

# NanoLab



UMEÅ  
UNIVERSITET

? Your experiments

clean room class 100 (ISO5)

we offer courses and trainings on demand

permanent access and individual assistance

equipment are always ready to operate

different gas (N<sub>2</sub>, Ar, O<sub>2</sub>, H<sub>2</sub>) supplies

all consumable materials are in place

a space for your own needs and ideas (move in your set up)

## CLEAN ROOM

Controlled environment used in manufacturing or scientific research, with a low level of environmental pollutants such as airborne microbes, aerosol particles, dust, and chemical vapors.

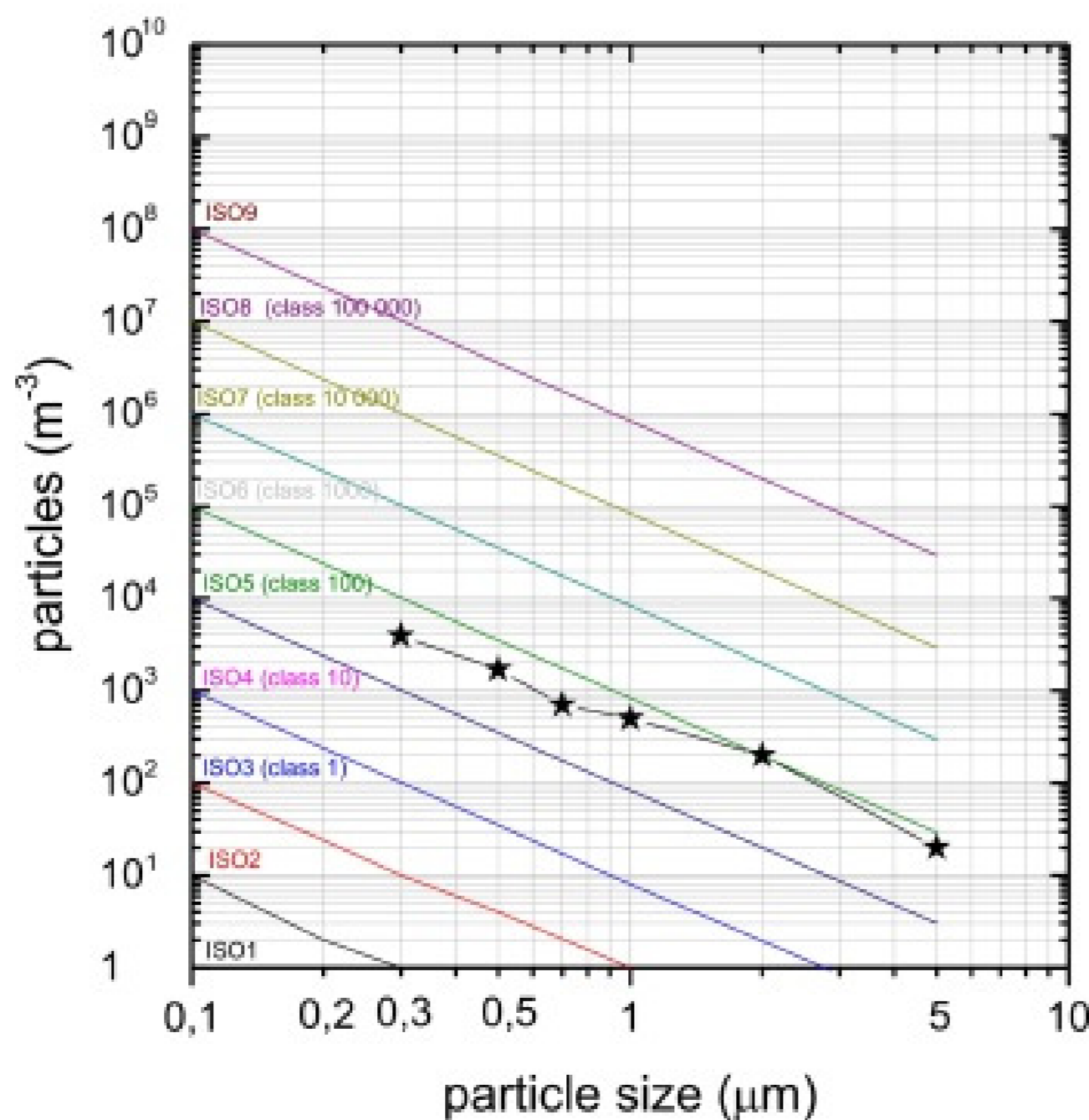
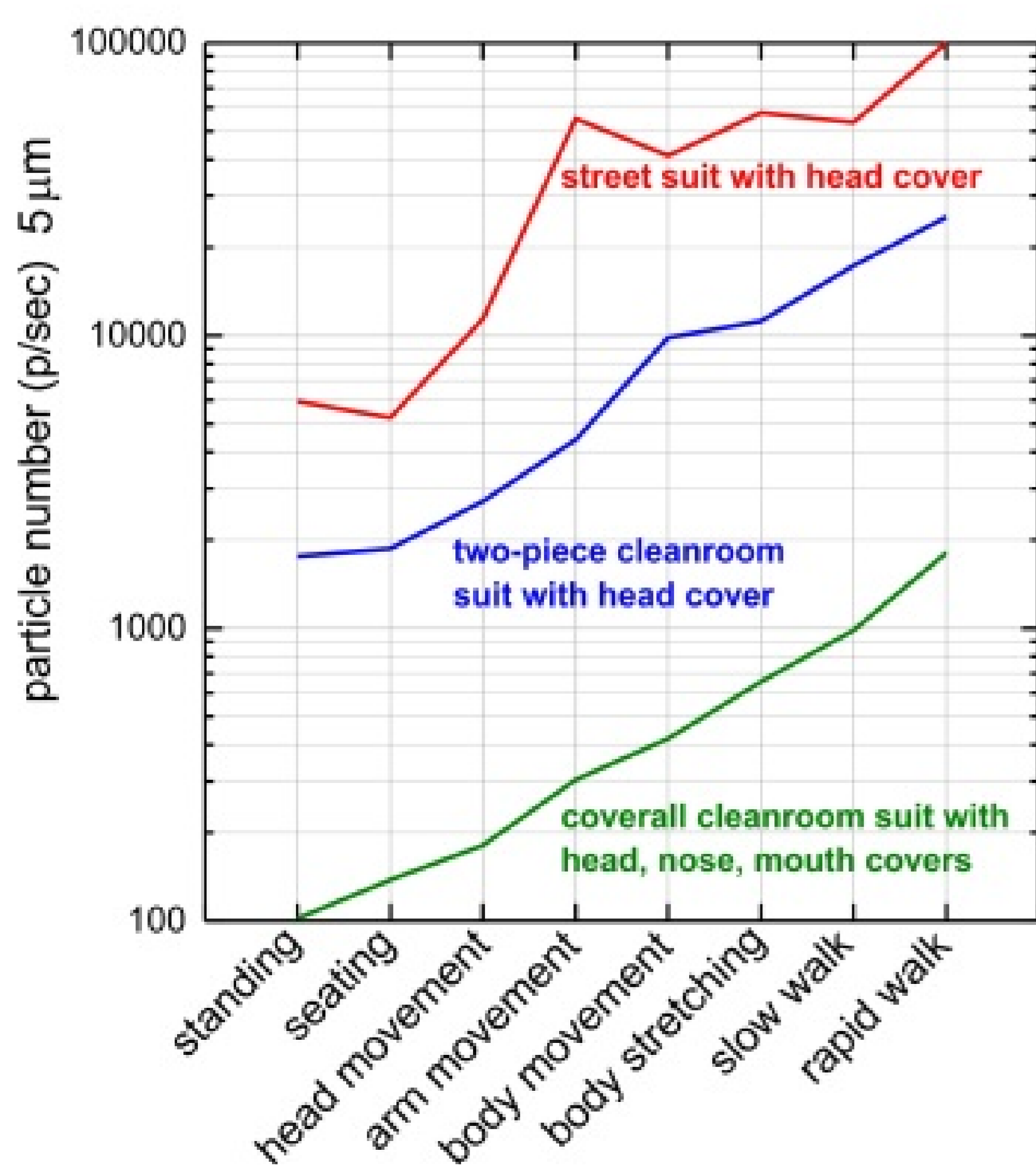
## WHY CLEAN ROOM

Manufacture products require specific limitation of concentration of airborne contaminants. It is used for pharmaceuticals, electronics, medical devices and chemical substances.

## CLEAN ROOM CLASIFICATION

Clean rooms are rated for purity according to guidelines established in Federal Standard 209D and ISO standard 14644. Air cleanliness is specified in terms of the number of foreign particles per cubic foot of air, relating different combinations of particle size and particle count.

- Class 1 / ISO 3 : only 1 particle per cubic foot
  - Class 10 / ISO 4 : 10 particles per cubic foot
  - Class 100 / ISO 5 : 100 particles per cubic foot**
  - Class 1,000 / ISO 6 : 1,000 particles per cubic foot**
  - Class 10,000 / ISO 7 : 10,000 particles per cubic foot
  - Class 100,000 / ISO 8 : 100,000 particles per cubic foot
  - Class 1,000,000 / ISO 9 : 1,000,000 particles per cubic foot
- [particles measure 0.5 micron or less in diameter]



## For more information contact :

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## Plasma Processing

### Diener ATTO

used for varieties of surface treatment, such as: cleaning, surface activation, etching. Samples can be up to 20 cm in diameter, two inlet gases are available.



## Metallization

### PVD75 evaporator

used for producing metallic or organic thin layers between 1-400 nm at high vacuum pressure 5x10<sup>-8</sup> Torr. The system has 3 normal deposition sources and 1 low temperature organic deposition source. Samples can be up to 30 cm in diameter, substrate rotation and heating up to 350°C and two gas inlets are available.



## Optical tensiometer

### Attension Theta

used for highly accurate measurements of static and dynamic contact angle, measure surface free energy, surface and interfacial tension.



## Optical Lithography

### Karl Süss Mask Aligner MJB3

used for UV photo lithography using 350 W mercury lamp and Süss diffraction-reducing exposure optics. The primary exposure wavelengths of 365 or 403 nm lead to about 5 µm minimum resolution.



## Nanoimprinter

### Obducat NIL 2.5 Nanoimprinter

used to stamp a pattern into a polymer coating on a substrate at max heating 250°C and max pressure 70 bar. A stamp made of nickel or silicon. The substrate is heated and the stamp is pressed into the polymer. The resolution is up to 1 nm depending on the stamp.



## Microscopy

### Olympus BX51 & GX71

provide high contrast, high magnification, optimal color fidelity, Imaging in different modes and with different magnifications.



## Spin processing

### SPIN150-NPP

used for producing thin layers from dissolved materials (liquids) at room temperature. Layer thicknesses (nm-µm range) controlled by the rotation speed between 1-10000 rpm.



## X-ray diffractometer

### PANalytical Xpert3 Powder

X-ray source : Cu K $\alpha$ ,  $\lambda = 1.5418 \text{ \AA}$ .  
Operating range : 10 - 70 °2 $\theta$ ,  
small-angle X-ray scattering possible too.  
Temperature : Room temperature, but temperature chamber available for lower and higher temperatures.  
Humidity : Ambient, but humidity chamber available for different humidities.  
Sample amount : App. 10 mg

