

Calvin R. King, Jr.

2124 Cheshire Bridge Road, NE • Atlanta, GA 30324 • (615) 417-9068 M • calvin.king@gatech.edu

OBJECTIVE

To obtain a challenging internship position in microelectronics engineering research and development utilizing my experience in semiconductor fabrication, assembly, packaging, verification, system bring-up, strategy and operations.

EDUCATION

Georgia Institute of Technology – Atlanta, GA

Doctorate of Philosophy – Electrical and Computer Engineering May 2010
Minor: Materials Science Advisor: Dr. James Meindl

Master of Business Administration (MBA) May 2009
GPA: 3.63/4.0 Concentrations: Operations / Strategy

Master of Science – Electrical and Computer Engineering May 2007
GPA: 3.54/4.0

Tennessee State University – Nashville, TN

Bachelor of Science – Electrical Engineering May 2005
GPA: 3.93/4.0 (Summa Cum Laude)

EXPERIENCE

Georgia Institute of Technology, Microelectronics Research Center Atlanta, GA

Gigascale Integration Group, Graduate Research Assistant August 2005-Present

- Research Involvements: 3D Integrated Circuits, I/O Interconnects, Thermal Management, Packaging.
- Collaborating in the design and fabrication of a 3D liquid-cooled IC prototype.
- Fabricated and assembled microfluidic chips with electrical and fluidic I/O interconnects.
- Semiconductor processing skills include: etching, oxidation, photolithography, PECVD, metallization, CMP, SEM, electroplating, flip-chip bonding and package assembly.

International Business Machines (IBM), Systems and Technology Group East Fishkill, NY

3D Systems Integration Group Intern May 2008-August 2008

- Created thermal modeling tool to analyze various 3D integration technology architectures.
- Performed cost modeling analysis of 3D integration technology.

International Business Machines (IBM), Systems and Technology Group Austin, TX

e-Server I/O and Packaging Development Intern May 2005-August 2005

- Created data library and improved visualization output for the design of an integrated system level DC-voltage analysis tool using Perl scripting.
- Wrote automated scripts to process data generated by DC analysis tool.
- Executed MCM characterization and debug on customer's hardware using remote access facilities.

International Business Machines (IBM), Systems and Technology Group Austin, TX

STI (Sony, Toshiba, IBM) Design Center Intern May 2004-August 2004

- Wrote VHDL trace data specifications used for simulative and formal verification of the debug bus for the instruction unit of the STI Cell microprocessor.
- Executed bring-up and characterization of first-pass prototype hardware using RISC-Watch and lab instrumentation.
- Wrote vector instruction set extension to the PowerPC architecture using the C programming language.

International Business Machines (IBM), Systems and Technology Group East Fishkill, NY

Microelectronics Packaging Intern May 2003-August 2003

- Designed, built, and debugged delay circuit for substrate electrical test prototype tool.
- Improved substrate testing accuracy by increasing viewable data outputs from 9 to over 200 data outputs.

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Tennessee State University, Computer and Information Systems Engineering Lab **Nashville, TN**
Engineering Leadership Council Program Manager and Research Assistant January 2002-May 2005

- Project Leader: Responsible for laboratory administration, team organization, project planning, and oral and written progress reports to the Dean of Engineering.
- Analyzed the structure of networks, researched network security and wireless communications.
- Capstone Senior Project: Design of a Network Security Procedure to Secure a Manufacturing Process.

Tennessee St. University, Intelligent Control Systems Lab **Nashville, TN**
Undergraduate Research Assistant August 2002-Dec. 2002

- Created Visual Basic graphical user interface to add intelligent functionality to the Trilobot robot.

TECHNICAL SKILLS

- Operating Systems: Microsoft Windows, Red Hat Linux, AIX
 - Programming Languages: C++, Visual Basic, Perl, Verilog, VHDL “Trace Data Specification Language”
 - Practical: Soldering, Hardware Operation (Oscilloscope, Digital Signal Analyzer)
 - Computer Applications: HSpice, Tanner Tools Circuit Design Suite, Orcad Capture, PSpice, AutoCad, MATLAB, SSUPREM3 Fabrication Software, Microsoft Office
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ACTIVITIES/INVOLVEMENTS

- President: Eta Kappa Nu National Honors Society (2004-05)
 - Parliamentarian: National Society of Black Engineers (2003-04)
 - Tennessee State University Engineering Technology Student Leadership Council (2003-05)
 - Treasurer: Institute for Electrical and Electronics Engineers (2003-04)
 - Tennessee State University College of Engineering Undergraduate Research Program Manager (2003-2004)
 - Mentor: Georgia Tech NNIN (REU) Research Experience for Undergraduates (2006)
Georgia Tech (SURE) Summer Undergraduate Research in Science and Engineering (2006, 2007)
Tennessee State University Honors Program (2002-04)
 - Member: Phi Kappa Phi National Honor Society, Alpha Kappa Mu National Honor Society, Golden Key International Honors Society, Alpha Phi Alpha Fraternity, Inc.
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HONORS/AWARDS

- IBM/SRC (Semiconductor Research Corporation) Ph.D. Fellowship (2005-Present)
- Applied Materials Ph.D. Fellowship (2008)
- NASA-Harriet Jenkins Pre-doctoral Fellowship (2008)
- Ford Foundation Pre-doctoral Fellowship (2005-2007)
- IBM FOCUS Ph.D. Fellowship (2007)
- Georgia Tech FACES (Facilitating Academic Careers in Engineering and Science) Fellowship (2005)
- Georgia Tech OMED Tower Award (2007)
- Qualcomm “Q” Award of Excellence (2007)
- NSBE Caterpillar Inc. Scholarship (2006)
- Certified Fundamentals of Engineering Intern (Tennessee)
- Tennessee State University Presidential Scholar (2001-2005)
- NSBE Board of Corporate Affiliates Scholarship (2005)
- NSBE Chevron Texaco Scholarship (2005)
- Tennessee State University Electrical Engineering Most Outstanding Sophomore / Senior (2003, 2004)
- Coca Cola Scholars Foundation National Scholarship (2001-2005)
- General Motors Minorities in Engineering and Science Scholarship (2003)
- Lee High School Valedictorian (2001)

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PUBLICATIONS:

Conference Proceedings:

- [1] **C.R. King**, D. Sekar, M. Bakir, B. Dang, J. Pikarsky, J. Meindl, "3D Chip Stacking with Inter-layer Liquid Cooling," SRC TECHCON, Austin, TX, September 2008.
- [2] **C.R. King**, D. Sekar, M. Bakir, B. Dang, J. Pikarsky, J. Meindl, "3D Stacking of Chips with Electrical and Microfluidic Interconnects," in Proc. IEEE 58th Electronic Components and Technology Conference, Lake Buena Vista, FL, May 27-30, 2008.
- [3] **C.R. King**, D. Sekar, M. Bakir, B. Dang, J. Pikarsky, J. Meindl, "Assembly Techniques for Microfluidic Networks in Three-dimensional Integrated Circuits," SRC TECHCON, Austin, TX, September 10-12, 2007.
- [4] D. Sekar, **C. R. King**, B. Dang, T. Spencer, H. Thacker, P. Joseph, M. Bakir and James Meindl, "A 3D-IC Technology with Integrated Microchannel Cooling," IEEE International Interconnect Technology Conference, Burlingame, CA, June 1-4, 2008.
- [5] M. S. Bakir, **C. King**, D. Sekar, H. Thacker, B. Dang, G. Huang, A. Naeemi, and J. D. Meindl, "3D heterogeneous integrated systems: liquid cooling, power delivery, and implementation," in Proc. IEEE Custom Integrated Circuits Conference, 2008.
- [6] M. S. Bakir, **C. King**, D. Sekar, and B. Dang, "Electrical, Optical, Thermal Interconnect Networks for 3D Heterogenous Integrated Systems," in Proc. IEEE Avionics, Fiber-Optics and Photonics Conference, 2008.
- [7] T. Shodeinde, M.S. Bakir, **C. R. King**, "Sidewall Metallization of High Aspect Ratio Perpendicular Polymer Structures for Chip I/O Interconnections," National Nanotechnology Infrastructure Network (NNIN) REU Convocation, Cornell University, Ithaca, NY, August 2006.

Invention Disclosures:

- [1] M. S. Bakir, D. Sekar, **C.R. King**, B. Dang, J. Meindl, "3D ICs with Microfluidic Interconnects," Invention Disclosure 4379, filed December, 2007.

Book Chapter:

- [1] Electrical, Optical, and Thermal Interconnects for 3D Integrated Systems, Chapter 11: Single and 3D Chip Cooling using Microchannels and MicroFluidic Chip Input/Output (I/O) Interconnects; Bing Dang*, Muhannad S. Bakir, Deepak Sekar, **Calvin R. King, Jr.**, and James D. Meindl

Poster Presentations:

- [1] **C.R. King**, D. Sekar, M. Bakir, B. Dang, J. Pikarsky, J. Meindl, "3D Stacking of Chips with Electrical and Microfluidic Interconnects," presented at the Georgia Tech Technical Symposium, Atlanta, GA, March 13-15, 2008.
- [2] **C.R. King**, D. Sekar, M. Bakir, B. Dang, J. Pikarsky, J. Menidl, "Assembly Techniques for Microfluidic Networks in Three-dimensional Integrated Circuits," Interconnect Focus Center Annual Review, Atlanta, GA, October 3-4, 2007.
- [3] **C.R. King**, "Microfluidic Networks for 3D Integration," presented at the Georgia Tech Technical Symposium, Atlanta, GA, March 15-16, 2007.

Oral Presentations without Proceedings:

- [1] **C.R. King**, D. Billingsley, and K. Fairbanks, "Design of a Network Security Procedure to Secure a Manufacturing Process," presented at the Tennessee State University College of Engineering, Technology and Computer Science Industrial Cluster Symposium, Nashville, TN, May 2005.