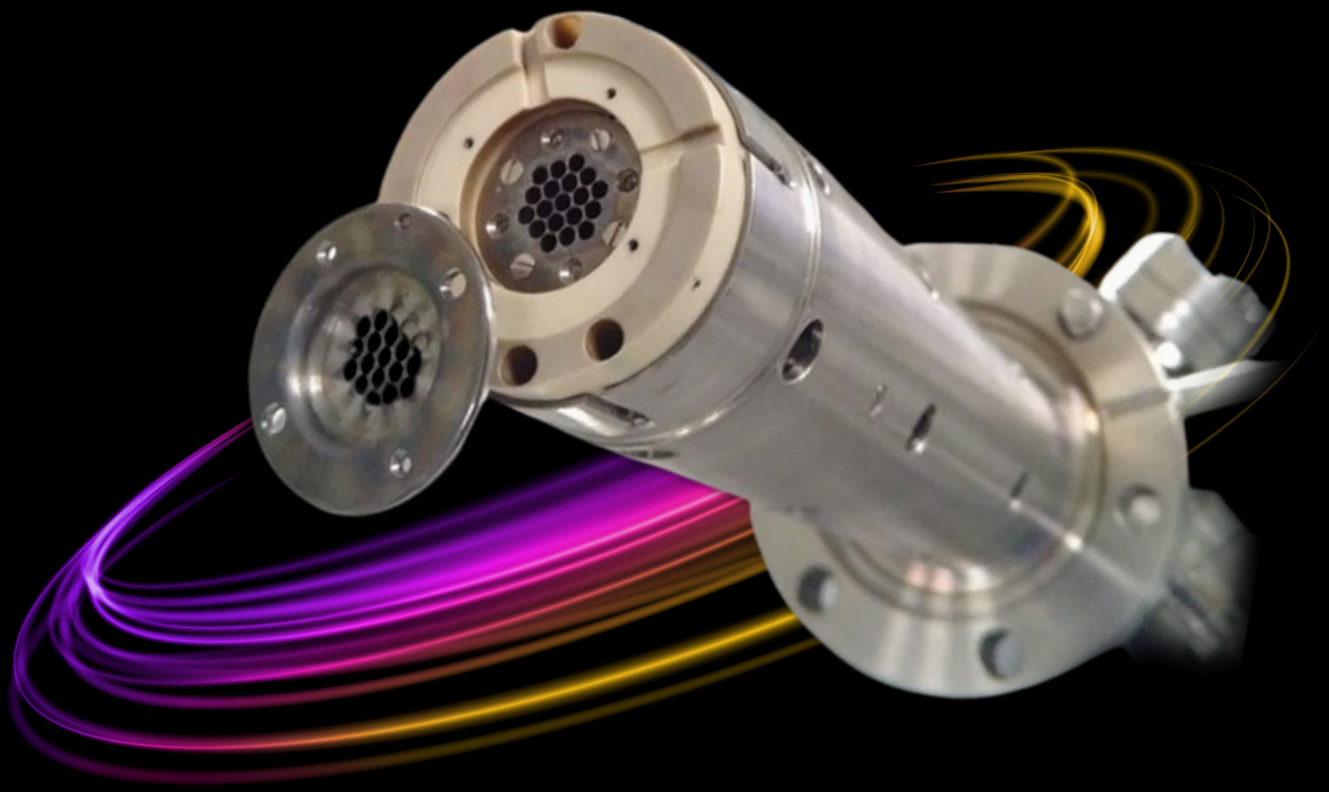
POLYGON PHYSICS

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TES-40

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Etching • Figuring • Sputtering • Surface Activation • Surface Modification

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TES-40 IONS BROAD BEAM

TES-40 GENERAL CHARACTERISTICS

Discharge	ECR filament free
Gas	H_2, He, N_2, O_2, noble gas, molecular gas
Microwave power typ. (2.45 GHz)	0.5 to 5 W
Maximum Energy	5 kV
Diameter in vacuum	36 mm
Flange type	CF40
Cooling	None
Cable length outside vacuum	2 m Option: 5 m
Electronics	Two 19" racks : Control command (inc.HF) and HV
Hardware control	API available via Microcontroller
Communication protocol	Ethernet UDP, RS232
User interface	GUI executable (ethernet UDP only)
Source gas control	Mass-Flow Controller (MFC)



TES-40 IONS BROAD BEAM

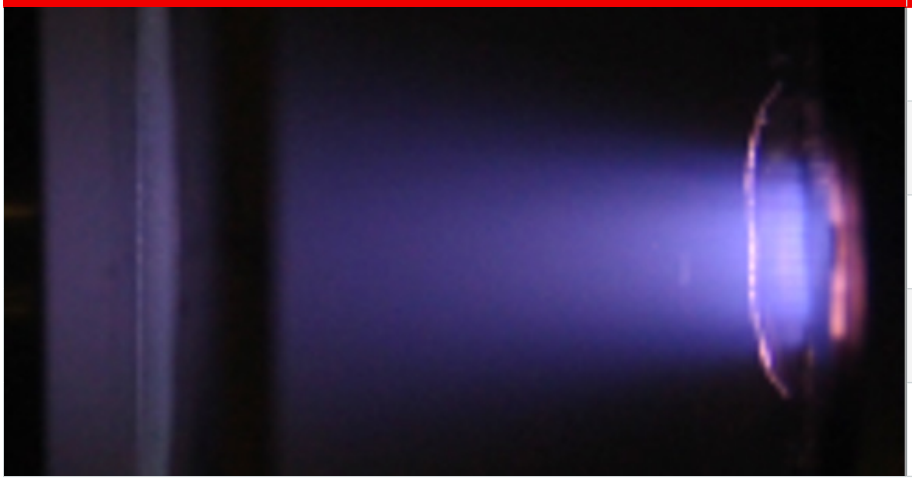
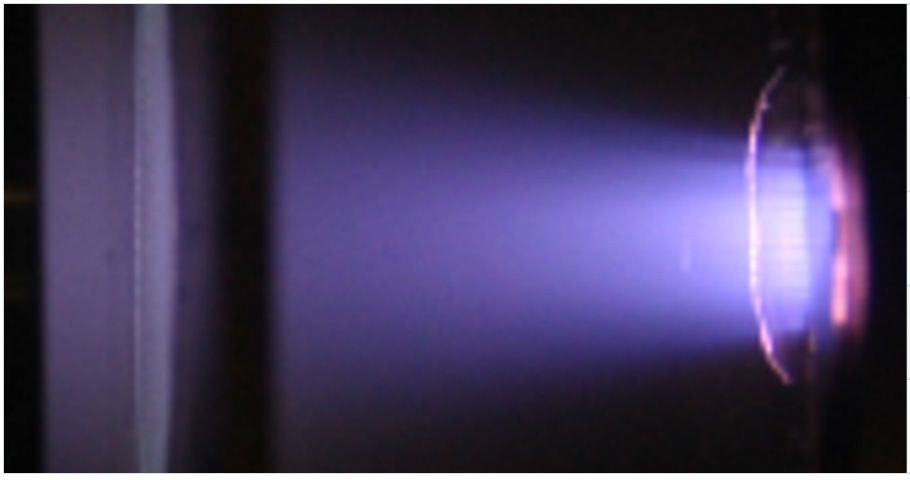
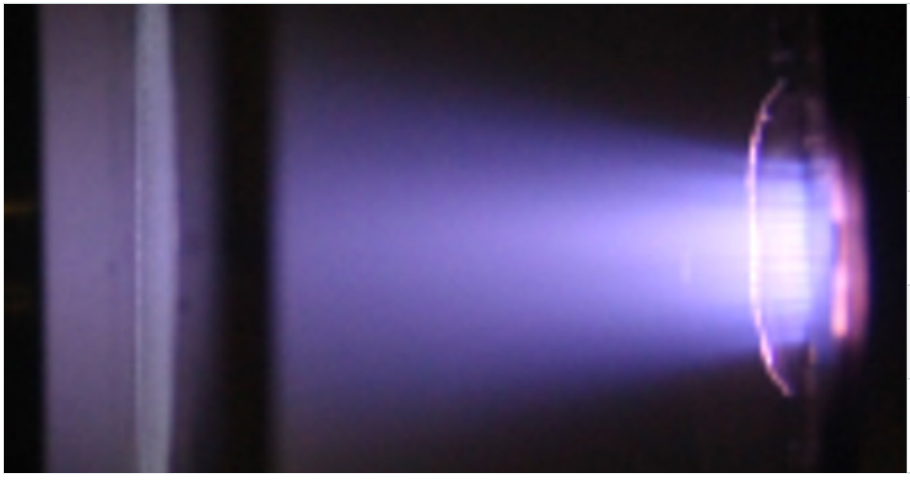
Applications	Etching, figuring, sputtering, surface activation, surface modification
Energy range	0.1 – 5 kV
Current	0.3 to 3 mA
Current density	0.1 to 1 µA/mm²
Beam size (typ. at 4 cm)	~ 4 cm
Insertion depth	151 mm
Option	Pulsed mode, bipolar mode, neutralizer, longer cables



TES-40 Ions Broad Beam

BEAM EXTRACTION CASES

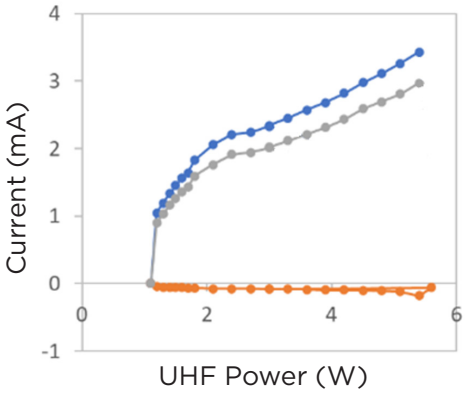
Example : Ar^+ extraction

BEAM SHAPE	SOURCE PARAMETERS	
	**Gas flow (sccm)**	1
	Pressure (mbar)	2.4E-4
	U_{beam} (kV)	2
	HF Power (W)	1.5
	I_{beam} (mA)	1.49
	**Gas flow (sccm)**	1
	Pressure (mbar)	2.4E-4
	U_{beam} (kV)	2
	HF Power (W)	3.5
	I_{beam} (mA)	2.27
	**Gas flow (sccm)**	1
	Pressure (mbar)	2.4E-4
	U_{beam} (kV)	2
	HF Power (W)	4.5
	I_{beam} (mA)	2.81

Actual working point/data on system delivered may be different depending on user's environment.

BEAM CURRENT TUNING WITH HF POWER

Example : Ar^+ extraction, after long-term testing



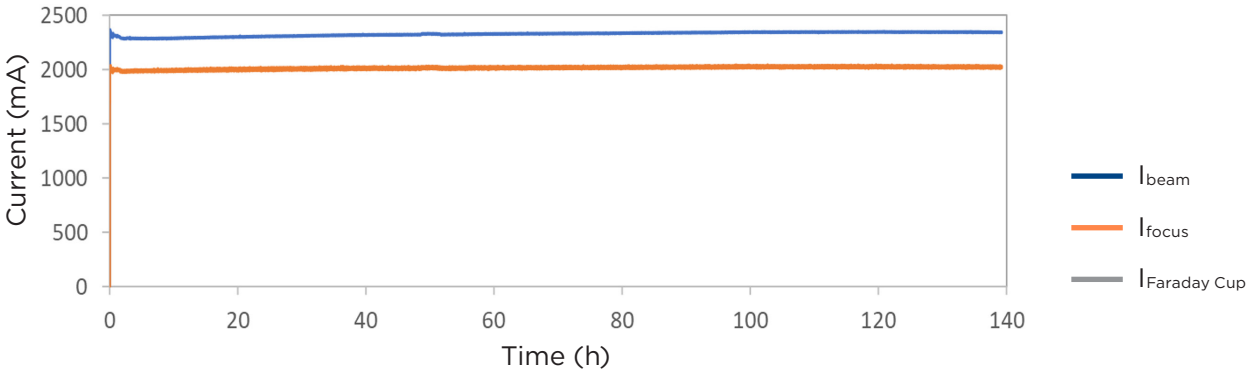
SOURCE PARAMETERS	
Gas flow (sccm)	0.8
Pressure (mbar)	9E-5

I_{beam}

I_{focus}

$I_{Faraday\ Cup}$

BEAM LONG-TERM STABILITY



CAMECA (Corporate Headquarters)
29 Quai des Grésillons
92622 Gennevilliers Cedex - France
Tel: +33 1 43 34 62 00
cameca.info@ametek.com

CAMECA Source Technology Center
19 rue de Sassenage
38600 Fontaine - France
Tel: +33 4 80 42 09 06

CAMECA Atom Probe Technology Center
5470 Nobel Drive
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