Srinivas Parimi

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EDUCATION

- **Ph.D. in Electrical Engineering** (2002-)
  University of Cincinnati, Cincinnati OH
  Expected Graduation: December, 2005 **GPA: 3.85/4.0**
- **M.S. (Thesis) in Electrical Engineering** (1999-2002)
  University of Cincinnati, Cincinnati OH **GPA: 3.85/4.0**
- **B. Tech. in Electrical and Electronics Engineering** (1995-1999)
  Nagarjuna University, Nagarjuna Nagar, INDIA **GPA: 3.90/4.0**

CAREER INTERESTS: Microelectronics/MEMS process & applications development/automation, Packaging, Thermal & Fluidic Modeling.

EXPERIENCE

- **Research Assistant and Project Engineer - CMSM (The Center for Microelectronic Sensors and MEMS), ECECS Department, University of Cincinnati (01/00 - present)** 6 years of MEMS processing experience at UC. Have gained experience and knowledge in the field of Sensors, MEMS (Micro Electro Mechanical Systems) Design, Simulation, Fabrication, Packaging, Automation and Instrumentation.

PROJECTS

- **Development of Coherent Porous Silicon (CPS) Microstructure (NASA Glenn):** Surface/Bulk micro machining of silicon for the development of CPS wicks. Applications vary from micro needles for medical purposes, Loop Heat Pipes for micro cooling of electronic devices, Micro chromatography and high resolution display devices.
- **Micro Chromatography:** Using CPS as the base technology, developing a micro chromatograph for liquid/gas. The retention time is drastically reduced giving a very fast response.
- **Very High Resolution Flat Panel Display Device:** Using MEMS techniques developing a very high resolution (40 million dpi) flat display device. Here, CPS is utilized as the base technology.
- **Space Solar Power (NASA, NSF, EPRI award):** Development of Loop Heat Pipes using Coherent Porous Silicon technology for thermal management of solar cells, collectors and lasing diodes.
- **Loop Heat Pipe (LHP) (NASA Glenn):** Developing an integrated on-chip Loop Heat Pipe, using Coherent Porous Silicon wicks, for micro cooling of electronic devices, especially for zero gravity conditions in space.
- **Wafer Bonding Technologies (SB-6) (Suss MicroTec Inc. and University of Cincinnati collaborative project):** A novel approach to bond very thick silicon dioxide using sodium has been successfully developed. Parametric approach to quantify and optimize the bond strengths is demonstrated.
- **Fabrication and testing of a micro machined pressure sensor:** Fabricated boron-doped piezo-resistors positioned in a Wheatstone's bridge configuration on an etched diaphragm using silicon wafer as a substrate.

MEMS SKILLS: Raith 150(Nano lithography tool), RCA cleaning, oxidation, diffusion, ion implantation, mask design & fabrication, photolithography (SU-8, PMMA, S1818), wet bulk etching, evaporation, rapid thermal processing (RTP), sputtering, electroplating, low pressure chemical vapor deposition (LPCVD), plasma etching (RIE), photo-electro-chemical etching, dicing, lapping, polishing, anodic bonding (Suss SB-6), fusion bonding, scanning electron microscopy (SEM), mechanical testing (Instron) and capillary and permeability testing. Good working knowledge of Si, SiO_2, Si_3N_4, Diamond, Pyrex glass and fused silica.

SOFTWARE SKILLS: ANSYS, SolidWorks, COSMOSFloWorks, LABVIEW, AutoCAD, Fluent, Flow3D, NX-3, Mathematica, Matlab, C, C++, VC++, VJ++, SQL, Java, Perl, TCL, HTML, Network Simulator.

PATENTS

- H.T. Henderson, F.M. Gerner, P. Medis, **S. Parimi**, A. Shuja, "A MEMS-based Loop Heat Pipe (LHP) and Capillary Pumped Loop (CPL) for planar surface cooling", provisional patent applied.

PUBLICATIONS/PRESENTATIONS

- ***S. Parimi****,* P. Medis, K. Ogirala, F.M. Gerner, H.T. Henderson, "Heat transfer in a Planar Micro Loop Heat Pipe Evaporator Package", in preparation.
- Praveen Medis, ***Srinivas Parimi***, Ahmed Shuja, Junwoo Suh, H. Thurman Henderson, Frank M. Gerner, **"Fabrication and Packaging Issues of a Planer Loop Heat Pipe Based on a Patterned Coherent Porous Silicon Wicks,"** in preparation.
- ***Srinivas Parimi*** Ph.D. Dissertation: ***"Coherent Porous Silicon Technology in Micro Scale Loop Heat Pipes, High Definition Display Devices and Liquid/Gas Chromatography".***
- ***Srinivas Parimi*** et al., ***"Proof of Concept LHP",*** NASA Glenn contract #NNC04CB44C annual report, June, 2005.
- J. Suh, A. Shuja, P. Medis, ***S. Parimi****,* F.M. Gerner, H.T. Henderson, ***"Operating Ranges of the Planar Loop Heat Pipe Under Non-Vacuum Conditions",*** Proceedings of HT2005 ASME Summer Heat Transfer Conference July 17-22, 2005, San Francisco, California, USA.
- ***Srinivas Parimi,*** Ahmed Shuja, ***"Micro Loop Heat Pipe Section",*** NASA Glenn contract #C-80063-A annual report, February, 2004.
- ***Srinivas Parimi,*** Ahmed Shuja, ***"ICPS Investigation",*** NASA Glenn contract #C-80075-A annual report, February, 2004.
- ***Srinivas Parimi*** M.S. Thesis: ***"Development of Automated Instrumentation for Fabrication of Coherent Porous Silicon (CPS) for Loop Heat Pipes (LHP) and Parametric Approach of Bonding Silicon and Glass structures".***
- S. Dharmatilleke, N. Okulan, ***S. Parimi***, H.T. Henderson ***"Anodic Bonding of Glass to Glass and Silicon to Glass or Silicon to Silicon through a very thick thermally grown SiO_2 layer".*** Proceedings of IS^{3}M International Symposium on Smart Structures & Microsystems, Hong Kong, October 19-21, 2000, p.32.
- Thurman Henderson, Frank Gerner, ***Srinivas Parimi "A system for thermal management of space solar power generation systems",*** a presentation given in the Technology Interchange Meeting of Space Solar Power, Cleveland, September 10-12, 2002.
- Thurman Henderson, Frank Gerner, ***Srinivas Parimi "Coherent Porous Silicon (CPS) as a Basis for Micro Heat Pipes and Airborne Bio-organism Selectors"*****,** Nanotech 2001, Switzerland, November 27-29, 2001.
- D. Cytrynowicz, P. Medis, ***S. Parimi***, A. Shuja, H.T. Henderson, F.M. Gerner ***"The MEMS Loop Heat Piper Based on Coherent Porous Silicon-The modified System Test Structure"***, Proceedings of the Space Technology and Applications International Forum, Albuquerque, New Mexico, Feb 8-11 2004.
- Thurman Henderson, ***Srinivas Parimi "MEMS, It's a Small World Out There"***, a visiting scholar presentation given in the University of Pacific***,*** California, April 2001.
- ***Srinivas Parimi*** B. Tech. Senior Project: ***"Sub-Station Data Management".*** Developed a Graphical User Interface that can communicate with relays in electrical sub-stations which enables automatic load monitoring, relay switching and load balancing.
- Vijay Kumar, ***Srinivas Parimi***, Dr. Dharma Agarwal ***"WAP Services to Phones",*** IEEE Pervasive Computing Magazine, Vol. 2, No. 1, Jan-Mar 2003, pp 79-83.
- Siddesh Kamat, ***Srinivas Parimi***, Dr. Dharma Agarwal ***"Reduction in Control Overhead for a Secure, Scalable Framework for Mobile Multicast"***, ICC 2003 - IEEE International Conference on Communications, vol. 26, no. 1, May 2003, pp. 98-103.

HONORS & ACTIVITIES

- University Grants Scholarship (08/99 – present) from the University of Cincinnati.
- Network Administrator - CMSM, University of Cincinnati (01/00 - present) Assembled and administered UNIX, LINUX, Windows 2000/NT/98/95 operating systems under a single LAN.
- Web Designer & Site Administrator – CMSM, University of Cincinnati (01/00–present) http://www.mems.uc.edu.