Charles D. Miller

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OBJECTIVE A challenging role in engineering or research.

SKILL HIGHLIGHTS I delight in creatively approaching technical challenges, and using both theoretical and practical skills to find solutions.

EDUCATION

Master of Science, Materials Science and Engineering
University of Texas at Dallas, Richardson Texas, 2010 (GPA 3.8)

Bachelor of Science, Physics
Muskingum University, New Concord Ohio, 2007 (GPA 3.9)
Minor: Mathematics

Continuing Education

SAS JMP Data Exploration, JMP ANOVA and Regression, JMP Measurement Systems Analysis

AVS on-site short courses Cleaning and Surface Conditioning Techniques for IC manufacturing, Plasma Etching and RIE, Sputter Deposition

DDI Leadership Courses Driving Change, Making High-quality decisions, Setting Goals and Reviewing Results

FAME computer Intermediate and Advanced Perl; Intermediate Java

Steven R. Covey Institute The 7 Habits of Highly Effective People

EXPERIENCE

Process Engineer II 2013-present
Cree Power & RF

- Supported rapid product development and production ramp in Cree Power & RF wafer fab, building Silicon Carbide power devices and GaN-on-SiC RF devices.
- Broad ownership of manufacturing processes with responsibilities encompassing equipment, process development, process sustaining, and manufacturing.
- Areas of responsibility include SiC MOSFET gate oxidation, polysilicon deposition, including doped polysilicon process development and process integration, rapid thermal anneal of SiC, SiC ohmic contact formation, including laser annealing, critical wet etching, metal etching, solvent strip and photoresist removal, GaN etching, silicon and SiC wafer marking, wafer cleaning, and more.
- Managed multiple capital improvement projects to increase throughput, improve process capability, and maximize manufacturing flexibility and yield during aggressive production ramp, allocating available capital among competing projects to balance production, R&D, and business needs. Managed all aspects of capacity expansion projects including project identification and budgeting, equipment selection (and often modification), purchase negotiation, vendor auditing, tool facilitization, process development and qualification, training of operators, and development of operating and maintenance procedures.

Semiconductor Fab Engineer 2010-2013
Texas Instruments

- Responsible for equipment and processes for high volume manufacture of multiple silicon technologies including submicron CMOS, BiCMOS, flash memory, FRAM, DLP, and on-chip ferromagnetics.

- Complete ownership of diverse processes including metal sinter, copper and aluminum anneal, silicide formation, and ferromagnetic thin-film anneal
- Shared ownership of equipment including TEL Alpha-8 TS4000 and Waves furnaces, Lumonics SigmaClean wafer markers, Nadatech wafer sorters and Cognex OCR, Magnetic Solutions MRT1000 magnetic anneal reactor, Applied Materials Centura Mod 1 and Mod 2 rapid thermal processors.
- Responsible for wafer starts and wafer marking using YAG/YLF lasers, continuously improving the equipment, metrology, and manufacturing logistics of high-volume wafer starts. Introduced new wafer marking and OCR processes, and integrated new product types with unique marking and OCR requirements.
- Supported purchase of capital equipment for capacity expansion (laser mark) and new product development (magnetic thin-film anneal).
- Continuously improved processes, reduced non-value-added operations, and revised preventive maintenance practices to increase productivity, equipment availability and reliability, including ongoing consumable cost savings of over $100k/yr.
- Created server and web applications to improve decision-making and productivity at all levels, drawing information from mainframe applications, industrial automation systems, legacy web applications, and even machine vision, typically using Linux servers, git, Python, Perl, awk, and bash, and large amounts of PL/SQL

Research Assistant 2007-2010
University of Texas at Dallas

- Graduate research on thin-film photovoltaics including CdTe and α-silicon
- Designed and built a low-temp atmospheric PECVD chamber to study amorphous silicon deposition with disilane.
- Created an automated solar-simulator for cell testing to create formatted $I-V$ reports per NREL specifications.
- Explored iron-catalyzed growth of multi-walled carbon nanotube forests, including extrusion of said forests into CNT yarns and fabrics.
- Employed many material characterization techniques including XRD, SEM, TEM, AFM, FIB, contact printing, and e-beam lithography, and processes including metal sputtering, CVD, ion etching.
- Performed device design, process flow and mask creation for MEMS research team, involving the creation of nanowire FETs with functionalized gates for subthreshold detection of bio-marker chemicals.

National Science Foundation REU 2006
Montana State University

- Researched proton-conducting perovskite ceramics for solid-oxide fuel cell applications, exploring synthesis and molding techniques, and characterizing mechanical and electrical response to various sintering processes.
- Assisted with experimental setups which included machining ceramics.

Research Fellow 2005
Muskingum University

- Refurbished high-current DC PSU and Vibrating Sample Magnetometer for studying ferromagnetic materials.
- Created automated control, data aquisition, and reporting tools using LabView to control hardware, capture data and extract B-H curves.

COMPUTER SKILLS

I use Microsoft Excel, Powerpoint and Sharepoint products for departmental communication and collaboration. I am proficient with Perl and SQL for data extraction, data analysis and web programming. I have experience with Python and C++ in the context

of the PIL and OpenCV libraries for machine vision. Robots are my hobby, and I enjoy writing C for AVR 8-bit microcontrollers in process control, timing, and sensing applications. I have experience using Linux and Solaris for webservers, cron scripting, factory control and automation, including x3270 for screen-scraping legacy mainframe applications. I use basic html, CSS, and Javascript to create websites for training, reporting, and inventory tracking. I also have experience with LabView, AutoCAD, gnuplot, LaTeX, Spotfire, JMP, and COMSOL.

LANGUAGE SKILLS Rudimentary Japanese listening, speaking and reading

HOBBIES AND INTERESTS programming, robotics, machining, woodworking, homebrewing, obsolete photochemistry and photographic processes, fishing, science fiction, record collecting, history, farming

HONORS AND AFFILIATIONS Featured Speaker, Muskingum University Science Week 2012

misc. github.com/Fasrad
circuitlab.com/user/chaz
chazmiller.com/projects