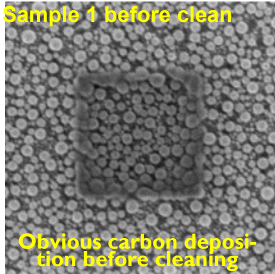
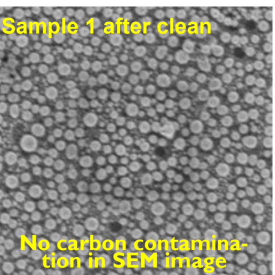
SEMI-KLEEN plasma cleaner

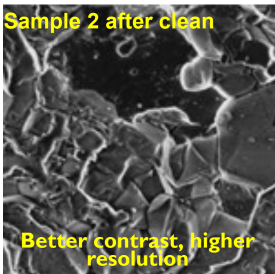
For SEM, FIB, TEM, EBL, CD-SEM, EBR, EUVL and other high vacuum system.
Clean vacuum chamber and samples at the same time!

Address：63 Bovet Rd, Suite 106, San Mateo, CA, 94403， U.S. A.

Cleaning effect:







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SEMI-KLEEN touch screen controller

Remote plasma source

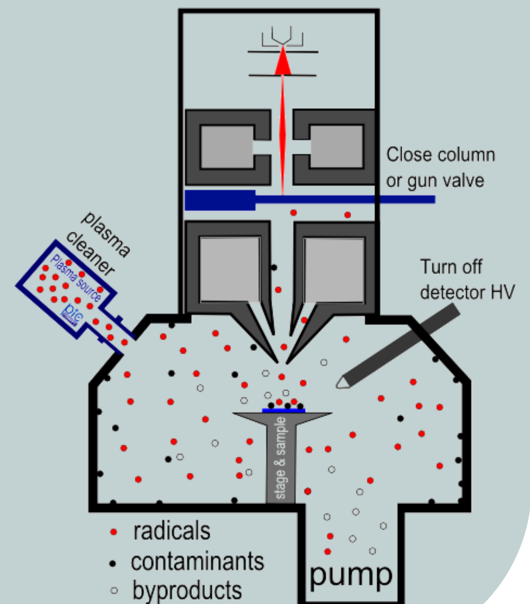
Impact of contamination to electron microscopes and other high vacuum systems

Lubricant, vacuum grease, pump oil, contaminated samples, or untreated air can all introduce hydrocarbon contamination into vacuum systems. Low vapor pressure high molecule weight contaminants can condensate on chamber wall and are extremely difficult to remove with conventional purging methods.

Electrons, high energy photons such as EUV and X-ray can breakdown contaminants that exist in vacuum systems or on samples. The byproducts can be low vapor pressure deposit on irradiated sample surface or exposed instrument components. For example, carbon deposition caused by hydrocarbon vapor breaking down can show up as black scanning mark on SEM images. It reduces image contrast and resolution, especially at low landing energy conditions. It can also cause wrong surface chemical or elemental analytical results.

Principle of remote plasma cleaning

Remote plasma source should be installed on the vacuum chamber to be cleaned. Controller provides the RF power to the remote plasma source. It breaks down the process gas such as oxygen in air or other oxygen gas mixtures or hydrogen and generates reactive oxygen or hydrogen radicals. Radical species will then diffuse into the chamber to be cleaned and react with the contaminants. The byproducts are usually low molecule weight, high vapor pressure molecules that can be easily pumped away. Remote plasma cleaner can clean vacuum systems and samples at the same time.

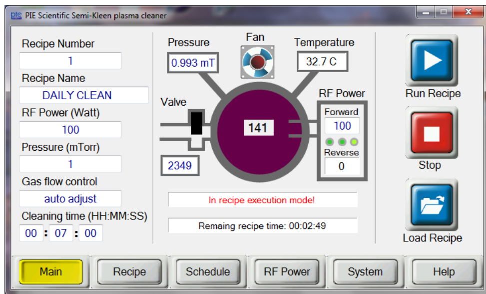


REMOTE PLASMA CLEANER THAT LEAVES COMPETITION IN THE DUST!

- ◊ **Low pressure high efficiency plasma discharge technology**
- ◊ **Plasma strength sensor**
- ◊ **Automatic RF impedance matching**
- ◊ **Automatic gas flow control with pressure sensor feedback control**
- ◊ **Smart schedule and Intelligent operation**

Spec and requirements

- ♦ Controller dimension: Standard 19" rack mount, standard 3U height; W484 X H133 X D410 in mm;
- ♦ Controller to PC communication protocol: RS232/RS485;
- ♦ Input AC Power: 100V/240V, 50/60 Hz, 200 Watt;
- ♦ Source dimension: W105 X H150 X D185 in mm;
- ♦ Source vacuum interface: NW/KF40 port;
- ♦ Plasma strength included;
- ♦ Minimum source operation pressure: <0.1mtorr;
- ♦ Maximum source operation pressure: >1.0 Torr;
- ♦ Source leak rate: <0.002sccm;
- ♦ RF power: 1~100Watt continuously adjustable;
- ♦ Standard automatic impedance matching; Reflected RF power after automatching should be <=4% of the set power;
- ♦ Gas flow controller: 0-50sccm electronically adjustable;
- ♦ Pressure sensor sensitivity: 10^{-4} torr to 760 torr;
- ♦ Standard RF cable length: 11 feet;
- ♦ PC remote control UI: Windows environment with .Net Framework 4.0



User Interface

Unique features

- Advanced discharge technologies can ignite plasma at a pressure (measured at the source) lower than 0.1mTorr---one to two orders of magnitude lower than competitors. Instant plasma ignition at extremely low pressure. User never needs to worry about whether plasma ignites or not.
- Electronic gas flow control with pressure sensor servo feedback. Plasma cleaner will maintain the user specified operation pressure by automatically adjusting gas flow through a servo feedback control loop provided by the pressure sensor.
- Plasma probe monitors the plasma strength to guide user to setup optimal recipe.
- Automatic impedance matching capability can ensure optimal RF delivery automatically at different operating conditions.
- Microcomputer with touch screen user interface.
- Intuitive remote PC control through RS232/RS485 protocol.
- Customizable SmartScheule function on the microcomputer can take care of your system autonomously.
- Support 60 recipes. One button to start a recipe with auto impedance matching and automatic gas feed.
- 16GB storage space inside the microcomputer for status logging and debugging.
- Safe operation mode and expert operation mode. User configurable.

Unrivaled protection

- ◊ **5 years warranty.**
- ◊ **Return anytime!**