

## Pressure Sensor Workshop January 4-8, 2010

University of New Mexico  
MTTC- Manufacturing Training and Technology Center

### Required Participant Preparation:

- Participants are required to complete the online safety learning module and score above a 90% on the online practice exam. A written exam will be given covering the materials which must be passed before entry into the cleanroom. See the link to the safety module online.
- All materials are online – see the SCME web site.

### Participant Materials (SCME Provided)

- Silicon Nitride Coated Wafers for Pressure Sensor
- Participants will have an opportunity to select kits to be shipped to them

**Participants are encouraged to bring their own laptops and cameras.  
Cameras are allowed in the cleanroom.**

**Discussion Led Format for presentations – Ask questions!**

**Day 1 - 4 will include activities in the MTTC cleanroom.  
Day 5 will be a workshop in the classroom only.**

### Day One - Tuesday

7:45 – Hotel Pick Up

8:00-8:30

- Welcome and Introductions – Pleil, Madsen, F. Lopez
- Overview of Activities and Expectations - Pleil
  - Anna's Paper Work
  - Pre workshop survey – Computer Lab
  - Agenda Review for the Week and Flight Schedules (Sat)

8:30-9:45

- MEMS Making MicroMachines DVD– Classroom
  - Pre-test (Knowledge Probe)
  - DVD
  - Homework: DVD Activities

9:45 – 10:00 Break

10:00 – 12:00

- Safety Review – Harold Madsen

12:00 – 12:45 Lunch at the MTTC Tango Cafe



12:45 – 15:30

- Cleanroom Tour - Harold Madsen
- Written Safety Test

15:30 – 17:00

- Pressure Sensor Fabrication – Process Flow
- Wafer Handling
- Remedial Safety if required

17:00 - Dr. Pleil will drive participants back to the hotel

### Description Pressure Sensor Cleanroom Activity 1

- Gowning Procedure
- Wafer Handling
- Backside Pattern – four wafers – Coat, Expose, Develop, two for each group
- Inspect – staged wafer
- RIE Nitride Plasma Etch – two wafers staged, one for each group
- Inspect - Nitride Etched staged wafer
- Resist Strip – two wafers staged, one for each group
- Inspect – staged Nitride Etched resist stripped wafer

### Day Two - Wednesday

7:45 – Hotel Pick Up

8:00 – 11:45pm

- Group A Cleanroom – Pressure Sensor Activity 1
- Group B Classroom –
  - Review DVD activities / Post-test / Classroom utilization discussion
  - Pressure Sensor Model Kit
  - SCME Website / Learning Modules / Website utilization

11:45 – 12:45 pm – Lunch

12:45 – 16:30

- Group A Classroom –
  - Review DVD activities / Post-test / Classroom utilization discussion
  - Pressure Sensor Model Kit
  - SCME Website / Learning Modules / Website utilization
- Group B Cleanroom – Pressure Sensor Activity 1

16:30-17:00

- Dr. Pleil will drive participants back to the hotel



## Description Pressure Sensor Cleanroom Activity 2

- Frontside Pattern – Liftoff – four wafers – Coat, Expose, Develop, two for each group
- Inspect – staged wafer post front side pattern
- Metal Deposition Demo – one wafer staged in the chamber with gold or actual run of 5 wafers
- Inspect – post gold deposition wafer
- Lift off Demo (2 wafers, 1 for each group), optional
- Inspect – post liftoff staged

### Day Three – Thursday

7:45 – Hotel Pick Up

8:00 – 11:45

- Group A – Cleanroom – Pressure Sensor Activity 2
- Group B – Classroom
  - Crystallography Kit – Breaking Wafers & Origami
  - Rainbow Wafer Kit

11:45 – 12:45 – Lunch

12:45 – 16:15

- Group A – Cleanroom – Pressure Sensor Activity 2
- Group B – Classroom
  - Crystallography Kit – Breaking Wafers & Origami
  - Rainbow Wafer Kit

- Return to Hotel



## Description Pressure Sensor Anisotropic Etch and Probe Activity 3

- Demo backside etch in KOH – one wafer
- Inspect - completed wafer staged
- Probe Wafer – completed wafer staged

### Day Four – Friday

7:45 – Hotel Pick Up

8:00 – 11:45 - All

- Crystallography Assessment
- Lift-off Kit
- Micromachining PPT / Crossword

11:45 – 12:45 – Lunch

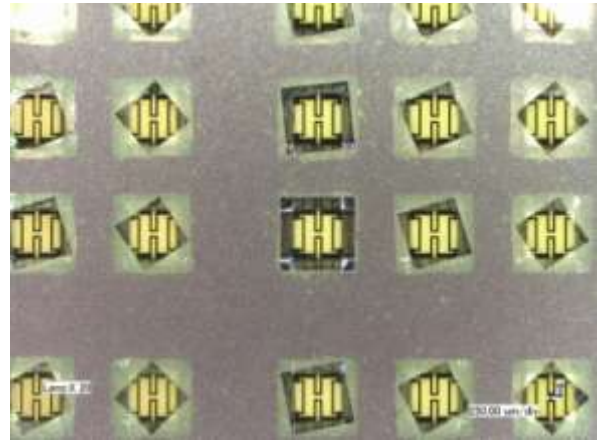
12:45 – 14:15

- All – Cleanroom and Probe Station – Pressure Sensor Activity 3
  - We will split into two groups

14:15-14:30 Break

14:30- 17:00

- Pressure Sensor Process Kit
- MTTC PS Process Assessment and Utilization
- MEMS Applications Review



### Day Five – Saturday – MEMS Innovators Workshop – Classroom work only

8:15 – Pickup at hotel

8:30 – MEMS Innovators Activity – Part I

- MEMS Components
- Building a MEMS component model

11:30 – Lunch

12:15 – MEMS Innovators Activity – Part II and project presentations

- MEMS Linkage Assembly Process
- Process Flow for MEMS component
- Presentations

2:15 – 3:00 – Post workshop survey and wrap up

- Why did you take this workshop?
- How are you going to incorporate the workshop information and materials into your curriculum?

