# Three new standards for MEMS devices

July 16 2004

Researchers at the National Institute of Standards and Technology (NIST), along with their colleagues at several companies, are completing experiments that validate new standards aimed at improving emerging new microelectromechanical systems, or MEMS, devices.

Microaccelerometers, the devices used to activate automotive airbags, are MEMS devices. In the future, microscopic MEMs devices made with gears and motors may, for example, be developed to clear blockages in arteries.

NIST scientists presented their findings at the semiconductor industry's annual SEMICON West trade show, held July 12-16, 2004, in San Francisco.

Working with ASTM International, NIST has developed three new standards aimed at helping researchers measure more accurately several characteristics of materials used to construct MEMS devices. With more accurate measurements of microsystem materials, designers and manufacturers hope to improve the design and performance of these devices. Currently, laboratories measuring the properties of similar device materials produce widely varying results.

Each new standard is a set of procedures for measuring dimensions or a particular materials property. One standard advances the "in-plane length" measurement of a microsystem, or its length in one dimension, typically from 25 micrometers to 1,000 micrometers. A second standard would improve measurement of "residual strain," or the strain the parts

of a microsystem undergo before they relax after the removal of the stiff oxides that surround them during manufacturing. The final standard aims to improve measurement of the "strain gradient," which determines the maximum distance that a MEMS component can be suspended in air before it begins to bend or curl.

Six companies have been collaborating with NIST on a so-called "round robin" experiment to validate the MEMS standards. The standards should significantly reduce variations in measurements between laboratories.

Citation: Three new standards for MEMS devices (2004, July 16) retrieved 24 April 2024 from https://phys.org/news/2004-07-standards-mems-devices.html