

## **Microcantilever Terminology**

*Analyte:* A substance or chemical constituent that is undergoing analysis or being measured.

*Angular deflection:* The angle formed between the two extremes of deflection.

*Atomic Force Microscopes (AFM):* A device for mapping surface atomic structures by measuring the force acting on the tip of a sharply pointed object that is moved over the surface.

*BioMEMS:* MEMS with applications for the biological / analytical chemistry market.

*Cantilever:* A beam supported at one end and with the other end suspended freely outwards.

*Chemical Sensor Arrays (CSA):* An array of sensors that chemical reacts with a target material resulting in a measurable change (i.e. resonant frequency or mass) with the sensor.

*Chemisorption:* The molecular bonding of gas to a solid.

*Displacement:* The difference between the initial position of something (as a body or geometric figure) and any later position.

*Dynamic:* Of or relating to energy or to objects in motion.

*Electrostatic:* Of or related to electric charges at rest or static charges.

*Hooke's Law:* The stress on a material is directly proportional to the strain on that material, provided the stress is less than the material's limit of elasticity.

*MEMS:* Micro-Electro Mechanical Systems – microscopic devices such as sensors and actuators, normally fabricated on silicon wafers.

*Piezoresistive:* The piezoresistive effect describes the changing electrical resistance of a material due to applied mechanical stress.

*Resonant frequency:* The frequency at which a moving member or a circuit has a maximum output for a given input.

*Resonators:* A device or system that exhibits resonance or resonant behavior.

*Selectivity:* The pumping speeds for specific gases. Pumps that are selective do not pump all gases at the same rate.

*Sensors:* A device that responds to a stimulus, such as heat, light, or pressure, and generates a signal that can be measured or interpreted.

*Spring constant ( $k$ ):* For an object that obeys Hooke's law, spring constant is the force per unit extension (N/m).

*Static:* Of or relating to bodies at rest or forces that balance each other.

*Transducer:* A substance or device that converts input energy of one form into output energy of another form.

*Young's Modulus of Elasticity ( $E$ ):* The measure of the stiffness or elasticity of a given material. The stiffer or less elastic a material is, the higher the  $E$  value.