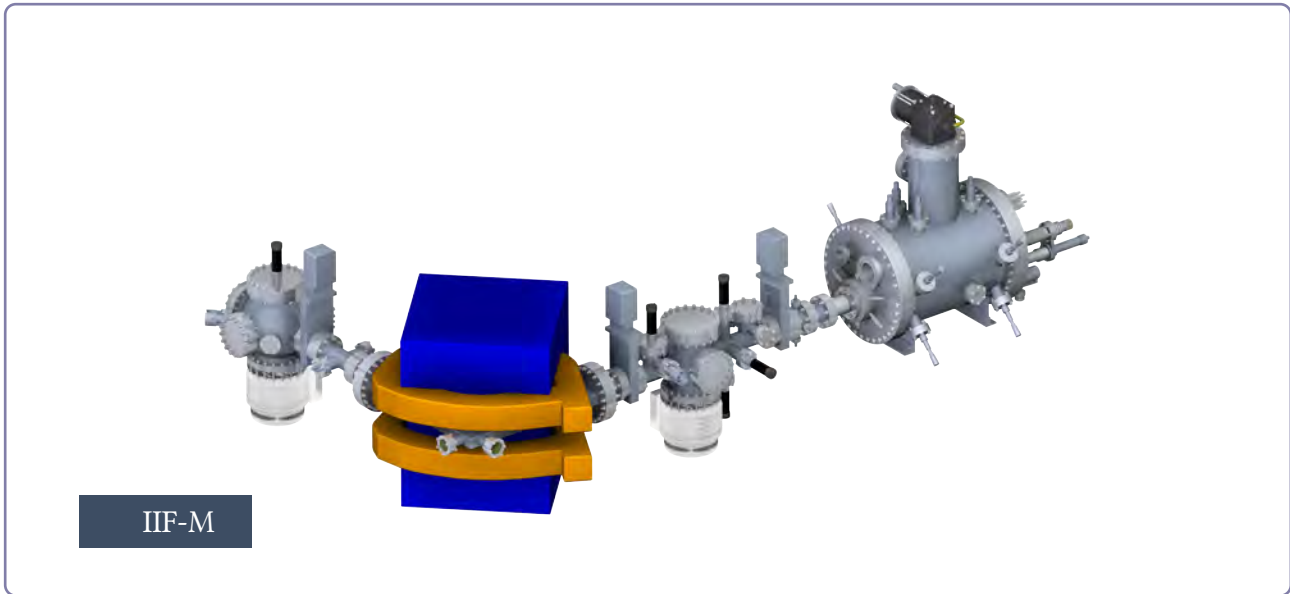


ION IRRADIATION FACILITY-M

- THE STANDARD DREEBIT ION IRRADIATION FACILITY-



The IIF-M is an ion irradiation facility for experiments with a broad range of ion types from low-charged ions or molecule fragments up to highly charged ions. It can be equipped with different DREEBIT ion sources such as a Dresden EBIS/T or Dresden ECRIS. Continuous ion beams or ion pulses are transported through the beamline using Einzel lenses, deflectors, and ion beam diagnostics (Faraday cups). Ion species separation is realized by a double-focussing dipole magnet. The complete ion beamline is designed for ultra high vacuum operation and includes hardware and software for remote controlling the facility as well as analysis of the produced spectrum of ions.

EXTRACTED ION CURRENTS

The IIF-M can be equipped with different ion sources. Thus, the available ion intensities depend on the chosen ion source as well as the applied source parameters. In the following table extracted ion beam intensities for the IIF-M including a Dresden EBIS-A are given.

ION SPECIES	IONS / s (DC)	IONS / s (PULSED)
H ⁺	$2 \cdot 10^{10}$	$1 \cdot 10^{10}$
C ⁴⁺		$1 \cdot 10^9$
C ⁶⁺		$1 \cdot 10^8$
Ar ⁸⁺	$2 \cdot 10^8$	$1 \cdot 10^8$
Ar ¹⁶⁺		$7 \cdot 10^6$
Ar ¹⁸⁺		$1 \cdot 10^5$
Fe ²⁴⁺		$2 \cdot 10^5$
Fe ²⁶⁺		$3 \cdot 10^4$
Kr ²⁶⁺	$2 \cdot 10^6$	
Xe ⁴⁴⁺		$6 \cdot 10^4$
Au ⁶⁰⁺		$4 \cdot 10^3$

SCOPE OF DELIVERY

- ion source of the EBIS/T or ECRIS type
- beamline with ion optical elements and Faraday cups for beam transportation
- dipole bending magnet for ion species separation
- target chamber
- beamline support rack
- control racks equipped with all power supplies required for the operation of the IIF-M
- remote control system including computer and control software

OPTIONAL EQUIPMENT

- x-ray spectroscopical equipment at the ions source (Be window, x-ray detector, TERX system)
- spare electron gun for EBIS/T ion sources
- additional ion beam diagnostics such as Pepperpot emittance meter or retarding field analyzer
- Metal Ion injection from Volatile Compounds (MIVoC) kit
- metal ion injection kit including pulsed quadrupole beam bender and liquid metal ion source
- target chamber equipment such as sample holders, linear feedthroughs, load lock, etc.
- heating equipment including temperature control for the entire beamline

TECHNICAL PARAMETERS

FACILITY PARAMETERS

source potential	1 kV up to 20 kV (depending on source type)
ion energy at target chamber	equals source potential x ion charge
ion pulse width	50 ns up to 100 μ s (depending on source type)

GENERAL PARAMETERS

dimensions (length x width x height)	3.5 m x 2 m x 2.5 m
weight	~ 500 kg

INFRASTRUCTURAL REQUIREMENTS

cooling water	multiple cooling water circuits, $p \geq 3$ bar each
electrical power consumption	up to 15 kW (depending on source type)

The specifications and parameters of the IIF-M can be adjusted according to customer's demands.

CONTACT

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