



# Advanced Problem Solving for Technicians

Presented by the

**Southwest Center for Microsystems Education**



## Questions that will be answered during this webinar

- What SCME can do for you
- How to use the problem-solving process and various tools to solve an out of control situation in the fabrication of a MEMS pressure sensor.

## Pressure Sensor Process Steps

1. Bare Silicon Wafer
2. Silicon Nitride Deposition
3. Backside Photolithography
4. Plasma Etch
5. Backside Photoresist Strip
6. Frontside Photolithography
7. Metal Deposition
8. Metal Lift-Off
9. Lift-Off Resist Strip
10. KOH Etch

## 8 Rules to Signal an Out of Control Process

Rule 1: One point outside the  $\mu \pm 3\sigma$  zone.

Rule 2: 2 out of 3 successive points outside  $\mu \pm 2\sigma$  zone.

Rule 3: 4 out of 5 successive points outside  $\mu \pm 1\sigma$  zone.

Rule 4: Eight or more successive numbers either strictly above or strictly below the mean (the center).

Rule 5: Six or more successive numbers showing a continuous increase or continuous decrease.

Rule 6: Fourteen or more successive numbers that oscillate in size (i.e. smaller, larger, smaller, larger)

Rule 7: Eight or more successive numbers that avoid  $\mu \pm 1\sigma$  zone.

Rule 8: Fifteen successive points fall into  $\mu \pm 1\sigma$  zone only, to either side of the centerline.

- SCME website: [scme-nm.org](http://scme-nm.org)
- [List and descriptions of SCME Learning Modules](#)
- [List and descriptions of SCME Instructional Kits](#)
- [YouTube Channel for SCME](#) (17 animations and narrated videos)

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## SCME Webinars (All recorded webinars are available.)

For info on the Fall 2011 – Spring 2012 webinars, click [here](#)

For info on the Fall 2012 – Spring 2013 webinars, click [here](#)

