Michael B. Wolfson, Ph.D.

CONTACT INFO

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NovelSemi

Solving your problems℠
www.novelsemi.com

QUALIFICATIONS Integration Engineer with substantial experience designing, fabricating, testing, and analyzing microscale systems. Specializing in characterization, analysis, and integration of novel devices within an R&D environment. Adept at integrating MEMS with other components. Comfortable with emerging technologies spanning multiple disciplines. Creative at applying innovative technology within available constraints.

- Invented 2 new transducer technologies (atomic-scale force & MOS strain)
- Characterized analog TFT, optomech, thermooptical, acoustomech, and more
- Integrated components with COTS & in-house custom subsystems
- Built prototype systems using MEMS transducers (acoustic, optical, biochemical)
- Fabricated advanced digital/analog micromirror prototypes
- Programmed automated control and characterization of MEMS devices

SKILLS

Scientific Packages	Matlab/Simulink, L-Edit, Mentor Graphics, LaTeX
Languages	LabVIEW, C, Pascal, FORTRAN, UNIX shell scripts
Test & Measurement	Wide range of HP, Keithley, Tektronix tools
Substrates	Glass and Silicon (bulk DRIE, SOI, surface) micromachining
Microfabrication	Photolithography, deposition, etch, packaging
Analysis	SEM, SAM, FIB, OM, Interferometry, OSA, Confocal

EXPERIENCE

Consultant, NovelSemi Solutions, LLC, Somerville MA 2008 - present
Providing technical solutions to aid transition from research innovation into robust implementation. Evaluate device design and fabrication for pitfalls. Characterize device behavior to locate hidden sources of optimization. Build instrumentation to provide rapid turn-around of designs. Integrate novel device with conventional systems.

Device Integration Engineer, RedShift Systems, Burlington MA 2006 - 2007
Understood Scorpion product from top to bottom serving as general purpose tactical sleuth. Called upon to solve problems across wide range of topics, such as microfabrication, laser qualification, CMOS imager characterization, low level instrument control, noise analysis, optical filter investigations, and custom instrumentation. Served as first line of defense when unusual problems encountered.

Senior Researcher, Sharp Laboratories of America, Camas WA 2005 - 2006
Contractor, Sharp Laboratories of America 2004 - 2005
Demonstrated feasibility of integrating sensors into Sharp Electronics Corp's product lines. One of two engineers at Sharp developing MEMS technology compatible with LCD manufacture. Patented novel Piezo-TFT displacement sensor based on thin-film transistor process flow, utilizing films typically deemed unsuitable. Built prototypes with functioning acoustic and biochemical sensors.

Director of MEMS Technology, Exajoule LLC., Palo Alto CA 2002 - 2004
Consultant, Exajoule LLC. 2002
Responsible for all MEMS-related aspects of the Exajoule ELP1 and ELP2 product lines: micromirrors for display and advanced optics devices. Developed process flow

and fabricated device prototypes in a research laboratory (the Stanford Nanofabrication Facility) using standard thin film deposition, patterning, and etching equipment. Simulated micro-electromechanical system properties with MATLAB code.

Member of Technical Staff, Nayna Networks Inc., Milpitas CA 2000 - 2002
Test, analysis, and integration of high density next-generation MEMS-based photonic switch. Developed automated characterization and yield analysis of 1024 2-axis mirrors per board using laser Doppler vibrometry, stroboscopic and continuous interferometry, and white light interferometry. Controlled mirrors using prototype subsystems from optic, digital firmware, analog, and mechanical teams. Patented mirror active feedback system. Automated test suite measured static and dynamic behavior, optical quality, device repeatability, lifetime, and performance with 0.02° accuracy.

Research Assistant, Cornell University, Ithaca NY 1995 - 2000
Investigated atomic-scale forces using microscale parametric resonator. Designed, constructed, and characterized integrated system for measuring sub-nm mechanical displacements in vacuum ambient using simultaneous optical interferometry and capacitive measurements. Fabricated suite of devices in Cornell Nanofabrication Facility using standard microfabrication equipment, including CAD, photolithography, thin film deposition, thin film etching, and packaging. Analyzed failed devices using standard microanalysis techniques, including SEM, SAM, FIB, thin film analysis, and optical microscopy.

PATENTS & PUBLICATION

US Patent Number 7,253,488
"Piezo-TFT Cantilever MEMS"
(with C. Zhan and J. W. Hartzell)

US Patent Number 6,529,654
"Method for transparent switching and controlling optical signals using mirror designs"
(with R. K. Wong, E. D. Sheh, J. Chen, and X. Yang)

Transducers 2001 Conference, Munich Germany
"On A MEMS-Based Parametrically Amplified Atomic Force Sensor"
http://www.novelsemi.com/~mw/Transducers01

EDUCATION

Cornell University, Ithaca NY
Ph. D. in Electrical Engineering, Jan 2001
Specialization: MicroElectroMechanical Systems
Advisor: Noel C. MacDonald
Thesis Topic: *On A MEMS-Based Parametrically Amplified Atomic Force Sensor*

Brown University, Providence RI
Sc. B. in Electrical Engineering, Magna cum Laude, with Honors, May 1995
Specializations: Computer Engineering and Control Systems
Thesis Topic: *The Micro-Kernel and Software for the HMA Microphone Module Board*

AFFILIATIONS

Tau Beta Pi, Engineering Honor Society, Member 1995 - present
Sigma Xi Research Society, Member 1995 - present
IEEE, Member 1993 - present