

Sumant Sood

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Objective

Seeking a full-time position in field of microelectronics processing or design that best utilizes my technical and analytical skills

Profile

Microelectronics Engineer with 2 years of leading edge and diverse experience. Strong background in vacuum technology, PVD and thin films. Good understanding of VLSI circuit Design, layout and device Physics. Managed Design of experiments for development of new semiconductor processes. A team player with excellent written, oral and interpersonal skills.

Education

Master of Science, Electrical Engineering, University of Central Florida, Orlando, FL Dec 2003

Thesis- **"Fabrication and Characterization of Ta₂O₅, Al₂O₃ and HfO₂ based multistack thin films for embedded capacitor applications"**.

Bachelor of Technology, Electrical Engineering, Punjab Technical University, India May 2001

Recent Experience

Research Assistant, Technology Applications Inc. Orlando
Advanced Materials Processing & Analysis Center (AMPAC), Orlando Jan 02 to Present

- ♦ 2 years of Cleanroom experience. Installed the facility interfaces and process lines for Multi-gun Sputtering System, Chemical Mechanical Polisher and metrology instruments for a new Class 1000 Cleanroom.
- ♦ Fabricated multilayer thin film capacitors involving sputter deposited Al₂O₃, Ta₂O₅, HfO₂ and Si₃N₄ dielectrics on ceramic and Silicon substrates.
- ♦ Surface characterization of laser machined Zirconia Ceramic substrates using VEECO NT 3300 Profilometer.
- ♦ Managed design of experiments to develop processes for PVD, photolithography, wet etching and chemical mechanical planarization of metal and dielectric thin films for capacitors in cryogenic applications.
- ♦ Conducted Electrical Characterization and surface analysis of thin film capacitors and developed a MathCAD based mathematical model for the same.

Academic Projects

- ♦ **Full Custom design and layout and testing of Class E power Amplifier for 2.4GHz applications.** Design and layout was DRC and LVS Clean and done using Cadence and Synopsis design tools using AMI 0.6 um technology.
- ♦ **Design and Simulation of a Linear Polynomial Evaluator** FPGA using Altera MaxPlus II tools as part of FPGA Design Project.
- ♦ **Design of a Systolic Priority Queue** using Cadence Design tools as part of CMOS IC Design Project.
- ♦ **Design of a MEMS Variable Capacitance Motor** as part of MEMS Design class.

Relevant Coursework

Advanced Semiconductor Devices
Solid State Devices - Design & Fabrication
Solid State Devices & Fabrication Lab
Micro Electro Mechanical Systems Design
CMOS Analog & Digital IC Design

Full Custom VLSI Design
Field Programmable Gate Arrays (FPGA) Design
Random Processes
Technology Strategies

Processing & Analytical Skills

- ♦ Sputtering (RF, DC and DC reactive) and evaporation of metal and dielectric films using AJA multi gun magnetron sputtering system
- ♦ E-Beam Deposition of metals
- ♦ Fabrication of BJTs and MOSFETs
- ♦ Photolithography processes
- ♦ Wet & Dry Oxidation and doping
- ♦ Wet Etching of Ta, Ta₂O₅, Au, Cr, Al₂O₃
- ♦ Chemical Mechanical Polishing of Tantalum and ZrO₂ using Strasbaugh CMP system.
- ♦ VEECO NT 3300 Optical Profilometer & Tencor Stylus Profilometer
- ♦ Resistivity and thickness Measurement Techniques using Four-point probe.
- ♦ Rudolph AutoEL 4 Ellipsometer
- ♦ Leakage Current Measurement using Keithley Picoammeter
- ♦ Electrical Characterization using HP 4192 Impedance Analyser

Computer Skills

Labview and C: Interfacing Instruments, Leakage Current, TZDB and TDDB Analysis
JMP DOE Software: Design of Experiments and Statistical Analysis
Matlab & MathCAD : Mathematical Modeling and Analysis of thin films, Plotting
Cadence & Synopsis: Schematic design, Simulation and Layout Tools
Others Altera Maxplus, MS Office, AutoCAD, Web design tools, Adobe Photoshop

Publications

S. Sood, R. Peelamedu, E. Dein, K. Sundaram "**Wet Chemical Etching of Ta and Ta₂O₅ Thin Films**" *Electrochemical Society, 204th meeting, Orlando FL October 12-16, 2003*

R. Peelamedu, S.Sood E. Dein, K. Sundaram "**Polishing studies of Tantalum on Zirconia substrates for mesoscale applications** " Proceedings of the *Electrochemical Society, 204th meeting, Orlando FL October 12-16, 2003*

S. Sood, R. Peelamedu, E. Dein, K. Sundaram, B. Nguyenphu "**Reactive DC Sputtering of Al₂O₃ and HfO₂ dielectric films for capacitors in mesoscale applications**", *Thin Solid Films, 2003 (in Process)*

Professional Memberships

- Student Member, IEEE Electron Devices Society and IEEE Components and Packaging Society, since 2001
- Member, Tantalum Niobium Research Center, Belgium, since 2001
- Student Member- American Vacuum Society, since 2003
- Student Member- Electrochemical Society, since 2003