, C. J., "Numerical Solution of Navier-Stokes Equations with Non-Staggering Grids Using Finite Analytic Method," Journal of Numerical Heat Transfer, Vol. 21, Part B, pp.287-306, 1992.
59. Chen, C.J., Kim, Y.G., and Walter, J.A., "Recent Developments of Quantitative Flow Visualization and Imaging Process," (Journal of Visualization): Atlas of Visualization, Vol. 1, pp.279-312, 1993.
60. Chen, C. J., Kim, Y.G., and Joel A. Walter, "Progress in Quantitative Flow Visualization and Imaging Process", Atlas of Visualization, Vol. 1, pp. 279-295, 1993.
61. Tsai, Whey-Fone, Chen, C. J., and Tien, H. C. "Finite Analytic Numerical Solution for Unsaturated Flow with Irregular Boundaries," Journal of Hydraulic Engineering, Vol. 119, No. 11, pp.1274-1298, November, 1993.
62. Bernatz, R. A., Chen, C. J., and Cekirge, H. M/."Finite Analytic Numerical Solution of a Two Dimensional Sea Breeze on a Regular Grid," Journal of Mathematical Computational Modeling, Vol. 19, No. 1, pp.71-87, 1994.
63. Tsai, Whey-Fone and Chen, C. J., "Unsteady Finite-Analytic Method for Solute Transport in Ground-Water Flow," Journal of Engineering Mechanics, Vol. 121, No. 2, pp.230-243, February, 1995.
64. Chen, C. J., Bravo, R. H., Chen, H. C., and Xu, Z., "Accurate Discretization of Incompressible Three-Dimensional Navier-Stokes Equations, " Journal of Numerical Heat Transfer, Part B- Fundamental, Vol. 27, No. 4, pp. 371-392, June, 1995.
65. Lin, W. L., Carlson, K. D., and Chen, C. J., "Pressure Boundary Condition of Incompressible Flows with Conjugate Heat Transfer on Non-staggered Grids, Part I: Methods," Journal of Numerical Heat Transfer, Part A, Vol. 32, pp. 459-479, 1997.
66. Carlson, K. D., Lin, W. L., and Chen, C. J., "Pressure Boundary Condition of Incompressible Flows with Conjugate Heat Transfer on Non-staggered Grids, Part II: Applications," Journal of Numerical Heat Transfer, Part A, Vol. 32, pp.481-501, 1997.
67. Lin, W. L., Haik, Y., Bernatz, B, and Chen, C. J., "Finite Analytic Method and Its Applications: A Review," Dynamics of Atmospheres and Oceans, Vol. 27. pp. 17 - 33. 1997.

68. Lin, W. L., Carlson, K. D., and Chen, C. J., "Diagonal Cartesian Method for Numerical Simulation of Incompressible Flows Over Complex Boundaries," Journal of Numerical Heat Transfer, Part B, Vol. 33, pp.181-213. 1998.
69. Jaw, S. Y., and Chen, C. J., "Present Status of Second Order Turbulence Models-Part I Overview," Journal of Engineering Mechanics, Vol. 124, No. 5, pp. 485-501, May, 1998.
70. Jaw, S. Y., and Chen, C. J., "Present Status of Second Order Turbulence Models-Part II: Applications," Journal of Engineering Mechanics, Vol. 124, No. 5, pp. 502-512, May, 1998.
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Research Focus During 1999-2009

- (1) Application of Finite Analytic Method
- (2) Turbulent Flow and Flow Visualization
- (3) Design and Application of Micro Devices
- (4) Effect of Magnetic Field on Cells
- (5) Bio-magnetic Fluid Dynamics
- (6) Synthesis and Application of Nano Magnetic Particles (New)
- (7) Issued Three Patents: Magnetic Separation of Biological Components
- (8) Published Book: Finite Analytic Method in Flows and Heat Transfer
- (9) Edited Book: Surface Water Modeling

(10) Edited Special Issue for Inter Journal of Computers and Fluids

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