

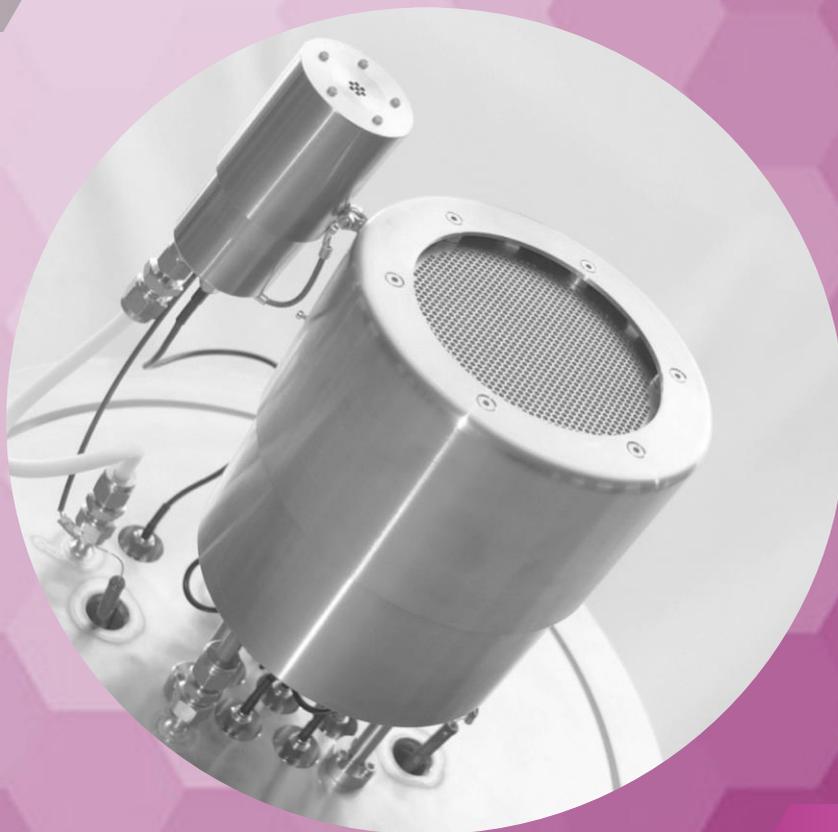


POLYGON  
PHYSICS

# HEXAR

## Broad Beam ECR source

Etching  
Deposition  
Assistance  
Cleaning



Compact  
No  $Z$  matching  
No consumables  
ECR neutralizer

# HEXAR I Broad Beam ECR source



Polygon Physics' HEXAR is a broad beam ion source based on a scalable concept and designed for surface processing in vacuum.

## Source principle

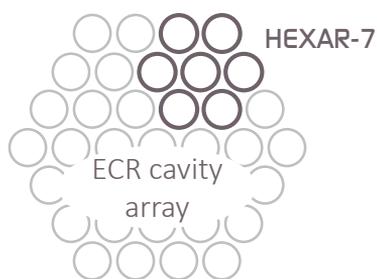
HEXAR is composed of an hexagonal arrangement of mini microwave cavities that each operate an ECR discharge at ultra low RF power (a few Watts per cavity at 2.45 GHz).

This approach is successful because of the reliability and stability of the ECR plasma, and the fact that the source has no consumables. In addition, it enables control over the current density profile of the beam, in a way inaccessible to standard broad beam sources.

## Scalable technology

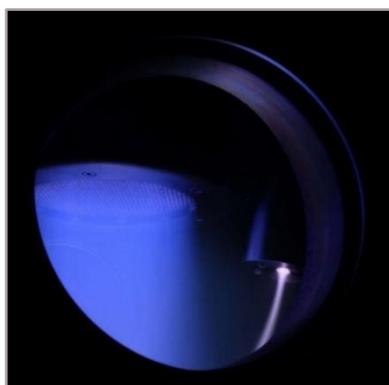
HEXAR relies on a scalable principle: the surface area that can be processed increases with the number of cavities that is used.

Contact us if you are interested in ion processing of larger surfaces.



## Current density control

For HEXAR the current density profile can be varied both in shape and in amplitude through the combination of gas flow, optics, and applied RF power.



## Neutralizer

For ion processing of non-conducting substrates a neutralizer can be used to avoid surface charging.

Polygon Physics offers an ECR electron source as neutralizer, which has no consumables like filaments. This neutralizer is based on the same compact ECR technology as HEXAR and is built from a single microwave cavity that is powerful enough to completely compensate the positive ion current.

## Applications

- Etching
- Cleaning
- Surface modification
- Ion assisted deposition
- Ion beam sputter deposition

## Main features

- Filamentless
- Gas: He, Ar, Ne, Kr, Xe, O<sub>2</sub>, N, etc.
- Beam energy: up to 2 keV
- Automated source operation
- Mass flow controller
- Oil cooling
- 19" rack-mount electronics
- Fully PC controlled

Beam optics are customizable.

## Option

- Neutralizer

## HEXAR-7 ETCHER:

- Source flange:  $\geq$ DN160
  - In-vacuum length: 207 mm
  - Gas flow rate:  $\sim$ 10-30 sccm
  - Beam diameter:  $\varnothing$ 80 mm
  - Si etch:  $\sim$ 30 nm/min (1kV/Ar<sup>+</sup>)
  - Glass etch:  $\sim$ 25 nm/min (1kV/Ar<sup>+</sup>/e<sup>-</sup>)
- under development, data June 2017*

Contact us if you'd like more information or discuss your application:

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*Polygon Physics reserves the right to change specifications and introduce design improvements without notice or obligation.*