Vinay S. Kulkarni, Ph.D.

25, Prasanna, Satya Colony,
Trimbak Road, Nashik 422007
India

kulvinay@yahoo.com
Mobile: +91 9011063284

PROFILE

Electrical Engineer skilled in the area of designing RF Filters using Bulk Acoustic Wave Technology. Research interest in MEMS/NEMS design and processing. Strengths include: •High creativity •Self-motivated •Innovative • Leadership • Capable of working in a team as well as independently •Quick learner and •Enthusiastic self-starter.

TECHNICAL SUMMARY

- Technology: VLSI Design and Fabrication, Analog / Digital circuit design, BAW Technology, IC Packaging, RF/Microwave Engineering, and Instrumentation Engineering.
- Process Equipment: PVD and CVD Thin Film Deposition tools, Dry and Wet Etch tools, Mask Aligner, Thermal oxidation and diffusion furnaces.
- Processes: Photolithography, Oxidation and Diffusion, Thin Film Deposition, Dry and Wet etching.
- Characterization Tools: Network Analyzer, Curve Tracer, Ellipsometers, Resistivity meters, Wafer Stress measurement tools, Profilometer, XRD, AFM, SEM and TEM.
- Computer skills: MS Office, C, Matlab , Agilent-Advanced Design System, Allegro-APD, Cadence-Virtuoso, AutoCAD, HFSS, and Verilog.

WORK / RESEARCH EXPERIENCE

Skyworks Solutions, Inc. Woburn, MA **2006-2009**

Senior Electrical Engineer,

- Developed Bulk Acoustic Wave Filters for mobile telecommunication systems from initial design to market release.
- Successfully modeled, designed and introduced to manufacturing Ladder Filters, Coupled Resonator Filters, Duplexer Filters, and Temperature Compensated Filters for RF filter applications.
- Improved product performance by performing circuit level simulations, optimization and designing of new architectures and met the needs of demanding customers including Cisco, Motorola and Sirius.
- Increased manufacturing productivity and quality by preparing innovative process flows, layouts and test methods of the devices to be manufactured.
- Successfully solved packaging issues related to BAW filters.
- Familiar in using RF and Microwave test equipment.

Skyworks Solutions, Inc and UMass Lowell. **2004-2006**

Doctoral Research,

- Researched novel filter structures of Stacked Crystal Filter using Aluminum Nitride piezoelectric films.
- Evaluated their physical parameters and properties required for optimum performance.
- Prepared a process flow and physical layout to fabricate these devices.
- Tested the fabricated devices and verified the results to the model.
- Determined the effect on filter bandwidth and performance by use of external components such as inductors.

Skyworks Solutions, Inc. **2003-2004**

Research

- Improvement of etch uniformity of GaAs structures using different organic acid/peroxide solutions and different etch tools.
- The etch depth was characterized using AFM and SEM.
- Contact angle measurement was done of the acid solutions. Surfactant was added in the solutions to improve surface wetting and thus improve etch uniformity.

Supreme Petrochem Ltd. India **1998-2000**

Instrumentation Engineer,

- Installed Distributed Control Systems, Programmable Logic Controllers and Sensors and Transmitters.
- Tuned various process measurement sensors and controllers and optimized the process.
- Performed maintenance of the instrumentation equipment according to ISO 9000 standards.

Toshniwal Instruments Ltd. India **1997-1997**

Engineering Intern

- Hands-on experience in assembling and testing analytical instruments such as Visible/UV-Visible Spectrophotometers, Gas Chromatographs and pH and Conductivity meters.

EDUCATION

University of Massachusetts Lowell, USA. **2002-2006**

D. Eng. in Electrical Engineering

GPA: 3.6/4.0

Thesis Title: Novel RF Filter Structures: Acoustically Coupled Piezoelectric Thin Films.

Relevant courses: Fundamentals of Acoustics, Quantum Electronics, Industrial Design of Experiments, Principles of Solid State Devices, SEM / TEM of Advanced Materials, MEMS, RF/Microwave Engineering, AFM and X-Ray Diffraction of Advanced Materials.

University of Massachusetts Lowell, USA. **2000-2002**

M. S. Computer Engineering

GPA: 3.6/4.0

Relevant courses: VLSI Design, VLSI Fabrication, Analog Devices, Embedded Systems, Computer Telecommunications, Fundamentals of Electromagnetism, FPGA Logic Design and Computer Architecture.

- Winner of 2001 Analog Devices Op-Amp Design Contest.

University of Pune, India. **1994-1998**

B. S. in Instrumentation Engineering

GPA: 3.6/4.0

Relevant courses: Process Instrumentation, Automatic Control Systems, Control Theory, Instrument and System Design, Project Planning, Analytical Instrumentation, Circuit Theory.

TEACHING EXPERIENCE

University of Massachusetts Lowell **2001-2006**

- Worked as an instructor to demonstrate Silicon IC fabrication process in VLSI Fabrication Laboratory.

PUBLICATIONS

A. Roy, **V. Kulkarni,** B. Barber and K. Prasad "Speed and Density parameter extraction in BAW Solidly Mounted Resonators" to be presented at IEEE Sarnoff Symposium Feb 2009.

B. Barber, **V. Kulkarni,** K. Prasad "Bandwidth Improvement Methods in Acoustically Coupled Thin Film BAW Devices" 2006, IEEE International Frequency Control Symposium

B. Barber, **V. Kulkarni,** K. Prasad "Control of Electromechanical Coupling in Stacked Crystal Filters" IEEE Long Island Systems, Applications and Technology conference, 2006.

V. Kulkarni, F. Spooner, L. Haynes, S. Woolsey, K. Smith, J. Mason B. Quinn "A Reproducible High Yield, Robust Wet-Etch Stop Process using Organic Acid-Peroxide Solutions" GaAs MANTECH conference June 2004.

V. Kulkarni, F. Spooner. B. Quinn, K. Prasad " Feature Size and Density Effects in Wet Selective Etching of GaAs/AlAs p-HEMT structures with organic acid-peroxide Solutions" 2003 Fall MRS meeting December 2003.