POLYGON PHYSICS

TES-35
Multipurpose ECR source

Ion mode +/-
Electron mode
Plasma mode
Atom mode

Plug & Play
Up to 10kV
No consumables
Automated

TES | Multipurpose ECR source

Polygon Physics' TES is a compact ECR source, designed for surface science & processing based on ions, plasma, electrons, or atoms, in UHV or HV environment.

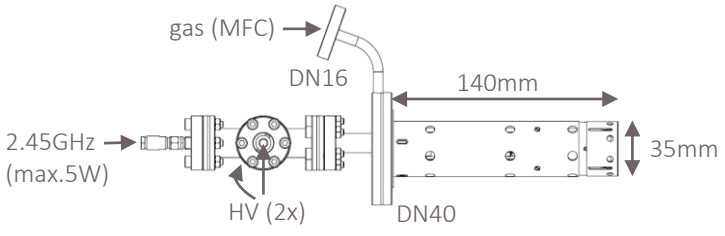
POLYGON PHYSICS

Source principle

The core element of TES is a patented microwave discharge system that operates at ultralow power and is as small as a thumb.

The plasma is ignited by creating an Electron Cyclotron Resonance discharge in a cavity resonating at 2.45 GHz and surrounded by permanent magnets.

The extraction system connected to the cavity determines the nature of the particles that leave the source.

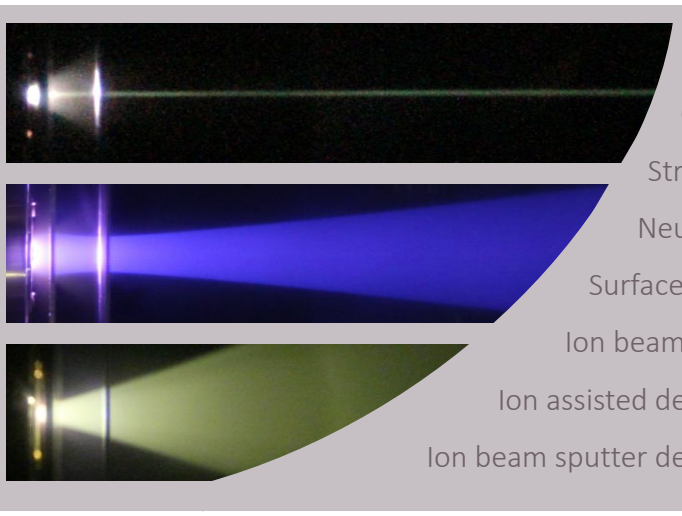


Particle flow rate

For a given aperture size, the particle flow rate can be varied over a wide range by tuning the gas flow rate and the applied microwave power. In the case of ions or electrons, the beam current can also be tuned by the strength of the extraction field.

Customizable beam optics

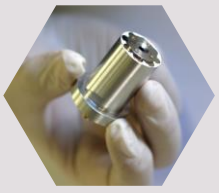
Different applications require different beam shapes. The beam can be focused, parallel or diverging. We typically use aperture or grid electrodes for beam shaping. With aperture electrodes, contact between the beam and the electrode can be avoided. This is of interest for two reasons. First of all, sputtering of the electrode by the beam causes contamination. Secondly, electrode erosion limits the lifetime of the source.



Milling
Cleaning
Structuring
Neutralizing
Surface analysis
Ion beam figuring
Ion assisted deposition
Ion beam sputter deposition

Operating modes

TES can be configured to deliver:



- ions (+/-)
- electrons
- plasma
- atoms

Main features

- Plug & Play
- Filamentless design
- No cooling required
- Automated source operation
- Source flange: DN40 CF (2.75" O.D.)
- In-vacuum length: 140 mm
- Gas: He, Ar, Ne, Kr, Xe, O_2, N_2, etc.
- Mass flow controller
- Beam energy: up to 10 keV
- Tunable spot size
- 19" rack-mount electronics

- Customizable plasma aperture
  - Ø1mm: e.g. up to 15 µA O_2^-
  - Ø3mm: e.g. up to 1.5 mA Ar^+

For a Ø1mm aperture:

- Gas flow rate: up to ~1 sccm
- Ion current: 10-100 µA (argon)
- Electron current: 0.1-3 mA (argon)

Option

- UHV-compatibility

Contact us if you'd like more information or discuss your application:
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La conception de TES est cofinancée par l'Union européenne. L'Europe s'engage en Auvergne-Rhône-Alpes avec le Fonds européen de développement régional.