

Navdip Singh

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SUMMARY

- Results-oriented professional with hands on experience of MEMS fabrication processes (lithography, RIE/ICP-DRIE plasma etch, PECVD, PVD, etc.) and metrology (SEM, Surface profiler, etc.) for complex micro fabrication process development and characterization in class 100 clean room;
- Solid background in materials and physics, as well as expertise in electronic/optical device fabrication and materials characterization;
- Independent, self-starter with demonstrated ability to take initiative and work effectively with little supervision;
- Well adept at performing both autonomously and collaboratively in fast-paced environments to complete assigned projects while adhering to strict deadlines and design specifications;
- Possess excellent analytical and complex problem-solving abilities as well as exceptional interpersonal and communication skills to build rapport and strong working relationships with colleagues and superiors;
- ISO 9001 Certified;

Objective:

I am seeking a full time position as a semiconductor/MEMS fabrication process engineer for new product/process development or research scenarios, utilizing my strong technical skills, systematic consideration, and management experience to contribute to the success of your company.

Technical Skills:

- **Film Processing:** Wet chemical etching (KOH-Si, SiO₂, Al, Cu, Ni, Au, Cr etc), STS-DRIE, RIE (Si, SiO₂, SiN, O₂ plasma etching etc), AOE, Ion Milling, Matrix plasma clean, Lift-off process;
- **Thin Film Deposition:** Sputter Deposition (Cr, Au, Ti, Ni, Cu, Getter, Pt, etc), Atomic layer deposition, PECVD (SiN, SiO₂, etc), and LPEVD (SiO₂, SiN);
- **Photolithography:** Stepper Photolithography (Nikon Stepper), Contact photolithography (Karl Suss Mask Aligner), Back to front alignment, Spin coating resist process (Negative and positive tones)
- **Back-end processing:** Wafer Bonding (Karl Suss Wafer Bonder);
- **Metrology and Failure Analysis:** SEM, Tencor profiler, Four probe Station, IR Scope, Nikon Microscope, Nikon Filmetrics, Resmap, Tencor-Stress measurement, SurfScan particle detection;
- **Device Characterization:** Current-Voltage (I-V) Measurement, Capacitance-Voltage (C-V) Measurement, Low Temperature Measurement;
- **Fundamentals Knowledge:** Semiconductor Physics, Solid state Electronics, MOSFET, Technical Paper writing, VLSI principles;
- **Software Applications:** C, C++, Oracle, JMP, Eyelet, Infinity, Familiar with AutoCad softwares, and Microsoft Office;

Work Experience:

Innovative Micro Technology, MEMS foundry

75 Robin Hill Road, Santa Barbara- 93117, CA

Process Development Engineering Technician

Dec'12- Present

- Fabrication the microelectronic devices with the wafers diameter of 6 inch for MEMS application;
- Execute process experiments, collect and analyze testing data for improving product quality, yield, and reliability with fab process development teams;
- Strong Background in the clean room environment such as conducting the fabrication process and steps for the semiconductor manufacture devices such as Ring Gyroscope and Thermistor application with generating the proper I-V characteristics ;
- Fabricated MEMS devices with photolithography and bonded two wafers with different approaches such as fusion bond and Au-Au thermo compression bond;
- Investigation the optimization of W2W bonding parameters for bonding strength such as temp, pressure, force, and time parameter;

- Fabricated the SiO₂ gyroscope rings and released other suspending parts from the silicon substrate with high etch rate and good processing controls with ICP etching;
- Designed QAI involving definition and selection of new concepts and approaches in processing or development;
- Familiar with Design of Experiments (DOE) methodology and Statistical Process Control (SPC);
- Conceive new or improved processes in photo masking, diffusion, deposition, stacking, wafer fabrication and device physics;
- Experienced in day to day MEMS fabrication processes in high volume manufacturing environment, with an emphasis on qualification of various tools for their better use;

Lecturer-Engineering Physics

July'09-June'11(2 years)

Galgotia College of Engineering & Technology, India

- Developed course plans to balance academic and intellect of graduate students;
- Worked in multi-disciplinary teams between industry and academia;
- Responsible for class lectures documentation;

Lecturer-Engineering Physics

Aug'11-Nov'11(3 months)

Anand College of Engineering & Management, India

- Responsibilities included pre-lab lectures, instrument calibration and repair, grading notebooks and exams, tutorial sessions and office hours;
- Prepared study material for physics courses; taught selected topics in graduate level course in Applied Physics: Electromagnetic theory, Laser, Quantum Physics, Atomic and Nuclear physics;

Research Assistant

Aug'08- Mar'09 (1 year)

DR. BR Ambedkar National Institute of Technology, Jalandhar, India

Project: Master's Dissertation:

“Electrooptical effects of Polymer dispersed liquid crystal (PDLC) films”

Activities/Conferences

- Attended a seven days Interaction Session at the Science-Conclave, “A Congregation of Nobel Prize Winners” during December 15-21,'08 organized at the Indian Institute of Information and Technology Allahabad, India;
- Attended the certified seminar program "National Symposium on Physics and Mega Project" at February 2009 in Miranda House University Of Delhi, India;
- Attended “Lasers and its application” workshop conducted by NITJ, India;

EDUCATION

- **University Of California, Santa Barbara** Sept'12-Dec'12
VLSI Principles Course Work (Extension Classes)
- **DR. BR Ambedkar National Institute of Technology, Jalandhar, India**
MS- Physics Aug'09-Apr'11
- **Dayanand Anglo Vedic College, Jalandhar, India**
BS-Computer Science Aug'04-Apr'07

Personal: Permanent U.S. Resident (Green Card Holder)

Reference: Available upon request