POLYGON PHYSICS

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TES-63
ELECTRON SOURCE

Surface Modification • Electron Chemistry • High Power Electron Beam

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TES-63 ELECTRON SOURCE

TES-63 GENERAL CHARACTERISTICS

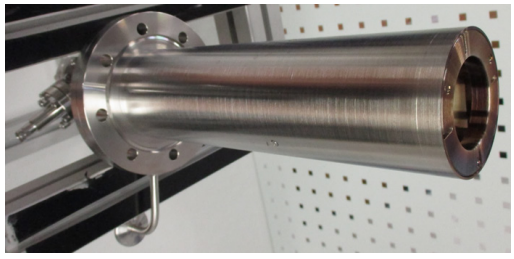
Discharge	ECR filament free
Gas	H_2, He, N_2, O_2, noble gas, molecular gas
Microwave power typ. (2.45 GHz)	0.5 to 5 W
Maximum Energy	15 kV
Diameter in vacuum	62 mm
Flange type	CF63
Cooling	None
Cable length outside vacuum	2 m Option: 5 m
Electronics	Two 19" racks : Control command (inc.HF) and HV
Hardware control	API available via Microcontroller
Communication protocol	Ethernet UDP, RS232
User interface	GUI executable (ethernet UDP only)
Source gas control	Mass-Flow Controller (MFC)



External power supplies

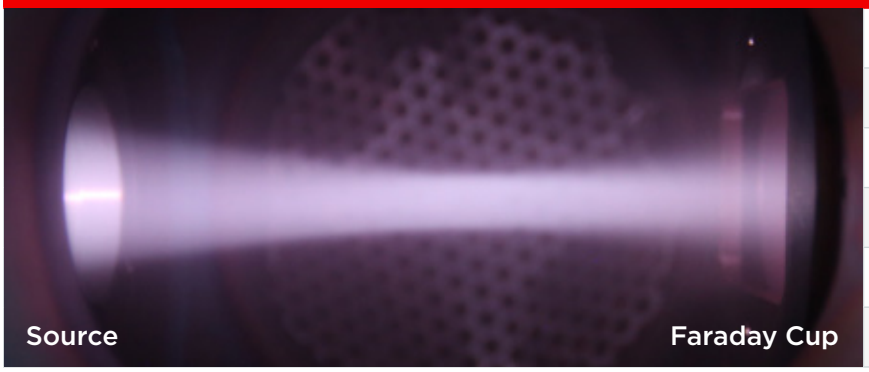
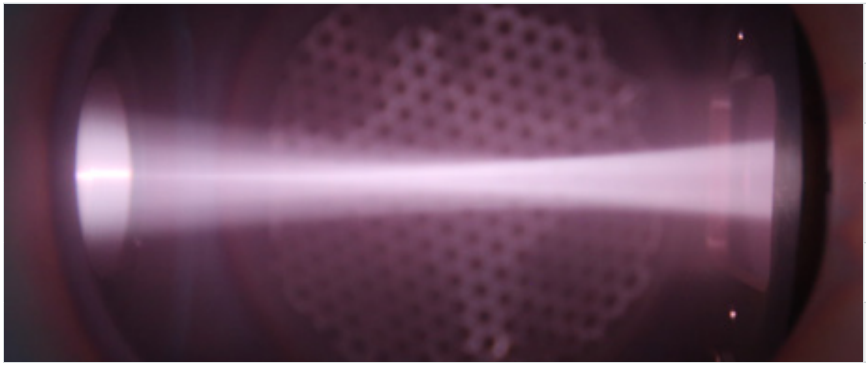
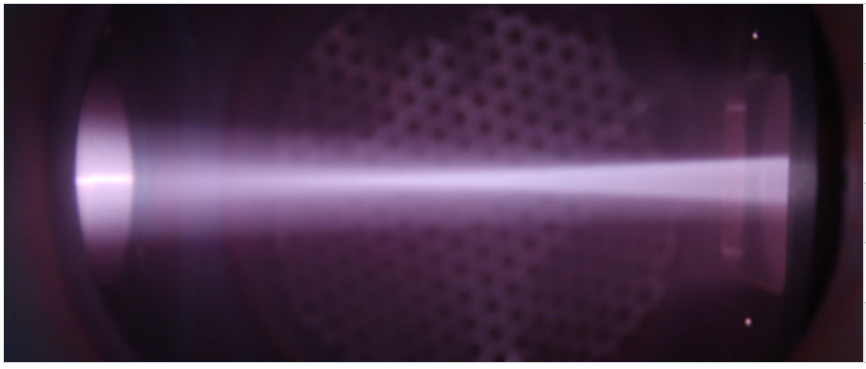
TES-63-ELECTRONS

Applications	Surface modification, electron chemistry, high power electron beam
Energy range	100 V – 15 kV
Beam size	Energy and focus dependent
Power	Low-power 60 W max Mid-power 300 W max
Insertion depth	146 mm or longer on demand
Options	Einzel lens, pulsed mode, longer cables



BEAM EXTRACTION CASES

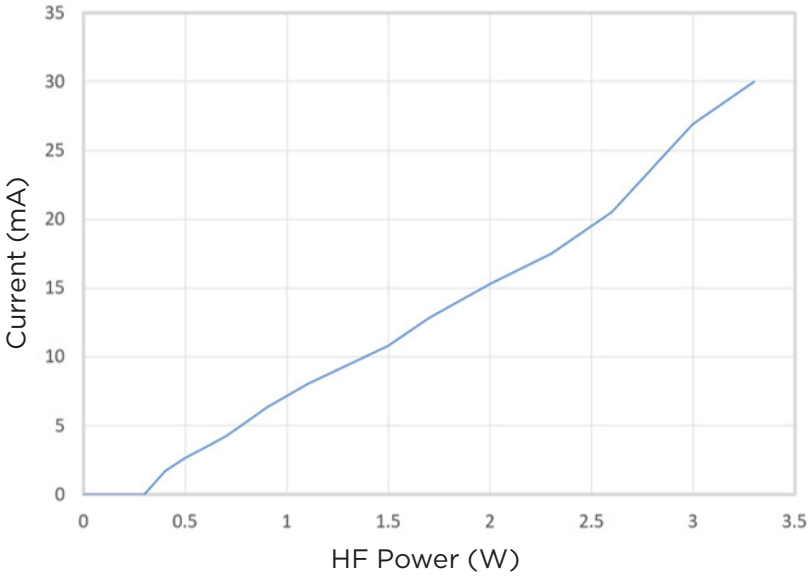
Example : Electrons (from H_2) - Control with continuous mode : 0.5/1.0/1.5/2.0 kV
3mm extraction

BEAM SHAPE CONTROL WITH EINZEL LENS	SOURCE PARAMETERS	
	**Pressure (Pa)**	1
	HF Power (W)	2.64
	U_{beam} (kV)	0.5
	U_{Einzel} (kV)	0.17
	I_{beam}(mA)	14.3
	$I_{Faraday\ Cup}$ (mA)	10.2
	**Pressure (Pa)**	1
	HF Power (W)	2.64
	U_{beam} (kV)	1.0
	U_{Einzel} (kV)	0.52
	I_{beam}(mA)	13.2
	$I_{Faraday\ Cup}$ (mA)	10.0
	**Pressure (Pa)**	1
	HF Power (W)	2.64
	U_{beam} (kV)	1.5
	U_{Einzel} (kV)	0.75
	I_{beam}(mA)	11.9
	$I_{Faraday\ Cup}$ (mA)	10.2
	**Pressure (Pa)**	1
	HF Power (W)	2.64
	U_{beam} (kV)	2.0
	U_{Einzel} (kV)	1.31
	I_{beam}(mA)	11.5
	$I_{Faraday\ Cup}$ (mA)	10.1

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

BEAM CURRENT TUNING WITH HF POWER

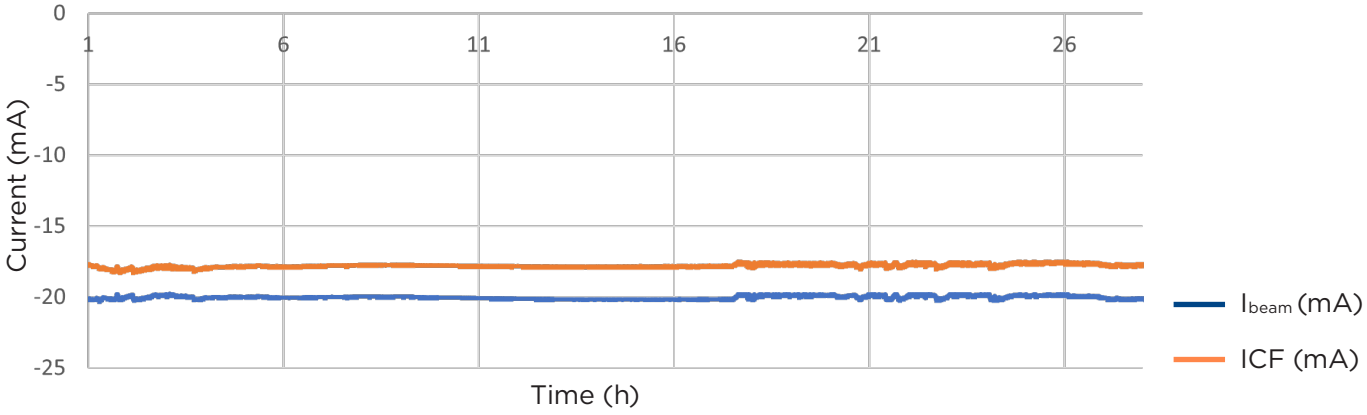
Example : Electrons from H_2 – 3mm extraction electrode



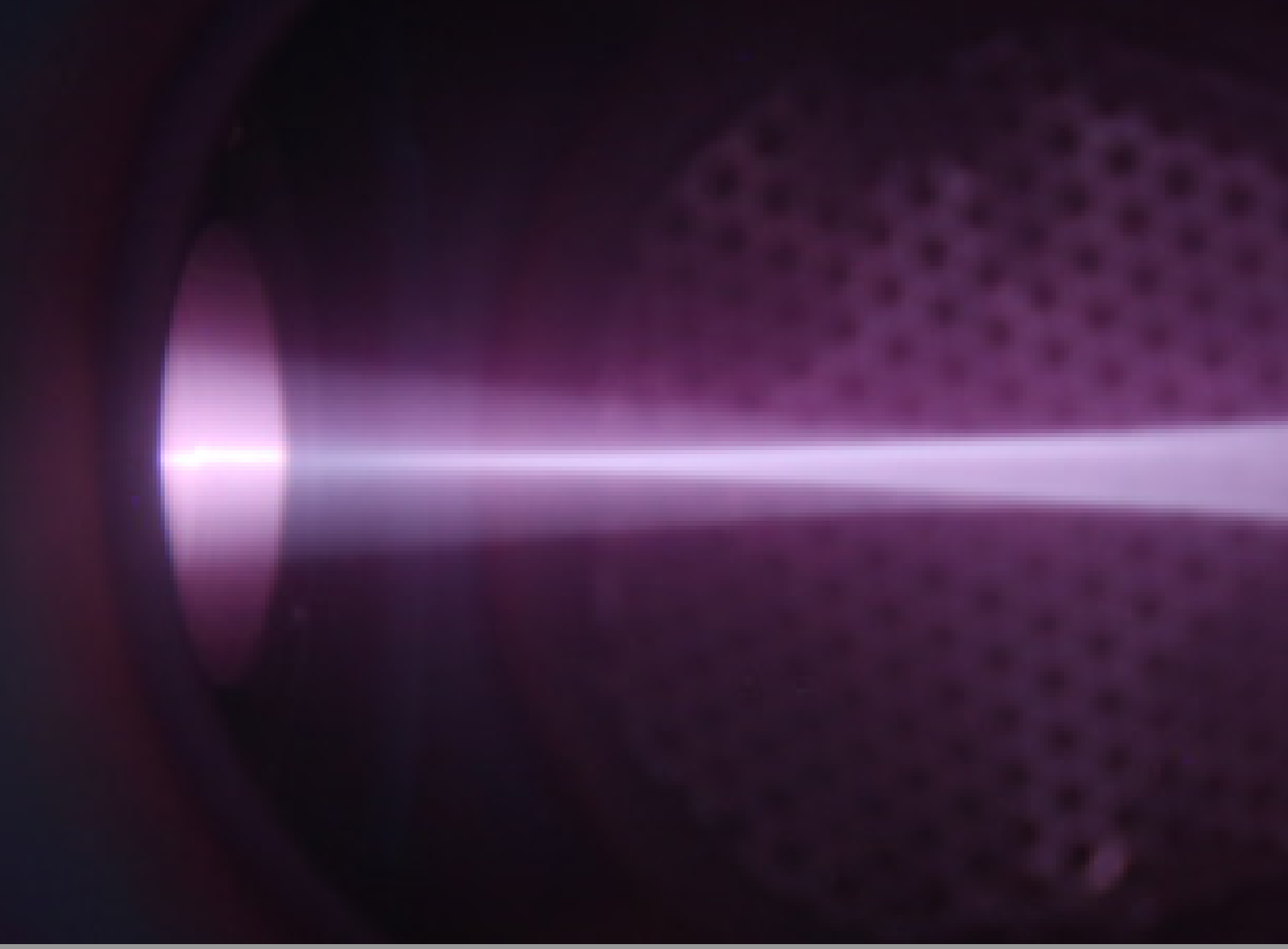
SOURCE PARAMETERS	
Gas valve (V)	4.1
Pressure (mbar)	3E-3
U_{beam} (kV)	1

BEAM LONG-TERM STABILITY (WITH HF REGULATION)

Electrons from Ar^+



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