



Feng C. Lai

RESEARCH INTERESTS

Heat and mass transfer in porous media, heat and mass transfer enhancement using electric field, electronics cooling, microfluidics, and bio heat transfer with applications in biomimetics.

BIOGRAPHY

Dr. Feng C. Lai is a professor in the School of Aerospace and Mechanical Engineering at the University of Oklahoma, where he joined in 1992. He received his PhD in Mechanical Engineering from the University of Delaware in 1988. His research interests are in the area of thermal sciences with problems centered on heat and mass transfer in porous media, heat and mass transfer enhancement using electrohydrodynamics (EHD), electronics cooling, and bio heat transfer. He is currently working on the design of a multi-stage EHD gas pump for electronics cooling application. He has published over 150 research articles in archival journals, conference proceedings, and book chapters.

Education

PhD, Mechanical Engineering
University of Delaware, 1988
MS, Mechanical Engineering
University of Delaware, 1985
BS, Power Mechanical Engineering
National Tsing Hua University,
Taiwan, 1978

Experience

Professor
University of Oklahoma
Associate Professor
University of Oklahoma
Assistant Professor
University of Oklahoma

AWARDS, HONORS AND PROFESSIONAL ACTIVITIES

Fellow, ASME,
Associate Fellow, AIAA.
Member: ISES, ASES, ASEE, and ASHRAE.
Program committee member (ASME K-19 Environmental Heat Transfer and AIAA Thermophysics Technical Committee) and reviewer for archival journals and professional society conferences.
External Program Reviewer, University of Technology, Jamaica.
Reviewer/Panelist, NSF, DOE and DOD.
Reviewer/Panelist, Natural Sciences and Engineering Research Council of CANADA

SELECTED PROJECTS

- Science Applications International Corporation (SAIC), “Development of Geothermal Power Plant Model,” June 2011-July 2011.
- Anautics (primary: DoD), “Thermal Load Analysis of C/KC-135 Electronics Cabinet – Phase 2,” Jan. 2009-Apr. 2010.
- National Science Council, Taiwan, “Development of μ -TAS and Biosensors Using Micro-Devices,” Sept. 2008-July 2009.
- IMTEC/Oklahoma Center for the Advancement for Science and Technology (OCAST), “IR Sensor Based on the Biomimetics of Melanophila Beetle,” Feb. 2008-Jan. 2009.

SELECTED PUBLICATIONS

- “Enhanced Thermal Stratification in a Liquid Storage Tank with a Porous Manifold,” *Solar Energy*, 85, pp. 1409-1417, 2011 (with N.M. Brown).
- “Effects of Porosity on the Performance of EHD-Enhanced Drying,” *Drying Technology*, 28, pp. 1477-1483, 2010 (with M.R. Ramachandran).
- “Numerical Study of EHD-Enhanced Water Evaporation,” *Journal of Electrostatics*, 68, pp. 364-370, 2010 (with M. Huang).
- “Transient and Steady Natural Convection from a Heat Source Embedded in Thermally Stratified Porous Layer,” *International Journal of Thermal Sciences*, 49, pp. 1527-1535 (with J. Zhang and M. Subotic).
- “Flows and Their Stability in Rotating Cylinders with a Porous Lining,” *Journal of Fluids Engineering*, 132, 051201 (with M. Subotic).
- “A Homogeneous Anisotropic Model for Natural Convection in Non-Uniform Layered Porous Cavities,” *Journal of Thermophysics and Heat Transfer*, 24, pp. 331-339, 2010 (with R.L. Marvel).
- “Visualization of the Surface Tension and Gravitational Effects on Flow Injection in Center-Gated Disks,” *International Communications in Heat and Mass Transfer*, 37, pp. 230-233, 2010 (with C.T. Li).
- “A Prototype of EHD-Enhanced Drying System,” *Journal of Electrostatics*, 68, pp. 101-104, 2010.
- “Natural Convection from a Layered Porous Cavities with Sublayers of Non-Uniform Thickness: A Lumped System Analysis,” *Journal of Heat Transfer*, 132, 032602, 2010 (with R.L. Marvel).
- “Electrohydrodynamically-Enhanced Forced Convection in a Horizontal Channel with Oscillatory Flows,” *Heat Transfer Engineering*, 31, pp. 147-156, 2010 (with K.K. Tay).
- “EHD-Enhanced Drying of Partially Wetted Glass Beads with Auxiliary Heating from Below,” *Drying Technology*, 27, pp. 1199-1204, 2009 (with C.C. Wang)
- “Heat Transfer Analysis of Soil Heating Systems,” *International Journal of Heat and Mass Transfer*, 52, pp. 6021-6027, 2009 (with C.C. Ngo)
- “Non-Destructive Evaluation of Surface Defects Using Scanning Infrared Thermography,” *Journal of Thermophysics and Heat Transfer*, 23, pp. 716-724, 2009 (with C.R. Dalton and B.W. Olson).
- “Electrohydrodynamic Gas Pump in a Vertical Tube,” *Journal of Electrostatics*, 67, pp. 709-714, 2009 (with N.M. Brown).