NL50

BENCHTOP NANOPARTICLE DEPOSITION SYSTEM

One touch nanoparticle deposition

Hydrocarbon free, non-agglomerated nanoparticles

Sub-monolayer or high porosity 3-D nanocoating

Cycle time less than 30 minutes

Surface plasma clean and functionalisation

Wide choice of materials including Au, Pt, Ag, Cu and Ir

The NL50 is designed for the researcher investigating the

Recommended Applications

- ◊ Photonics
- ◊ Antiviral
- ◊ Catalysis
- ◊ Life Science
- ◊ Graphene
- ◊ Sensors
- ◊ Antibacterial
- ◊ Drug delivery

..and many more

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NL50 compact design

Flip back magnetron lid

..quick material exchange

Nanoparticle generation zone

..ultra pure nanoparticles formed in vacuum

Sample Chamber

..easy sample loading

..view deposition through clear loading door

Touch Screen

..fully automated recipe control

..preloaded settings for common materials

NL50 is at home in any research laboratory

The **compact benchtop design** and **simple touch screen operation** of the NL50 makes the system ideally suited for any laboratory studying the applications of nanoparticles.

The vacuum deposition process produces **ultra pure** nanoparticles that are **free of hydrocarbons** or other contamination**,** which typically plague chemical techniques. The nanoparticle coating is deposited straight onto your substrate and the after a typical **cycle time of 30minutes** is ready for analysis; no further drying or purification steps required.

Applications of NL50

Graphene

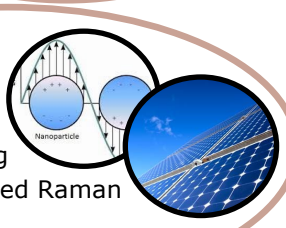
Electronics
Energy
Composites
Sensors

Life Sciences & Nanomedicine

Cancer Therapies
Drug delivery
Antimicrobial
Antiviral
Biofilms

Photonics

Photovoltaics
Light harvesting
Surface enhanced Raman

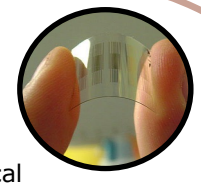


Catalysis

Fuel Cells
Photocatalysis
Electrochemistry
Water/air purification

Sensors

Biosensors
Optical
Electrical
Electrochemical



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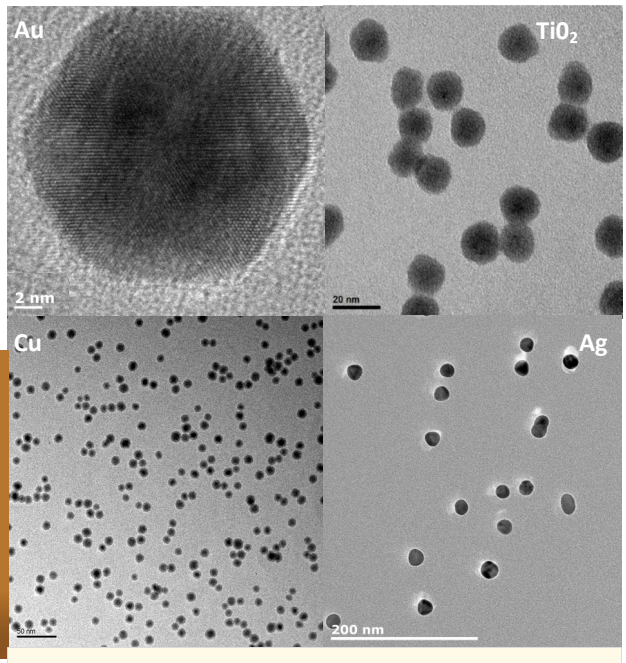
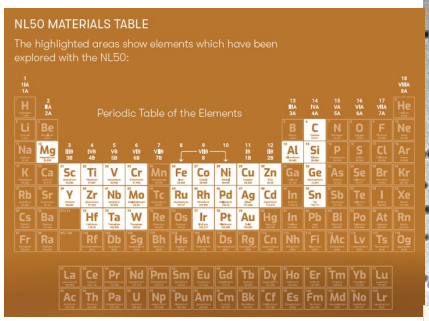
Ultra Pure Nanoparticles

The NL50 utilises magnetron sputtering to generate a beam of ultra pure nanoparticles in vacuum. Nanoparticle characteristics are:

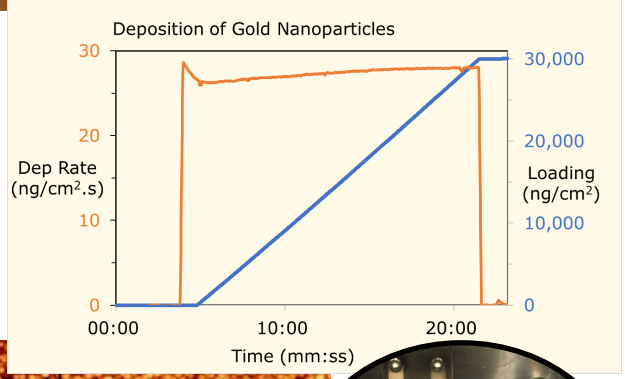
- Ultra pure and hydrocarbon free
- Non-agglomerated
- Consistent and repeatable results
- Choice of materials including **Au, Ag, Cu, Pt, Ir, Ni, Ti, and Zr**
- Generate compound nanoparticles such as nitrides and oxides

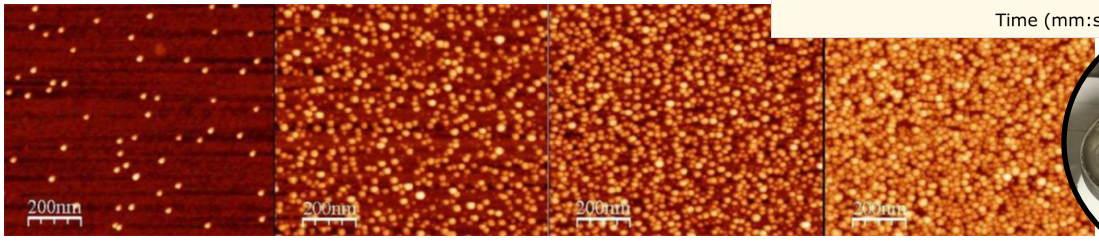


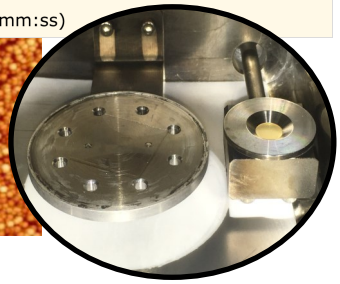


Deposition Control

Real time deposition control using a Quartz Crystal Monitor (QCM) enables precise and repeatable control over surface loading from sub monolayer coverage to porous 3D structures. Deposition times are typically a few minutes. Deposition Rates range from 10-50ng/cm^{2}s







Easy to Use

The intuitive user interface is easy to use and allows full automation of the pump down and deposition sequence.

- Fully automated pump down and venting
- Preloaded optimised deposition settings for common materials
- Advanced users can control deposition conditions to vary the nanoparticle size and deposition rate
- Choice of deposition control using deposited weight or deposition time.

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Quick material exchange

NL50 is the ideal **multi-user tool.** Switch from one material to another in minutes.

The flip back design ensures target exchange in minutes using only a pozidrive screwdriver. The 180deg flip back lid allows full access to the sputter target without needing to remove the magnetron head.

Surface cleaning and pre-treatment

The NL50 offers optional **in-situ plasma cleaning** of conducting substrates.

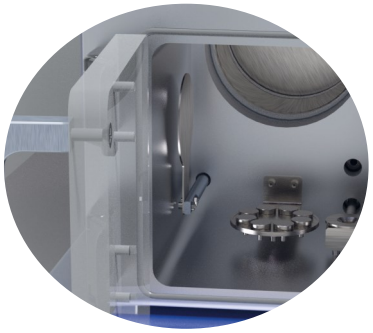
In vacuum plasma cleaning removes adsorbed molecules from the substrate, in order to aid adhesion of the deposited nanoparticles and enable functionalisation of the substrate surface before deposition.

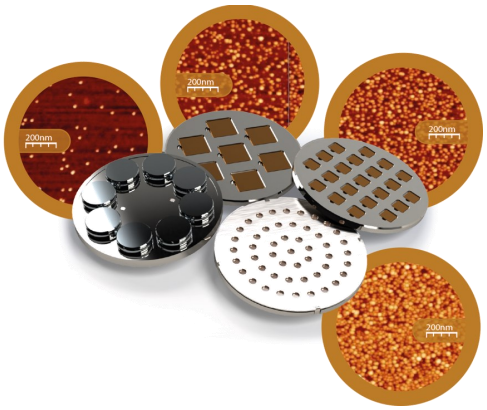
For delicate substrates simply deselect the plasma cleaning step in the recipe.

Flexible Substrate loading

The NL50 is designed for a wide range of substrate types and sizes up to 50mm in diameter. Even delicate substrates are suitable as no heat is generated in the deposition chamber. Substrates include, but are not limited to,

- microscope slides
- petri dishes
- micro-well plates
- electrodes
- membranes
- plastics





SPECIFICATIONS

NL50 Weight: approx. 60Kg (113lbs)

NL50 Dimensions: (LXWXH) 70x50x60cm (27.6x19.7x23.6inches)

Consumables

Target size	1inch (25.4mm) diameter, max 3mm thick
Max Sample Size	50mm diameter
Materials	Conducting materials, including Ag, Au, Pt, Cu, Ni, Ti, Ir

Utilities

Power	Single phase IEC, AC@110-260v, 50-60hZ
Gas	Argon (process gas) Nitrogen (vent gas) High pressure air (pneumatics) 6mm compression fittings
Water	1L/min (0.3 US GPM) 2x10mm compression fittings
Pumping	DN25KF, 120L/m(7.2m^3/h) backing pump required (provided as optional extra)

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