

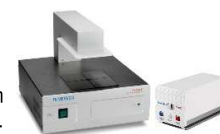


# NanoLab

## Filmetrics

### Filmetrics F10-RT-UVX

Thin film measurements system based on spectral reflectance (SR). Suitable mostly for transparent films, enabling measurements of films 30 Å to 100 µm thick films.



### Diener ATTO & PE-100

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



### PVD75 Kurt J. Lasker evaporator

For producing metallic or organic thin layers between 1-400 nm at high vacuum pressure  $5 \times 10^{-8}$  Torr. The system has three deposition sources and one 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.



**Park NX-Hivac AFM** High vacuum atomic force microscope, offers greater accuracy, better repeatability.

**Specification:** Vacuum level: E10-5 torr, Vacuum chamber: 300 mm x 420 mm x 320 mm, XYZ scanner: X-Y 100 µm x 100 µm and Z 15 µm, Sample stage size: 50 mm x 50 mm, Sample size: up to 150 mm x 150 mm, Sample thickness: up to 20 mm.

**Applications:** Surface imaging and topography (by contact, non-contact, tapping, PinPoint, force modulation modes), Nanomechanical and Electrical properties, Nanolithography.



### Attension Theta

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



**Karl Süss Mask Aligner MJB3** used for 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.



**Olympus BX51 & GX71** provide high contrast, high magnification, optimal color fidelity, Imaging in different modes and with different magnifications.



**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.



**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 Kα,  $\lambda = 1.5418$  Å.

Operating range : 10 - 70 °2θ, 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



## Atomic force microscope

## Optical tensiometer

## Optical Lithography

## Microscopy

## Nanoimprinter

## Spin processing

## X-ray diffractometer

## X-ray diffractometer

## 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.

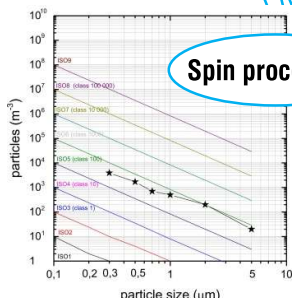
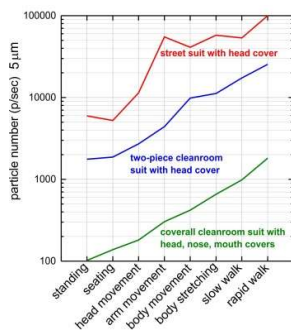
## WHY CLEAN ROOM

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 100,000 / ISO 8 : 1,000,000 particles per cubic foot  
[particles measure 0.5 micron or less in diameter]



## For more information contact :

Dr. rer. nat. Roushdey Salh, Physics department,  
Linneausväg 24, 901 87 Umeå,  
Tel. : 090 786 5702, E-mail: roushdey.salh@umu.se