**Sneha Sen Gaddam**

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**Objective**

To seek a career in the semiconductor industry and to work in an environment that articulates my communicating skills and surface characterization experience; further developing my interest, knowledge, ability, as a measure to reach my goal and the organization vision.

**Academic Profile**

Ph.D. in Chemistry Dec 2009 - May 2014

University of North Texas, Denton, U.S.A. GPA: 3.7

Advisor: Jeffry. A. Kelber

**Thesis: EFFECT OF PLASMA ON SILICON NITRIDE**

**AND OXYNITRIDE FOR ENHANCED SURFACE ADHESION**

M.S in Chemistry Aug 2006 – December 2009

University of North Texas, Denton, U.S.A. GPA: 3.8

Advisor: Jeffry. A. Kelber

**Thesis: EFFECT OF FLOURINE AND HYROGEN**

**RADICAL SPECIES ON MODIFIED OXIDIZED Ni(Pt)Si**

Bachelor of Pharmacy (B.Pharm) July 2002 – June 2006

G. Pulla Reddy College of Pharmacy, Hyderabad, India. GPA: 3.7

**Job Experience**

* Working as **Sr. Process Engineer** in the CLEANS division at **GLOBALFOUNDRIES** at Malta New York. (Dec 2014-Current)

Job Responsibilities:

* Responsible for process transfer, equipment planning, selection and configuration, installation, startup and ramp up.
* Establish the process engineering-related business proceses, necessary to run the tools in production, as well as their documentation
* Collaborate with equipment suppliers and internal stock holders for a successful ramp up.
* Responsible for daily process engineering tracking and continuous improvement.

**Research Experience**

* Worked as an **Intern** in the gapfill division at **Lam Research** under the mentorship of **Ms. Nerissa Dreager (06/03/2013-8/23/2013)**

Job Responsibilities:

* Develop new or modified process formulations, define processing or handling equipment requirements and specifications, and revises processing techniques and methods applied in the manufacture, fabrication, and evaluation of semiconductors.
* Compile and evaluate test data to determine appropriate limits and variables for process or material specifications.
* Conceive and plan projects involving definition and selection of new concepts and approaches in the processing or development of new or improved processes in deposition, wafer fabrication, and device physics.
* Worked as an **Intern** in the packaging division at **Freescale** under the mentorship of **Ms. Sheila** **Chopin** and **Dr. Varughese Mathew. (05/30/2012-11/30/2012)**

Job Responsibilities:

* Primary responsibilities include conducting and analyzing chemical lab experiments on package Cu wire bonded semiconductor dies with special emphasis on Cu-Al interface corrosion and reliability.
* Experiments in general included conducting wet chemical quantitative solution preparations at various pH and Cl ranges, high temperature experiments and interface integrity by Ball shear testing.
* Experience in working with the chemical and material labs and interfacing with analytical, process and reliability teams to gather and analyze data.
* Working as **Research Assistant** in **Chemistry Department** under the guidance of **Prof. Jeffry. A. Kelber (08/23/2008 – Present)**.
* One of the students in the group funded by the **Semi Conductor research Corporation.**

***Projects:***

1. Performed research on the **Free** **radical reactions on various substrates** in the Surface science laboratory of the Kelber group. The work includes:

* Free radical Interactions at the Ruthenium (0001) Surface: Effect of Atomic Oxygen and Ammonia.
* XPS results for Fundamental mechanisms of oxygen plasma-induced damage of ultralow-k organo silicate materials.
* XPS results for the Interaction of vacuum ultraviolet on low-k organo silicate glass film.
* Effect of Fluorine and Ammonia Radicals on Oxidized Ni (Pt)Si.

1. **Growth of Graphene on MgO(111)**

* Physical Vapor deposition and Chemical Vapor Deposition of Graphene on MgO (111) and the origin of band gap.

1. **Effect of Free radicals and Hydrogen, Oxygen, noble gas, and mixed plasmas on Silicon Nitride and Silicon Oxy nitride** for surface cleaning and enhanced adhesion to packaging surfaces. Contact angle and AFM measurements.

* Worked as **Teaching Assistant** in **Chemistry Department** at **UNT (08/20/2006 – 2008)** and the responsibilities included teaching and reinforcing the material for the undergraduate labs for chemistry majors and non-majors. Also, evaluating and grading the students, answering questions and encouraging student initiative.

**Skills**

**Responsible for the operation and maintenance of the UHV System in the Laboratory for Surface Science in the Department of Chemistry, UNT.**

* Operation and maintenance of an Ultra high Vacuum chamber used the characterization of samples.
* Job responsibilities require knowledge of and experience with design, construction, assembly, and testing of ultrahigh vacuum components and chambers, vacuum technology (mechanical pumps, turbo molecular drag pumps, diffusion pumps, ion pumps, vacuum gauges, leak detectors, **Residual Gas Analyzers** and other vacuum instrumentation). Successfully designed and built a new intro chamber for the plasma studies on the SiN and SiON for the packaging and better epoxy adhesion. The new intro chamber was also retrofitted with a capacitive coupled plasma source, a button heater and magnetic feed through.
* Training new users on various equipments mentioned above.
* Sample preparation for the XPS, CVD and PVD.
* Thin Film deposition, semiconductor device fabrication and Materials Characterization.

**Surface science and Thin Film Characterization**:

* Surface Science Characterization tools: X-Ray Photoelectron Spectroscopy (XPS) with Ar+ sputter depth profiling capabilities and Auger Electron Spectroscopy (AES)Scanning tunneling Microscopy(STM), Transmission Electron Microscopy(TEM), Atomic Force Microscopy (AFM), Residual Gas Analyzer (RGA), Rapid Thermal Processing or Annealing (RTA) and Low energy electron Diffraction (LEED).
* Thin film deposition methods and semiconductor processing:

A high vacuum cluster tool with capabilities for Physical Vapor Deposition, PVD (sputter deposition, reactive sputtering) Thermal /e-beam evaporation and plasma processing.

* Software:

Experience with Origin 4.1, Spectra and other programs for the characterization of the samples.

**Other Skills:**

* Ability to work harmoniously in any team and have strong interpersonal skills.
* Can adapt and excel in various environments, have good communication skills and willing to learn.

**Presentations and Talks**

* Presented in the Global research corporation- Center for electronic materials and processing (GRC-CEMPI) back-end processes review in 2010 and 2011 along with Prof. Jeffry Kelber.
* Participated in the SRC-Techcon 2011 at Austin; presented a paper and a poster: *“Direct graphene growth on MgO: Origin of the band gap”*
* Presented at the American Vaccum society meeting in 2013 and Materials research society in 2012“ Effect of plasma on Silicon nitride and oxynitride for enhanced plasma adhesion”
* Presented at the Material Research Society, (MRS) Spring meeting 2012, “Surface Cleaning for Enhanced Adhesion to Packaging Surfaces: Plasma and Free Radical Chemistries”
* My paper was presented in the SRC-Techcon 2014 at Austin; “Surface cleaning for enhanced adhesion to packaging surfaces: Effect of oxygen and ammonia plasma

**Peer reviewed Publications**

* Sudha Manandhar, **Sneha Sen Gaddam**, Jeffry Kelber; “[Free radical reactions at the Ru(0 0 0 1) surface: Atomic oxygen and dissociated NH3](http://www.sciencedirect.com/science?_ob=ArticleURL&_udi=B6TVX-4WGDR19-4&_user=452995&_coverDate=08%2F15%2F2009&_alid=1506578748&_rdoc=1&_fmt=high&_orig=search&_origin=search&_zone=rslt_list_item&_cdi=5546&_sort=r&_st=13&_docanchor=&view=c&_ct=1&_acct=C000007818&_version=1&_urlVersion=0&_userid=452995&md5=6eda03a209e6bfe0c84a53ab9b39e5de&searchtype=a)” *Surface Science, 603, Issue 16,* (2009),2469-2473*.*
* Chaudhari, Mrunalkumar; Du, Jincheng; Behera, Swayambhu; Manandhar, Sudha; **Gaddam, Sneha**; Kelber, Jeffry; “Fundamental mechanisms of oxygen plasma-induced damage of ultralow-k organosilicate materials: The role of thermal 3P atomic oxygen*” Applied Physics Letters,* 94, 204102 (2009).
* Behera, Swayambhu;  Lee, Joe;  **Gaddam, Sneha** ; Pokharel, Sundari;  Wilks, Justin ; Pasquale, Frank ; Graves, David; Kelber, Jeffry A; “Interaction of vacuum ultraviolet light with a low-k organosilicate glass film in the presence of NH3” *Applied Physics* *Letters*, 97, 034104 (2010).
* Lingmei Kong, Cameron Bjelkevig, **Sneha Gaddam**, Mi Zhou, Young Hee Lee, Gang Hee Han, Hae Kyung Jeong, Ning Wu, Zhengzheng Zhang, Jie Xiao, P. A. Dowben and Jeffry A. Kelber; “Graphene/Substrate Charge Transfer Characterized by Inverse Photoelectron Spectroscopy” *J. Phys. Chem. C* 2010, 114, 21618–21624.
* **Sneha Gaddam**, Cameron Bjelkevig, Siping Ge, Keisuke Fukutani, Peter A Dowben and Jeffry A Kelber; “Direct graphene growth on MgO: origin of the band gap” *J. Phys.: Condens. Matter* 23 No 7 (23 February 2011) 072204 (4pp)*.*
* J lee, H Kazi, **S Gaddam**, JA Kelber, DB Graves; “Effect of He and Ar ion kinetic energies in protection of organosilicate glass from O2 damage” *Journal of Vacuum Science and Technology* A 31(4), 041303
* **S Gaddam**, H Kazi, B Dong, M Driver, J Kelber; “Surface cleaning for enhanced adhesion to packaging surfaces: Effect of oxygen and ammonia plasma, *Journal of Vacuum Science and Technology* A 33(2), 021301

**Patents**

* Graphene formation on dielectrics and electronic devices formed therefrom; J A Kelber, **SS Gaddam**, CL Bjelkevig, **US Patent App**. 14/156,775 **US 8685802 B2**

**Paper Reviews**

Peer reviewed 3 papers for Journal of Semiconductors and Surface Review and Letters.

**Book Chapter**

Prepared the manuscript for a chapter in the book **“Graphene, Carbon Nanotubes, and Nanostructures: Techniques and Applications”** Edited by James. E. Morris and Kris Iniewski.