# Course 3:

# MEMS CAD Tools

## Introduction

Micro Electro Mechanical Systems (MEMS) is the integration of mechanical elements, sensors, actuators, and electronics on a common silicon substrate through micro fabrication technology. There are a numerous possible applications for MEMS and Smart Systems. Coupled with the smart materials and systems technology, MEMS find applications from aerospace to automobile engineering, from environmental monitoring to biomedical health sciences. The MEMS has been classified with respect to the area of applications like Bio-MEMS, Optical MEMS, RF-MEMS, etc.

### MEMS CAD tools

### This course offers a

hands on experience on popular MEMS-CAD tools used in the industry. MEMS CAD tools are very powerful tools for engineers, researchers and students working in the field of MEMS. It provides 2D design specification and 3D analysis of structures in various domains such as thermal, Electrostatics, Mechanical, Fluidics, Piezo and Magnetostatics. The MEMS material contains material databases and process optimization. It has a one click meshing with the flexibility of adaptive machining, mask to mesh and process based meshing. It is a best solver for each physical domain with Boundary Element Method, Finite Element Method and Finite Volume method.

The hands on training will be provided on widely used MEMS structures ( sensors and actuators ) such as cantilevers, pressure sensors, Electro - thermal actuators, etc.

### What should be outcomes of the session?

- Introduction to MEMS CAD Tools
- About MEMS
- COMSOL Multiphysics
- IntelliSuite
- Design and analysis in MEMS CAD tools.

## Who should attend?

- Students of,
    - Biomedical
    - Electronics
    - Mechanical/Auto/Aero
    - Electrical
    - Biotech

- People working on,
    - MEMS
    - Instrumentation and control
    - Sensors
    - Automation
    - Micromachining