

# VSP-S1

## Size Selector

Reproducible samples with size-selected nanoparticles in < 60 minutes

Distribution in the UK & Ireland

Fully automated sample preparation tool for **1-10 nm size-selected nanoparticles**



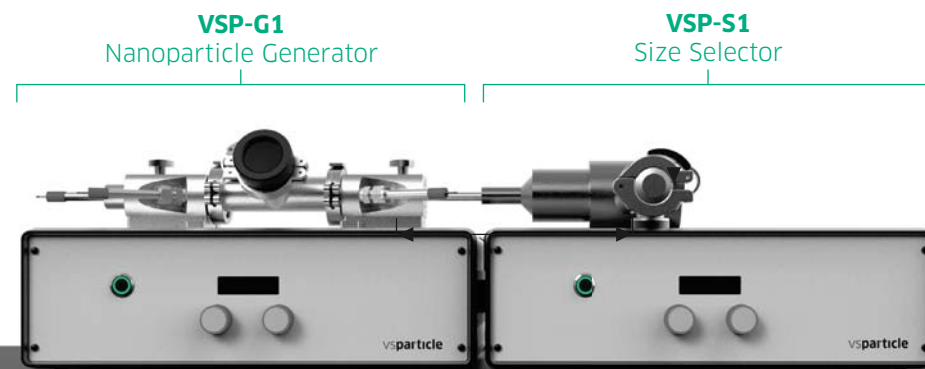
[www.lambdaphoto.co.uk](http://www.lambdaphoto.co.uk)

vSparticle

### Rapid, automated, and reproducible production of size-selected nanoparticles

Understanding the unique properties of sub-10 nm metallic nanoparticles is crucial to developing improved and novel nanomaterials. The accurate and controlled production of metallic nanoparticles below 10 nm is highly desired for model studies in catalysis and materials science. Combining a robust and reproducible nanoparticle preparation method with advanced in-situ/operando characterisation techniques will enable researchers to focus on the science and not the synthesis.

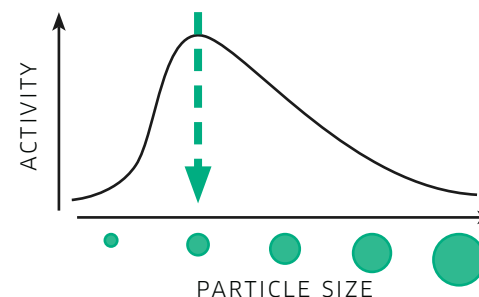
**The VSP-S1 is a table-top, user-friendly nanoparticle size-selector** that enables the automated production of size-selected inorganic nanoparticle (1-10 nm) samples, with minimal effort. Compatible with **any (semi-)**



Connect the VSP-S1 Size Selector directly to the outlet of the VSP-G1 Nanoparticle Generator to produce, select, and deposit your nanoparticles.

### Size-dependent catalytic activity screening made simple

Produce catalytically active nanoparticles in the range of 1–10 nanometer to study particle size effects and develop clear structure-activity relations. The automatic preparation of catalytic samples with a 0.1 nm resolution enables sequenced sample production in less than a day.



3 nm Au nanoparticles on an in-situ TEM chip prepared with the VSP-G1 and VSP-S1



### Unique features of the VSP-S1

In a combined setup with a VSP-G1



#### Size selection

- Select nanoparticle size between 1 and 10 nm
- Resolution  $\pm 0.1$  nm
- Particle size sequence possible (property screening)
- Modular system for optimal flexibility



#### Automated Production

- Fully automated production ensures optimal reproducibility
- Choose particle size and press start



#### Versatility

- Compatible with all (semi)-conductive materials
- Multi-element composition possible (alloy and non-alloy)
- Easily tune particle composition with electrodes and carrier gas



#### Clean particles

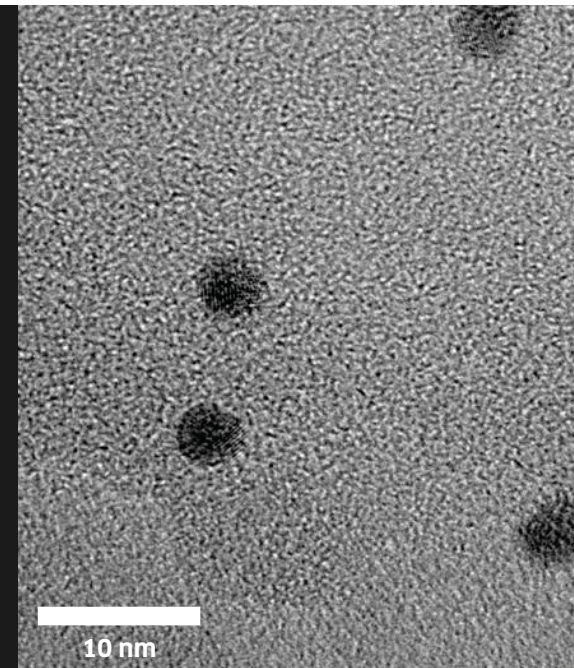
- Only inputs needed are power, electrodes and carrier gas
- Pure, model particles: No surfactants, precursor salts
- No influence of contaminants on particle properties

### Operating Window

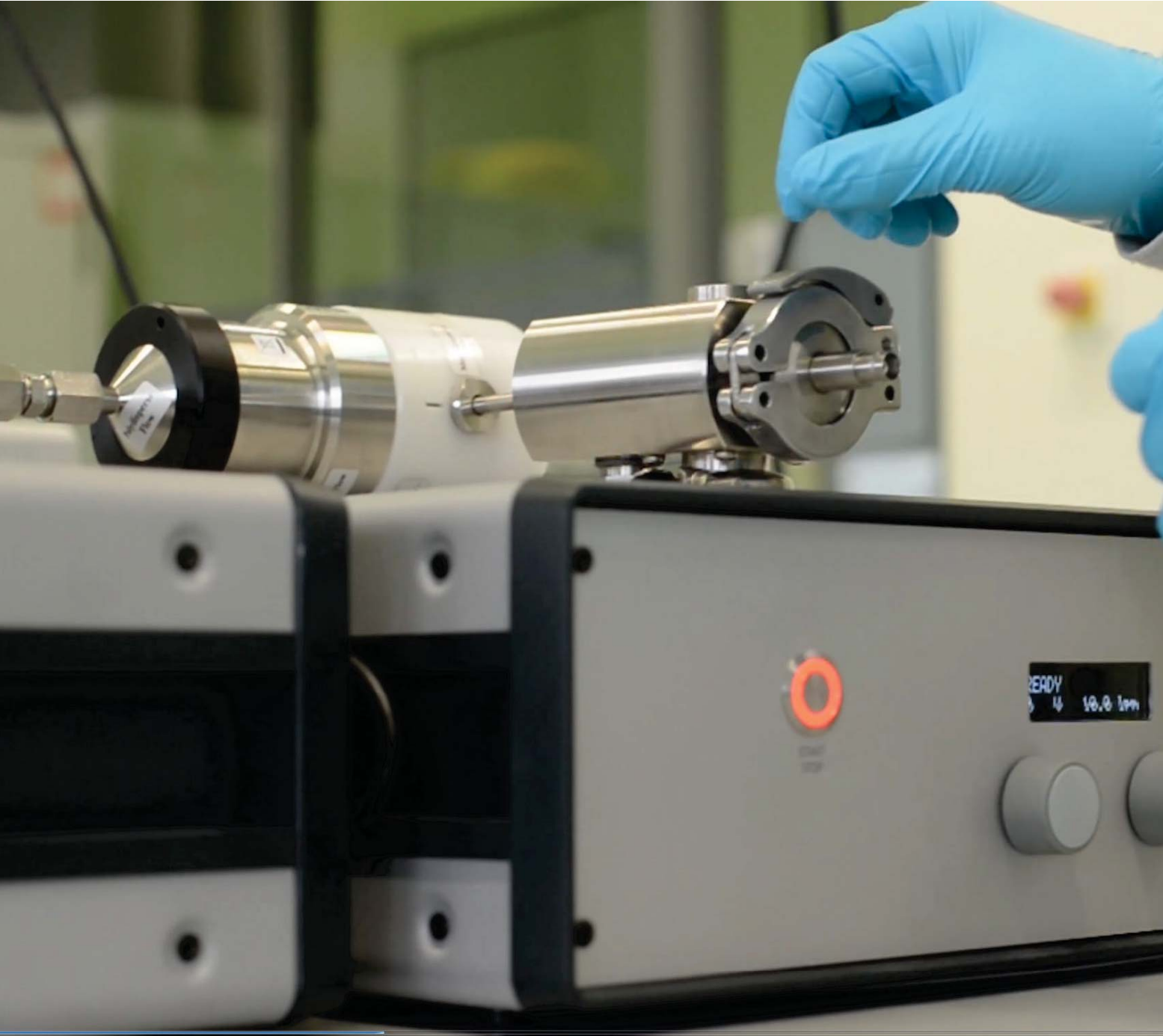
Target Electrode material	metals, metal oxides, alloys, semiconductors, carbon
Particle size	1–10 nm $\pm$ 0.1 nm
Max substrate size	10×10 mm
Max deposited area	3×3 mm
Substrate types	e.g. (in-situ) TEM, Electrodes, (doped) Si chips
Surface coverage	0.1–20 %
Deposition time	1–30 minutes
Total sample prep. time	30–60 minutes
Carrier gas	Ar, N <sub>2</sub> , Ar + O <sub>2</sub> , Ar + H <sub>2</sub>

### Technical Specifications

Power	110–240V AC
Dimensions	Casing ca. 52×45×20 cm
Weight	ca. 15 kg
Display	16×2 characters
Digital output	Secure wireless interface



5 nm Au particles on TEM grid



**Size-selected  
nanoparticles  
at the push of a  
button.**

Distribution in the UK & Ireland



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**VSparticle**