henniker plasma

Plasma clean
Improved wettability and adhesion
Functional nano-coatings

TEM & SEM Plasma Cleaner

For specimen & holder cleaning

www.plasmatreatment.co.uk

Solutions for Microscopy

Henniker specialises in advanced, compact plasma cleaners that deliver precision surface cleaning for electron microscopy applications, ensuring reduced contamination and sharper, more reliable results.

Our versatile systems are compatible with major TEM and SEM sample holders, offering fully automated control and gentle, low-power operation. Experience increased measurement stability, minimised common sources of error, and simplified sample preparation—backed by robust, user-friendly technology that adapts to your research needs.

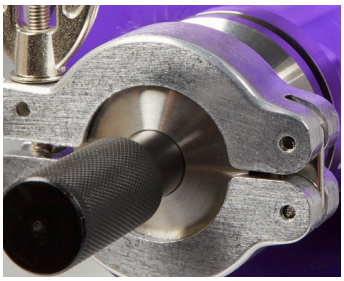
Benchtop Plasma Cleaners

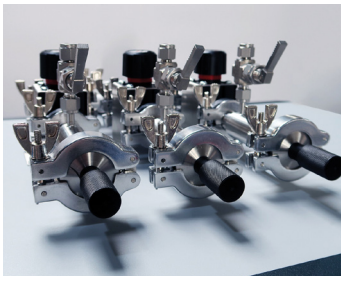
The HPT-100 plasma cleaner for TEM, SEM sample & specimen holders is designed specifically for controlled and repeatable cleaning.

A compact, benchtop format, the HPT-100 is a fully automated, programmable device with standard adapters suitable for TEM specimen holders from all the major microscope manufacturers. The plasma output power is fully variable over the range 0-100W (0-200W option), allowing gentle cleaning that can handle both ultra-thin carbon and graphene grids as well as bulk carbon deposition removal after STEM imaging.

- **Plasma cleaning**
- **Low power operation**
- **Front-feed TEM sample holder**
- **Integral TEM holder vacuum storage manifold**
- **Multiple TEM grids and SEM stub cleaning**
- **Re-entrant style sample holder introduction**
- **Dual gas inlets for O_2/Ar and other gases**
- **Recipe store and recall**

Key Features





Plasma Environment

The HPT-100 TEM features a 100mm (150mm option) diameter plasma process chamber in stainless steel with vacuum compatible materials throughout. Our proprietary, high stability HPS plasma generator is continuously variable over the entire 0-100W (0-200W option) power range rather than being limited to discreet levels, delivering much finer control when processing delicate materials.

Process Control

The 5.7 inch colour touchscreen provides a rich, user-friendly interface. Variables such as gas flow rate, pressure, power level and plasma processing time can be freely set and then stored to produce a fully interlocked process cycle from a single keypress.
A handy status display and end of process audible alarm informs the user of every step in the process.

Repeatable & Reliable

With precision digital mass flow controllers and integrated pressure gauge, the HPT-100 TEM delivers unmatched reliability and repeatability by removing common errors in gas flow and gas type settings which will be familiar to users of equivalent equipment that utilise manual needle valves. Convenient recipe store software, a unique feature, allows fixed repeatability.

Versatile

Recipe store allows users to select and store up to four recipes. Each recipe contains unique settings for power level, plasma process time and pressure.
Additionally, we offer an optional TEM holder vacuum storage manifold, capable of holding up to three sample holders (extendable to 5). It includes blanking plugs to seal individual sample holder chambers when not in use.

Performance Insights

Installation: **Research in Advanced Materials**

The Bridge, a leading research hub at the University of Lincoln, collaborates with industry partners to advance materials science and engineering solutions. Recognising the need for precise and reliable sample preparation, **The Bridge** chose Henniker Plasma's **HPT-100 TEM Plasma Cleaner** to enhance their electron microscopy capabilities.

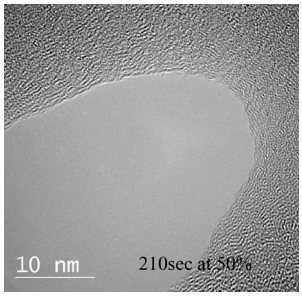
Application: **Effectiveness on Holey Carbon Film**

Johnson Matthey Technology Centre evaluated the Henniker HPT-100 Plasma Cleaner for TEM sample preparation using a holey carbon film. The study demonstrated precise control over carbon removal, making it ideal for eliminating hydrocarbon contamination from catalyst samples.

Using a 95:5 Ar:O_2 mixture at 20W and 50W power settings, the plasma treatment effectively cleaned samples in incremental 30-second steps. Bright-field imaging in a JEM 2800 TEM showed a gradual carbon loss, first from thinned areas and then from thicker regions, confirming the system's adjustable cleaning capability.

"The Henniker HPT plasma cleaner was observed to be suitable for TEM preparation purposes because it offers amazing control over how much carbon is removed from samples."

Dr. Dogan Ozkaya and the Johnson Matthey Technology Centre team.



Final step of cleaning progression

Application: **Reducing Contamination Build up During Analyses**

Researchers investigating delicate planetary materials, including meteorites and cometary samples, rely on the Henniker Plasma Cleaner to eliminate contamination and preserve sample integrity during high-resolution imaging.

In one case, hydrocarbon build-up was observed on a lacey carbon film when imaging a C-Pt-Cr material without plasma cleaning. Subsequent plasma treatment removed the contamination, enabling uninterrupted STEM analysis. Similarly, contamination from EDS scans on meteorite samples was prevented by pre-cleaning, allowing for multiple analyses of the same region without degradation.

Users describe the Henniker Plasma Cleaner as invaluable for contamination-free imaging, improving analytical efficiency and precision in unique and irreplaceable materials research.

"The Henniker Plasma Cleaner is very user friendly, which is perfect for a university lab setting where we have many users with varying levels of expertise."

Dr. Sheryl A. Singerling, TEM Lab Manager, Schwiete Cosmochemistry Laboratory - SCL, Goethe University Frankfurt.

In-situ at TEM Lab

HPT-100/200 TEM Model Specifications

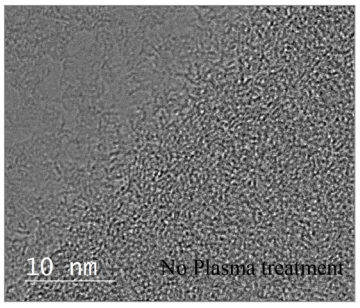
	BASE MODEL	OPTIONS
ENCLOSURE		
Dimensions	W 520mm x H 286mm x L 550mm (+50mm on rear for cables)	
Weight	HPT-100 ~22kg / HPT-200 ~23KG	
CHAMBER		
Material	Stainless Steel	
Form	Cylindrical	
Dimensions	HPT-100 - 100mm dia. x 280mm L / HPT-200 - 150mm dia. x 280mm L	
REMOVABLE PARTS CARRIER		
Material	Aluminium	stainless steel
Form	Flat tray	perforated tray, others to suit application
Dimensions	90mm W x 255mm L	others to suit application
PLASMA POWER SUPPLY		
Power	HPT-100 - 0-100W, HPT-200 - 0-200W both continuously variable output	
Frequency	40 kHz	
PROCESS CONTROL		
Interface	5.7" Colour TFT with recipe store	
Gas channels	x2 Mass Flow Controllers	
Vent inlet	x1	soft ventilation option
Connections	6mm compression	1/4" compression
Process timer	1sec – 99.59min	
Recipe Store	Stores up to 4 x recipes - for power level, and process times	
Pressure gauge	Pirani sensor	
Vacuum pump	3 to 6 m3/hr pumping speed	
Vacuum pump options	2-stage rotary pump (air/inert gas), PFPE rotary pump (oxygen compatible), dry pumps. All pumps include exhaust filter and connections	
Sample holder adapter	Includes one adapter suitable for either JEOL or FEI instruments, others on application	
Vacuum storage manifold	Optional - up to 5 x vacuum sample storage units	
SERVICES		
Electrical	90-250 VAC, 50-60Hz, 1200-1500 VA (including pump), fused 6.3 A T / 10 A T	
Power cord	Suited to region	
Compliance	CE – UKCA - ROHS - WEEE	

Benefits

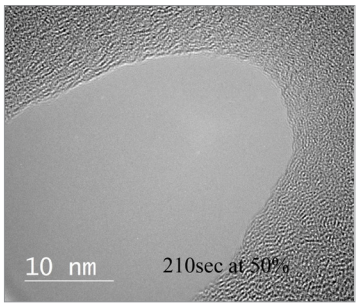
- compact benchtop unit
- user friendly TFT interface
- recipe store
- fast treatment time
- precise & repeatable
- no hazardous emissions

Typical Process Results

- Material : Holey Carbon Grid
- Argon/Oxygen mix
- 210 seconds



Before Treatment



After Treatment

About Henniker

Henniker Plasma are an international leader in the design, development and manufacture of plasma surface treatment systems & advanced plasma processes.

Our products are installed worldwide and trusted to deliver consistent, reliable results in both leading research institutes and in critical manufacturing steps.

We are experts in plasma technology and surface science. We are trusted partners, valued for our courtesy, professionalism and dedication to delivering the correct solution for our clients.

Services

Contract plasma treatment

Our technical staff will be happy to discuss contract treatments, from small one-off batches to regular, large throughput requirements.

Proof of concept treatment

Let's discuss your application and then we will provide a quick, no-nonsense feasibility study.

Surface testing laboratory

With a comprehensive suite of surface analysis equipment, we are able to conduct a wide range of surface property tests, both before and after plasma treatment, in order to provide you with the whole picture.

After sales support

We are proud of our reputation for being approachable, thorough and easy to work with.

"Henniker's after sales support is first class. They have always been extremely responsive if we have ever had need to call on them."

Steve Rackham, Teledyne

Rental plasma systems

We carry a wide range of our standard equipment in stock and available for short or long term hire. This is particularly useful for in-house proof of concept trials or to satisfy short term contract work.

"The low risk option of hiring a plasma unit for evaluation was a key reason that we chose to work with Henniker and one that enabled us to proceed with confidence."

Dr. Chris Nicklin, Reinnervate

Method development

We have invested significantly in laboratory facilities to assess, test and investigate all aspects of plasma surface modification on a wide range of materials. Coupled with extensive in-house and real-world knowledge, we can usually deliver a tailored treatment quickly and efficiently to suit your individual product or production needs.

"The technical team at Henniker are very knowledgeable and supportive and always approachable. I have found it a pleasure to work with them."

Simon Baxter, BAE Systems, AI

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