Handbook of

ION SOURCES

Edited by

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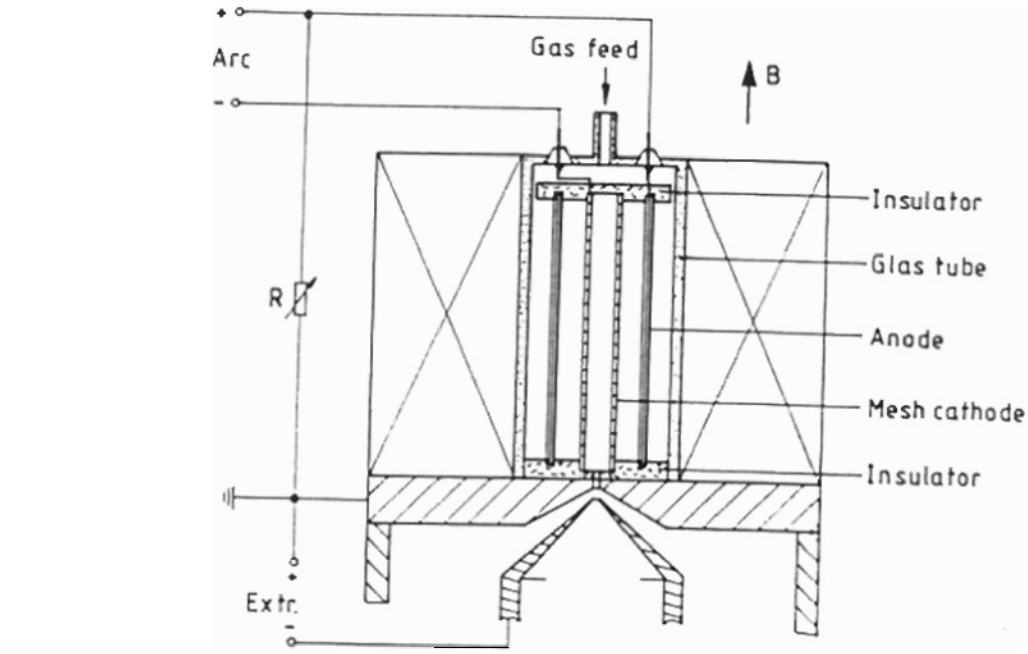

FIGURE 4.5
Hollow-cathode magnetron ion source. (Courtesy of V. Miljević, VIVČA, Belgrade.)

Magnetron ion source with axial extraction.'

4.3.2 *Hollow-Cathode Magnetron (Figure 4.5)*

- Special design and construction details of the source

  The hollow-cathode magnetron consists of a diode with two coaxial cylinders placed in an axial magnetic field. A cylindrical anode is around the cylindrical mesh cathode and leaves a free optical axis through the ion source. Anode (18-mm *O* x 60 mm) and cathode (5.5-mm *O* x 60 mm) are insulated to the base flange with the extraction aperture in its center. The discharge plasma *is* established inside the hollow cathode. When the discharge is established and the base Range connected to the anode, an ion current is obtained even at low accelerating voltages.

- Ion source material and vacuum conditions

  The discharge chamber is a glass tube (30-mm Ø), the anode cylinder Al or stainless steel, the cathode mesh stainless steel *wire* (0.4-mm Ø), eight lines per centimeter, and the insulators are made of lava. The base flange is nonmagnetic.

- Application area of the source

  Accelerators, ion implantation, SIMS, ion beam analysis, optical spectroscopy

- Deliverer or user

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