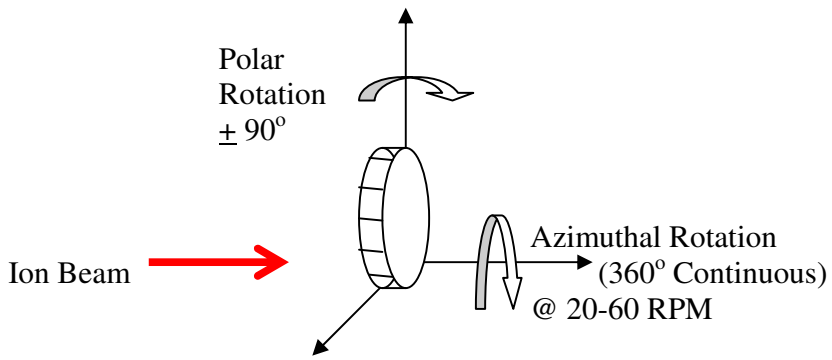
Item No. 10: Sample Manipulator, chamber and accessories

(A) 5-axes sample manipulator:

Orientation : Vertical
X-Y movement: ± 12.5mm (precision of 1 mm)
Z movement: 50 mm (precision of 1 mm)
Sample holder / Plate size: Should be compatible to make the best use of the X, Y, and Z movements
Sample size: Typically 1 × 1 cm^2
Sample thickness: 0.5 – 1mm
Sample heating: 500°C
Sample cooling: Sample needs to be water cooled (through the holder) because of high ion currents
Sample rotational motions: Motorized **polar rotational movement** of the sample is required with a precision of 0.5°. It should be free from any backlash. We also want continuous **azimuthal rotation** from 0 – 360° @ 20 – 60 RPM. One should be able to interface them.



Sample tilt: NIL
Base flange…… 8 inch OD

During the high-temperature irradiation experiments, target current measurement should be possible.

Beam should always fall on the target even when high polar tilt is going to be applied.

A secondary electron suppressor (metallic) before the sample manipulator is needed. This is required to suppress the ion induced emission of the secondary electrons from the surface of the samples under analysis. Therefore, around -150 Volt (maximum) may be required to be supplied to this. It should be designed as a part of the sample manipulator such that it always remains fixed with respect to the beam and should not hinder the ions to fall on the sample during any kind of lateral or rotational motion. It should be electrically isolated from the chamber and the manipulator.

(B) Chamber and accessories:

Main chamber: 12 inch dia. SS304 spherical chamber whose top port has to mate to the sample manipulator (goniometer) described above

Load lock chamber: SS304 made standard load lock chamber with CF flanges. DN100CFF main pumping port and two DN40CFF ports. Viton sealed quick access door. However, the isolation/gate valve (DN63CFF) between the load lock chamber and the main chamber will be provided by the user. The load lock port should be clearly defined with respect to the beam entrance port (through schematic diagram or in words).

Sample transfer system: Magnetically coupled linear rotary feedthrough for sample transfer. It has to mate with transfer fork in part-A (sample manipulator).

Ports: DN160CFF main pumping port (chamber bottom), two DN40CF ports, two DN40CFF port each equipped with one BNC, one MHV, and one SHV vacuum compatible connectors, one DN100CF View Port (UV & X-ray resistant) at 45º (with respect to the beam entrance port), one ion source mounting flange (4½ inch (NW63CF) – 6 inch (NW100CF), which needs to be finalized before fabrication).

The chamber should be electro polished in compliance with normal UHV standards, leak checked and certified leak free.

Blank off flanges along with studs and bolts should be quoted as optional items.

Warranty: Five years

Installation: Free of cost

Service facility: Supplier should mention about the possible service set up and how capable they are to provide after sales service

Pre-installation requirements: To be supplied by the manufacturer well in advance after the bid is awarded

List of Users: The supplier should provide a list of current users of their similar products in India.