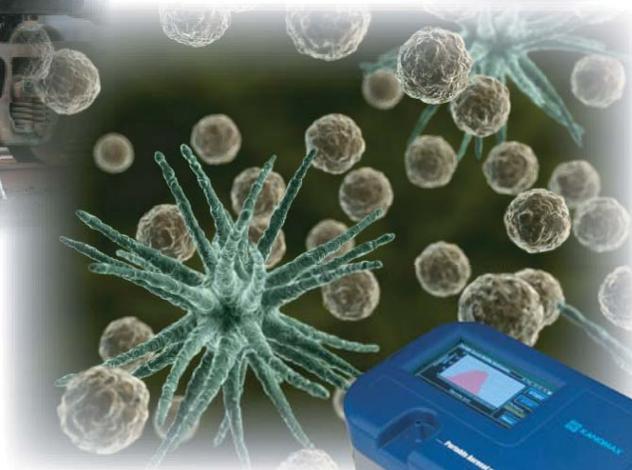
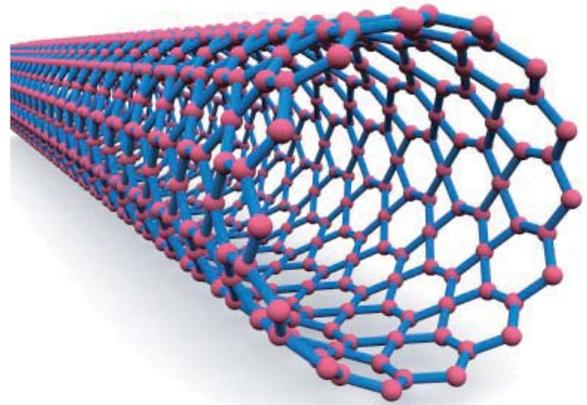
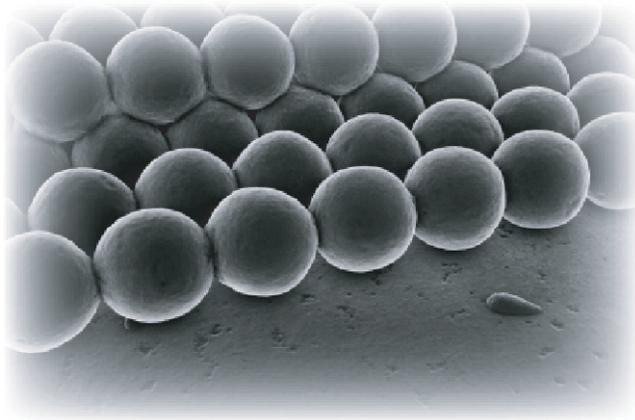


# Nanoparticle Monitoring Solutions



# Importance of Nanoparticle Monitoring

## Nanoparticle

Nanoparticle research is currently an area of profound scientific interest due to its wide variety of potential applications and future implication in biomedical, optical and electronic fields.



## Increasing importance of Nanotechnology

Nanotechnology involves developing new materials with dimensions on the nanoscale to investigating possibility of directly control matter on the atomic scale. Nanotechnology is a very diverse, ranging from extensions of conventional device physics to completely new approaches based upon molecular self-assembly. Nanotechnology is significant due to its superiority upon comprehension, use, and control of matter at magnitudes of approaching atomic levels, with which to manufacture new substances, instruments, and frameworks.

Molecular manufacturing is an emergent diversity of technologies in which medicine and engineering function together with physics and chemical science gear to many brand new possibilities within the medical arena such as research to vaccine formation, wound regeneration, skin care, narcotic countermeasures and chemical and biologic detectors.

The future of nanotechnology may include huge task forces of medical nanorobots tinier than a cell drifting through human bodies removing bacteria, cleaning blocked arteries, and undoing the damage of aging. This key functionality would permit medical personnel to analyze patients' heart attacks much quicker than current tests.

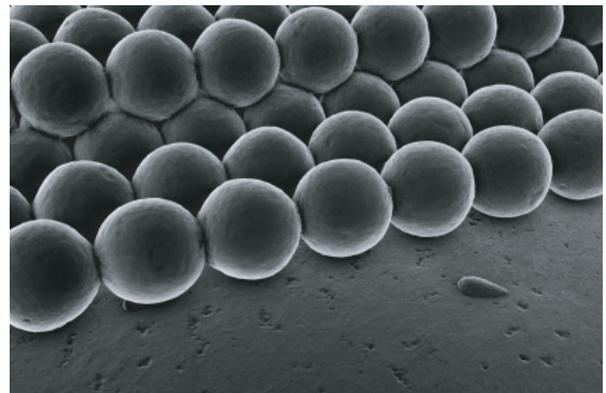
## IAQ and Nanoparticle Health Risk

Indoor air quality degradation due to energy efficiency efforts is the most problematic concern for particulate contaminants as they have clearly demonstrated health impacts and due to the large gaps in the measurement science for ultrafine particles. Particles in general, especially ultrafine particles, are known to be cause health issues such as lung damages with respect to asthma and other respiratory diseases.

To solve the gaps in the measurement science needed to understand indoor levels of ultrafine particles and the associated exposures to building occupants, Kanomax USA offers a handheld condensation particle counter Model 3800. CPC 3800 can trace particle sizes as small as 0.015 to 1.0 micrometers. This handheld instrument is perfect for identifying nanoparticle sources, which offers more accurate data to IAQ investigation in order to prevent future human health risks.

## Evaluating Exposures to Nanoparticle

In Approaches to Safe Nanotechnology, NIOSH recommends direct-reading instruments and filter sampling with lab analysis to obtain particle number, size, and shape, degree of agglomeration, and mass concentration of elemental constituents in nanoparticles. Direct-reading instruments include both optical particle counters and condensation particle counters such as the Kanomax 3800.



# Nanoparticle Risk Measurement for Industrial Hygiene and Safety

## Handheld Condensation Particle Counter

The Model 3800 is a handheld condensation particle counter that detects ultrafine particles in many applications. With this advanced technology, users can implement nano-sized particle research in occupation and working areas. The Model 3800 is appropriate as a screening tool to evaluate filter performance and gasket leakage. It is also an optimal tool to detect black carbons, such as soot and smog, which are normal constituents of exhaust contaminants from combustion.



### Features and Benefits

- Particle size range of 0.015 to 1.0  $\mu$  m
- Concentration range of 0 to 100,000 particles/cm
- Data logging and managing data with measuring software

## PAMS: Portable Aerosol Mobility Spectrometer

PAMS is an electrical mobility size spectrometer designed for portable, mobile, or handheld aerosol sampling applications. It provides the number-weighted diameter distribution of aerosols over the entire submicrometer range (10-1000 nm) in one scan. The unit Uses a non-radioactive bipolar aerosol charger to allow easy access to sampling sites with tight safety regulations. its bipolar charger significantly reduces measurement uncertainty of larger particles in the submicrometer range



### Features and Benefits

- CPC mode: to get total particle concentration
- Single diameter count mode: to get a total count within a narrow size range
- Size distribution mode: to get an automated size distribution measurement

# Nanoparticle/Aerosol Characterization and Environmental Research

## Nanosampler Inertial Filter

The nanosampler Model 3180 classifies under ambient pressure. A low pressure impactor (LPI) is usually used for sampling PM<sub>0.1</sub>, however, an LPI requires a low pressure vacuum or it will cause a change in particle composition. The Nanosampler can be used to sample a greater amount of PM<sub>0.1</sub> particles at ambient pressure without causing a distortion in particle composition.



### Features and Benefits

- Particle classification as small as 0.1  $\mu$  m
- Five stages of PM: 10, 2.5, 1.0, 0.5, 0.1
- Large Sample Flow Rate of 40L/min

## APM: Aerosol Particle Mass Analyzer

Aerosol Particle Mass Analyzer (APM-II) classifies particles by mass based on the balance between centrifugal force and electrostatic force. Particle size distribution measurement is normally used in order to measure nanosized particle distribution. While DMA (Differential Mobility Analyzer) classifies particles by particle size utilizing electrostatic force, APM-II classifies particles by mass based on entirely new classification principles.



### Features and Benefits

- Desktop and lightweight unit
- APM-II classifies aerosol particles of 0.01 ~ 100 femtograms
- Particle density distribution can be attained by combining the APM and DMA

# Nanoparticle/Aerosol Elemental Composition Analysis

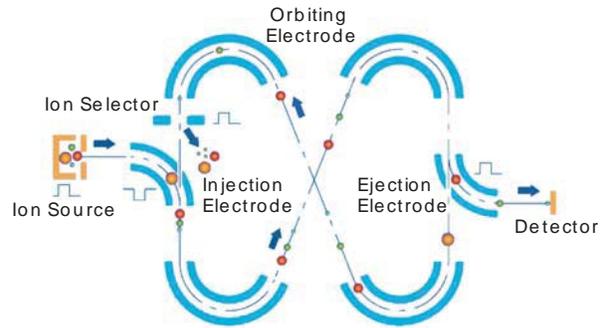


## High performance and small foot print Time of Flight Mass Spectrometer

Don't settle for having to choose between portability or high resolution. Patented multi-turn optics allow the infiTOF to be compact with no measurable trade-off between portability and high precision high resolution mass spectrometry.

### Features and Benefits

- High resolution, compact TOF Mass Spectrometer
- Resolution > 30,000
- Dynamic range: 10bit
- Sampling rate: 2 GS/s



Multi-turn Technology

## Other Solutions for Particle / Aerosol by Kanomax

### Particle Counters

Kanomax offers 3 & 5 channel handheld particle counters as well as a 50LPM 6 channel portable. We also provide a complete cleanroom monitoring system for 24/7 monitoring.



### Dust Monitors

Kanomax Piezobalance Dust Monitor Model 3521 and Digital Dust Monitor Model 3443 implement exposure testing for dust and other airborne contaminants.



### Particle Generator

Kanomax Fluidized Particle Generators generate standard particles continuously for a long time. Applications are pharma and chemical compound exposure research & filtration performance testing.



### Ambient Monitor

AQM60 provides long-term monitoring of environmental conditions such as particulate, temp. humidity, noise, and gases in a weather-proof enclosure.

