

Wafer Fabrication Processes Training
(5 days Training Contents)

| Dates | Contents |
|-------|---|
| Day 1 | Introduction and briefing |
| | Introduction to Cleanroom Protocol and Wafer Handling Procedure <ul style="list-style-type: none"> - Understand the responsibility for maintaining the cleanroom cleanliness and work ethics - Perform the gowning and degowning procedure - Wafer handling procedure and tools |
| | Photolithography - Theory Overview of Photolithography Process <ul style="list-style-type: none"> - Introduction of IC fabrication - Concept of Light, Light Source - Resolution and DOF - Types of printing - Resist Chemistry Process Flow <ul style="list-style-type: none"> - Prime, Apply (Coating), Soft Bake - Imaging - Post Exposure Bake - Develop |
| | Photolithography - Practical <ul style="list-style-type: none"> - Coater & Stepper & Developer - Deep UV - Overlay - CD Sem - Microscope - Basic Operations - selecting recipes, machine operations - Standard Operating Procedures - Common error and trouble shooting |
| | Q & A + Test |
| Day 2 | Reactive Ion Etch for Metal Etching (RIE) - Theory Theory/Application :Etching <ul style="list-style-type: none"> - Overview/definition/types - Etching criteria - How do plasma generated - Types of profile - Endpoint monitoring System <ul style="list-style-type: none"> - Basic structure of RIE chamber - Paameters (Recipe) Measurement Tools <ul style="list-style-type: none"> - Stepheight (for Metal ER measurement) |

| | |
|--------------|--|
| | <ul style="list-style-type: none"> - Nanospec Process Control - Visual Inspection CD measurement |
| | <p>RIE Metal - Practical</p> |
| | <ul style="list-style-type: none"> - Equipment Overview – DPS Chamber, Ceramic Dome Temp Control Unit, Electrostatic Chuck - Basic operation - recipes selection, machine operation, endpoint - Standard Operating Procedures - Inspection – resist residues, metal residues - CD Measurement |
| | <p>Q&A + Test</p> |
| <p>Day 3</p> | <p>Wet Processing - Theory</p> <p>Wet Cleaning Process</p> <ul style="list-style-type: none"> - Overview and definition - Machine hardwares components and schematic drawings - Wet cleaning chemistries - Wet cleaning recipe sequence and applications - Wet cleaning process control - Machines operating procedure - Safety <p>Wet Etching Process</p> <ul style="list-style-type: none"> - Overview and definition - Machine hardwares components and schematic drawings - Wet etching chemistries - Wet etching recipe sequence and applications - Wet etching process control - Machines operating procedure - Safety <p>Solvent Clean Process</p> <ul style="list-style-type: none"> - Overview and definition - Machine hardwares components and schematic drawings - Solvent clean chemistries - Solvent clean recipe sequence and applications - Solvent clean process control - Machines operating procedure - Safety <p>Solvent - Practical</p> <ul style="list-style-type: none"> - Hardwares and configuration - Machine operating procedure - Hands-on particle monitoring procedure - Hands-on visual inspection for polymer removal <p>Wet Etching - Practical</p> <ul style="list-style-type: none"> - Hardwares and configuration - Machine operating procedure |

| | |
|-------|---|
| | <ul style="list-style-type: none"> - Hands-on etch rate monitoring procedure for oxide & nitride film stripping <p>Wet Cleaning - Practical</p> <ul style="list-style-type: none"> - Hardwares and configuration - Machine operating procedure - Hands-on etch rate monitoring procedure for oxide stripping - Hands-on particle monitoring procedure |
| | Q & A + Test |
| Day 4 | <p>Thin Film PECVD - Theory</p> <ul style="list-style-type: none"> - PECVD process definition - System hardwares and configuration - PECVD process gases - PECVD process concepts (conformality, step coverage and etc.) |
| | <p>Thin Film PVD (Al/Si/Cu, Ti & TiN) - Theory</p> <ul style="list-style-type: none"> - Sputtering process definition and basic concepts - Sputtering process methods - System hardwares and configuration - Films properties - Process applications (contact, vias & etc.) - Process control - Common process issues and troubleshooting <p>FTIR Theory on application and hardware (An overview)</p> <ul style="list-style-type: none"> - Process applications - FTIR mechanism - FTIR measurement sample preparation |
| | <p>Thin Film – PECVD - Practical</p> <ul style="list-style-type: none"> - Hardwares and configuration - Machine operating procedure - Hands-on process monitoring procedure <p>Thin Film PVD - Practical</p> <ul style="list-style-type: none"> - Hardwares and configuration - Machine operating procedure - Hands-on process monitoring procedure |
| | Q & A + Test |
| Day 5 | <p>Test & Reliability - Theory</p> <ul style="list-style-type: none"> - Introduction to testing - Important of reliability test - Theory on Electro migration - Hot Carrier Injection - Gate Oxide Integrity and - Mobile Ions Degradation. |
| | <p>Test & Reliability - Practical</p> <p>Practical training on PCM</p> |

| | |
|--|--|
| | <ul style="list-style-type: none">- Manual measurement on transistor, diode, resistor and capacitor.- Auto test training on PCM- Gate Oxide Integrity Test |
| | Q & A Session |
| | Test Review/Evaluation |
| | Closing and Certification Presentation |