

# The Extractor Ion Source IQE 11/35

## Product Information

The extractor type ion source IQE 11/35 generates a typical ion current of 10-15  $\mu\text{A}$  (Argon) with a Gaussian type beam profile depending on acceleration voltage. The special Y-oxide coated Ir-cathode is suitable for operation with all noble gases,  $\text{N}_2$ , and reactive gases like  $\text{O}_2$ ,  $\text{H}_2$  and  $\text{CH}_4$ . This cathode is of the non-line-of-sight type which eliminates sample contamination. The special arrangement of the accelerating electrode and anode ensures long term stable operation of the ion source. The ion current can be varied over a wide range by adjusting the gas pressure. The energy range of the ions is continuously variable between 0.2 and 5 keV. The source is bakeable up to  $200^\circ\text{C}$  and can be degassed internally. The standard insertion depth of 62.5 mm can be adjusted to the customer's specification.

## Dimensions

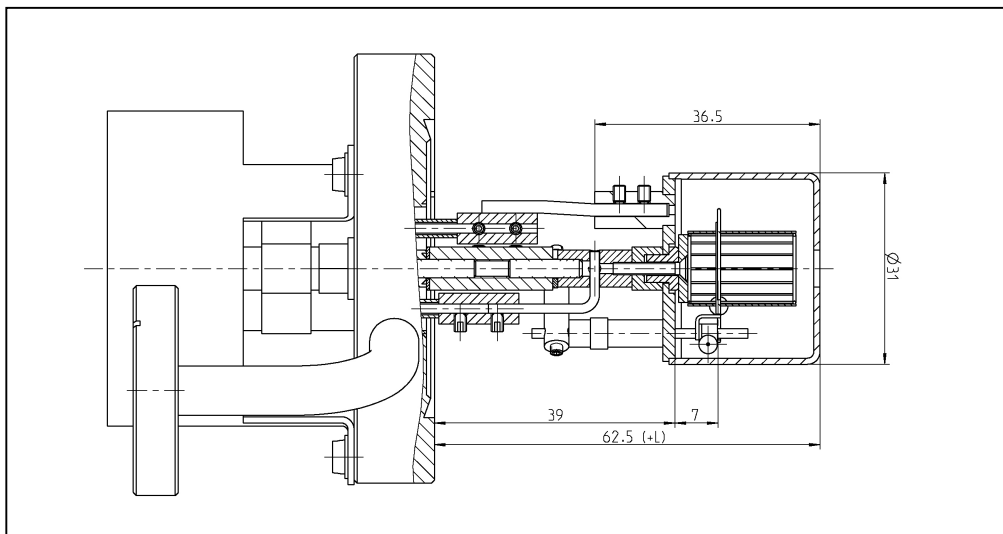


Figure1: Schematic Drawing of the Ion Source IQE 11/35

### Direct (IQE 11/35) versus Indirect Gas Inlet

The ion source IQE 11/35 has a direct gas inlet flange for direct gas transfer to the ionization cylinder cap and is differentially pumped via the aperture opening. This leads to a low operation pressure of  $10^{-6}$  to  $10^{-5}$  mbar within the main chamber, clean sputter conditions and reduced pumping times after sputtering.

The ion source can also be operated by backfilling of the UHV chamber with the sputter gas. The typical chamber pressure for operation of the ion source IQE 11/35 with indirect gas inlet via backfilling is in the range of  $10^{-4}$  to  $10^{-3}$  mbar.

## Performance (IQE 11/35)

**Figure 2: Dependence of Maximum Sample Current and Beam Diameter on Ion Energy**

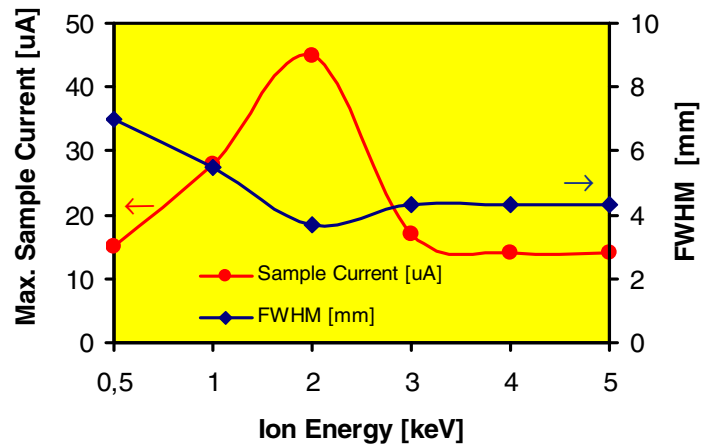
Parameters:

§Source-Sample Distance:

§ 50 mm

§Emission Current: 10 mA

Please note that the pressure is optimized at each point for maximum sample current.

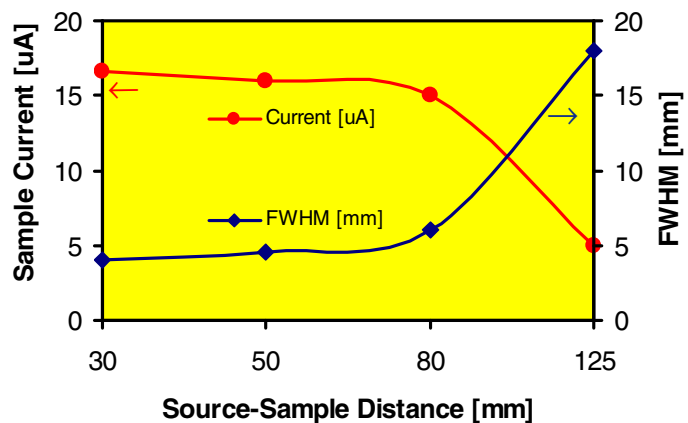


**Figure 3: Dependence of Sample Current and Beam Diameter on Source-Sample Distance**

Parameters:

§Acceleration Potential: 5 kV

§Emission Current: 10 mA



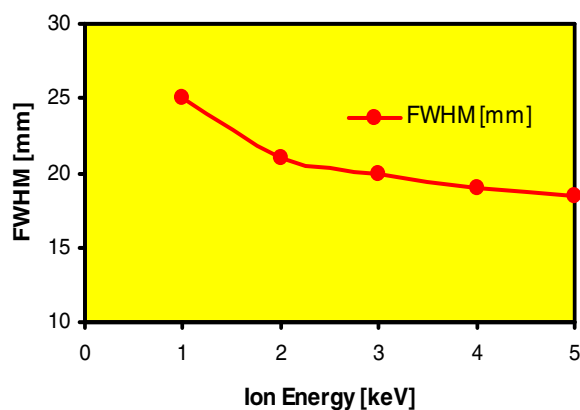
**Figure 4: Dependence of Beam Diameter on Ion Energy**

Parameters:

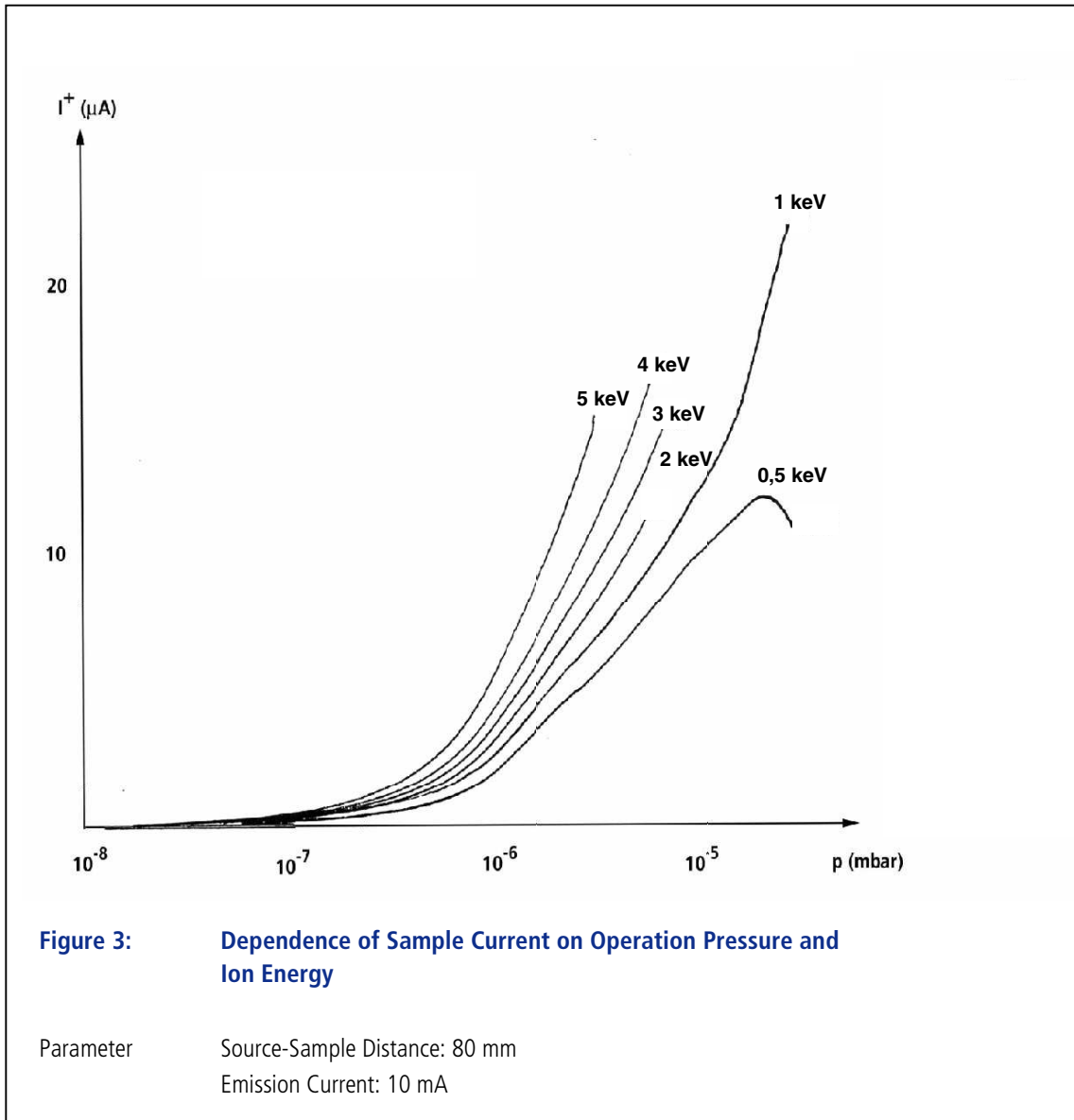
§Source-Sample Distance:

§ 125 mm

§Emission Current: 10 mA



## Typical Ion Current - Dependence on Pressure (IQE 11/35)



**Please Note that the actual achieved Sample Current at a certain pressure depends on the chamber geometry and pumping speed.**

**Furthermore the pressure to achieve a certain ion current will increase with the length of the ion source.**

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