
New Innovations in MEMS Activity

Instructor Guide

Note to Instructor

New Innovations in MEMS is an activity for the *History of MEMS Learning Module*. This activity asks the students to continue the history of MEMS timeline into the 21st century. This activity should be completed after reviewing the reading material – History of MEMS.

The *History of MEMS Learning Module* consists of the following:

- Pre-test or Knowledge Probe
- History of MEMS Primary Knowledge
- History of MEMS Activity
- **New Innovations in MEMS Activity**
- History of MEMS Final Assessment

Introduction - Description and Estimated Time to Complete

The timeline presented in the History of MEMS reading unit took you through the innovations that lead to the microelectromechanical systems (MEMS) being developed by the end of the 20th century. In this activity you continue this timeline to modern day.

There have been many innovations and advancements in MEMS during the 21st century that have led to new devices and applications of MEMS, and some that led to even smaller technologies, like NanoEMS. In this activity you identify and discuss at least five of these innovations.

Allow up to 3 hours to complete this activity.

Activity Objectives and Outcomes

Activity Objective

- Identify and explain at least five (5) innovations of the 21st century that have led to advancements in MEMS and NEMS (NanoEMS).

Activity Outcomes

After the completion of this activity, you will have strengthened your knowledge of the current milestones that have occurred in the development of MEMS/NEMS since the 20th century.

Dependencies

It would be helpful to review the following material:

- History of MEMS Primary Knowledge (PK) unit

Activity – New Innovations in MEMS

1. Revisit the timeline in the *History of MEMS PK*. As you can see, this timeline identifies “specific” milestones in MEMS development up to 1999, the last of which is the Optical network switch by Lucent.
2. For this activity, research, identify and discuss at least five (5) specific milestones that have occurred since the year 2000. Each of these milestones must meet the following criteria:
 - a. Occurred during the 21st century
 - b. Led to a change or new development/direction in at least one area of MEMS or NEMS.
3. Create a graphic illustrating your five milestones – what they are and when they occurred.
4. For each milestone, write a discussion that includes, at a minimum, the following:
 - a. The timing of the milestone
 - b. Description of the milestone
 - c. People involved in the innovation
 - d. How this innovation affected the direction of MEMS or changed MEMS at that time
 - e. The importance of the innovation to the future of MEMS/NEMS
5. Include a Reference section of all of your sources for information and graphics.
6. Submit your timeline, discussion and references.

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