

13.56 MHz Hollow Cathode Plasma Source HCD-P 400



Fig. 1: HCD-P 400 (from below)

Fig. 2: HCD-P 400 (from above)

Features

- planar source with 400 mm length
- extended power range
- no mode jumps
- high plasma and radical densities with excellent axial homogeneity
- compatible with chemically reactive and non reactive gases
- cw and pulsed operation
- low contamination
- scalable

Applications

- plasma enhanced chemical vapor deposition (PE-CVD)
- plasma polymerization
- surface modification
- plasma cleaning
- plasma etching
- reactive and non reactive ion etching
- material science (in general)

Lifetime

The HCD-P 400 is manufactured using exclusively stainless steel (aluminum is possible as well) and ceramic parts for electrical isolation. No quartz windows etc. are necessary. Since all ceramic parts are shielded from direct plasma interaction and sputtering the source is extremely robust and offers extended lifetimes often superior to those of inductively and microwave excited plasmas.

Contamination

It is commonly said that HCD's are prone to unwanted parasitic sputtering of the source electrodes. Due to its proprietary and patented excitation geometry PlasmaConsult's hollow cathode plasma sources HCD enclose the plasma completely with the exception of the plasma jet holes. Any possible contamination must have its origin in the inner cylinder or at the jet orifices.

From the source geometry it is highly unlikely that contaminants will leave the inner source and are deposited e.g. on a substrate.

Technical Data

- *rf-power* 1 - 1000 W
- *frequency* 13.56 MHz
- *pressure range* 10 - 1000 Pa
- *cooling* water
- *gas flow rates*
 - primary gas: 5 - 2000 sccm
 - monomer: 4 - 500 sccm C₄F₈

Data may vary with process.
Other monomers possible.



Fig. 3: HCD-P 400 (during a process)

Dimensions

