Karl J. L. Geisler, Ph.D.

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EXPERIENCE

November 2002 to Present — General Dynamics – Advanced Information Systems
Lead Mechanical Engineer — Bloomington, MN
Mechanical Design Group

- Design of terrestrial, airborne, and space electronics for the defense industry/government customers (proposals; requirements definition; preliminary and detailed design; test and integration support; failure analysis)
- Thermal and structural design, analysis, and verification
- Thermomechanical solder joint reliability test and analysis
- Direction of other engineers and technicians
- Writing and review of environmental test plans (MIL-STD-810, HALT, HASS, *etc.*)
- Adherence to corporate policies (ISO, CMMI, *etc.*), member of Process Deployment Team
- Asset manager and safety monitor for mechanical design engineering laboratory

Fall 2007 — Department of Mechanical Engineering, University of Minnesota
Lecturer
ME5348 Heat Transfer in Electronic Equipment

June 2000 – September 2001 — Cray Inc., Chippewa Falls, WI
Engineering Intern
Independently responsible for analysis, testing, and validation of air handling/heat exchanger system for X1 supercomputer. Proposed multiple design modifications subsequently incorporated into manufacturing prototype.

June 1995 to August 2002 — Laboratory for the Thermal Management of Electronics
Research Assistant to Dr. Avram Bar-Cohen
Department of Mechanical Engineering, University of Minnesota
Worked on a variety of experimental and theoretical research projects related to the thermal management of electronic components and systems.

July – August 1996 — Thermal Design & Engineering, Inc., St. Louis Park, MN
Contract Engineer
Performed parametric analysis of air-cooling limits of flexible printed board. Recommended increasing copper layer thickness to enhance in-plane thermal conductivity and optimize fin effect of printed circuit board material.

1997 to 2002 — Department of Mechanical Engineering, University of Minnesota
Teaching Assistant
Heat Transfer in Electronic Equipment, Prof. Avram Bar-Cohen ; Experimental Methods in Heat Transfer, Prof. Strykowski and Prof. Kortshagen ; Advanced Heat Transfer, Prof. Sparrow ; Conduction (graduate-level), Prof. Bischof ; Radiation (graduate-level), Prof. Heberlien

EDUCATION

Ph.D. in Mechanical Engineering, University of Minnesota, Twin Cities Campus, February 2007
Cumulative Graduate School GPA: 3.8/4.0

M.S. in Mechanical Engineering, University of Minnesota, Twin Cities Campus, August 1997

B.A. in Physics, Lawrence University of Appleton, Wisconsin, June 1994, Cum Laude honors

PROFESSIONAL MEMBERSHIPS

American Society of Mechanical Engineers, ASME, K-13 Committee (Multiphase Flow)

SKILLS AND TOOLS

Experience with numerous CFD, FEA, and CAD software packages, including Icepak, Fluent, ANSYS Mechanical, ANSYS CFX, Pro/Engineer (Wildfire 3.0), and Pro/Mechanica; symbolic and numeric mathematics software packages such as Matlab, Mathematica, MathCAD, IDL, Maple, and Engineering Equation Solver (EES).

Experience with numerous scientific instruments, machine tools, measurement techniques, statistical analysis, and design of experiments.

Experience with various microfabrication techniques and equipment, including wet benches, oxidation/diffusion furnaces, RF and DC sputtering, at the University of Minnesota's Microtechnology Laboratory

Programming experience in C, FORTRAN, PASCAL, BASIC, and HTML.

PUBLICATIONS

"Thermal Analysis and Design," Avram Bar-Cohen, Karl J. Geisler, and Allan D. Kraus, Chapter 19 of *RF and Microwave Applications and Systems*, Edited by M. Golio, CRC Press, 2007.

"Thermal Performance Maps for Forced Air Cooling of Ruggedized Electronics Enclosures," Jesse VanEngelenhoven, Gary L. Solbrekken, and Karl J.L. Geisler, *Proceedings – The ASME/Pacific Rim Technical Conference and Exhibition on Packaging and Integration of Electronic and Photonic Systems, MEMS, and NEMS*, Vancouver, B.C., Canada, 2007. IPACK2007-33641

"Passive Immersion Cooling of 3-D Stacked Dies," Karl J.L. Geisler and Avram Bar-Cohen, *Proceedings – The ASME/Pacific Rim Technical Conference and Exhibition on Packaging and Integration of Electronic and Photonic Systems, MEMS, and NEMS*, Vancouver, B.C., Canada, 2007. IPACK2007-33619

"Optimization of Pool Boiling Heat Sinks Including the Effects of Confinement in the Interfin Spaces," Karl J.L. Geisler and Avram Bar-Cohen, *Proceedings – The ASME/Pacific Rim Technical Conference and Exhibition on Packaging and Integration of Electronic and Photonic Systems, MEMS, and NEMS*, Vancouver, B.C., Canada, 2007. IPACK2007-33620

Buoyancy-Driven Two Phase Flow and Boiling Heat Transfer in Narrow Vertical Channels, Karl J.L. Geisler, Ph.D. Thesis, Department of Mechanical Engineering, University of Minnesota, 2007. http://www.menet.umn.edu/~kgeisler

"Surface Effects on Confinement-Driven Pool Boiling Enhancement in Vertical Parallel-Plate Channels," Karl J.L. Geisler and Avram Bar-Cohen, *Proceedings – ASME Summer Heat Transfer Conference*, San Francisco, CA, USA, 2005. HT2005-72666

"Thermal Analysis and Design of Electronic Systems," Allan D. Kraus, Avram Bar-Cohen, and Karl J. Geisler, *Encyclopedia of RF and Microwave Engineering*, John Wiley & Sons, 2005.

"Immersion Cooling Module for Military COTS Applications," Karl J.L. Geisler, Ivan Straznicky, and Avram Bar-Cohen, *Proceedings – Ninth Intersociety Conference on Thermal and Thermomechanical Phenomena in Electronic Systems*, Las Vegas, NV, USA, 2004.

"Nucleate Pool Boiling Heat Transfer in Narrow Vertical Channels," Karl J.L. Geisler and Avram Bar-Cohen, *Proceedings –Fifth International Conf. on Boiling Heat Transfer*, Montego Bay, Jamaica, 2003.

"Thermal Analysis and Design," Avram Bar-Cohen, Karl J. Geisler, and Allan D. Kraus, *RF and Microwave Semiconductor Device Handbook*, Edited by M. Golio, CRC Press, 2002.

"Distance Learning in Thermal Design of Electronic Systems-The IEEE/NSF Project," Yogendra Joshi, Jayanta K. Sircar, Avram Bar-Cohen, Karl J. Geisler, Sushil Bhavnani, Prachi Pradeepkumar, and James Barnes, *Proceedings – Electronic Components and Technology Conf.*, IEEE, Piscataway, NJ, USA, 2000.

"Design and Analysis of an Optimum Boiling Heat Sink," Karl J. Geisler and Avram Bar-Cohen, *Boiling 2000: Phenomena & Emerging Applications*, Begell House, 2000.

"Thermal Analysis and Design of Electronic Systems," Allan D. Kraus, Avram Bar-Cohen, and Karl J. Geisler, *Encyclopedia of Electrical and Electronics Engineering*, John Wiley & Sons, 1999.

"Teaching Thermal Design of Electronic Systems on the Internet: National Course Experience," Avram Bar-Cohen, Sushil Bhavnani, Yogendra Joshi, and Karl J. Geisler, *Proceedings of the 2nd International Conference of Electronic Packaging Research and Education for the 21st Century*, 1999.

"Package-Corrected Composite Relations for Natural Convection Between Asymmetrically-Heated Populated PCBs," Karl J. Geisler and Avram Bar-Cohen, *Proceedings of the Pacific Rim/ASME International Intersociety Electronic & Photonic Packaging Conference*, 1997.

"A Passive Immersion Cooling Module with a Finned Submerged Condenser," Karl J. Geisler, David Kitching, and Avram Bar-Cohen, *Process, Enhanced, and Multiphase Heat Transfer / A Festschrift for A. E. Bergles*, R. M. Manglik and A. D. Kraus, Eds., Begell House, 1996.