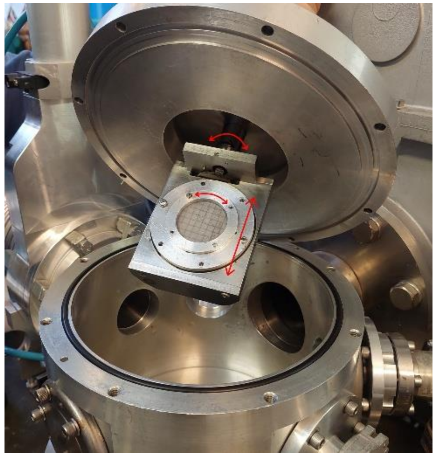
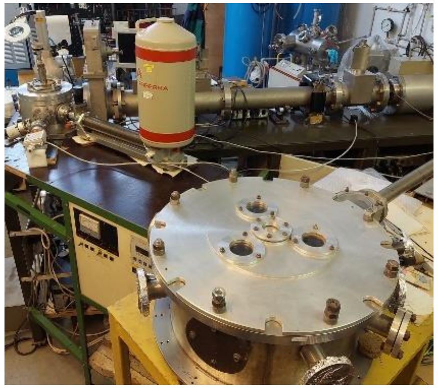
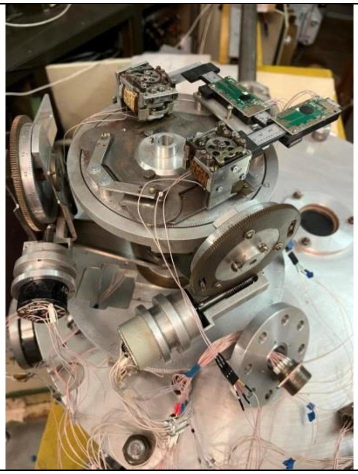
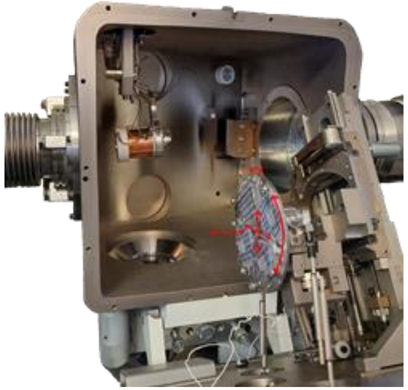
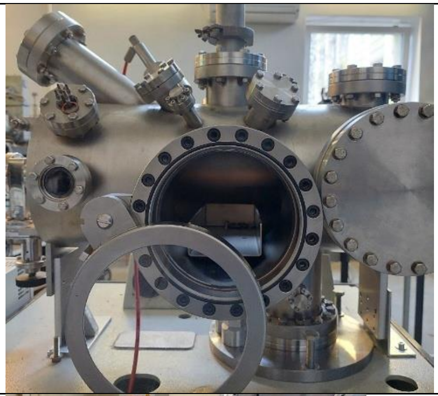
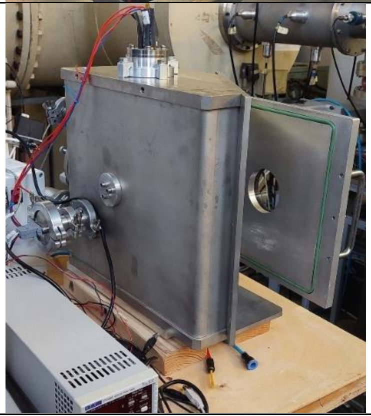
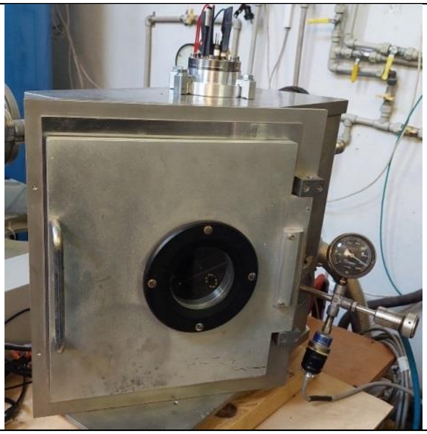
#	Chamber	Photo	Description	Option #	Option description
1	High Energy Beam Line#1	 	Diameter: 20cm Height: 20cm + adjustable part of 20 ÷28 cm Ion beam irradiation - Yes The bottom cover of this chamber has vacuum bellow, which is a little smaller 15cm in diameter than the top part of chamber, but extends the chamber height from additional 20cm up to 28cm during experiment. The bottom cover of the chamber is equipped with manipulator, that has 3-axis adjustment. The finger of this manipulator can be customized according to the needs or removed completely. Chamber is equipped with inside camera and a LED bulb with controlled brightness. Also, CsI crystals are used as indicator for beam positioning. Typical parameters: • Ions – from H^+ to Au^+ • Ion Energy from 700 keV to 2 MeV for single charged ions and up to 5 MeV for 4 times charged ions • implantation depth from 0,5 to 60 um depending on the ion species and/or energy • Min size of implanted area ~2*4mm (could be less using beam collimator or aperture) • Max size of implanted area – up to 5x5 cm • Beam scanning system for the uniform implantation of the ions • Pressure: <2.0 E-5 mbar • A range of different diameter ion beam collimators available	1.1	4 custom (non-standard) ports with different configurations (viewports, high voltage/high current and signal feedthroughs, etc.) are available*. These are used to attach different detectors for PIXE, RBS and other applications. Adapters to ISO-KF and ISO-CF are available. All 4 ports have the same port bore diameter of 6cm.
				1.2	3 DN25CF flanges are available on the bottom cover of the chamber. Different options are available for these: high voltage/high current and signal feedthroughs, etc.
				1.3	Blank chamber cover. Typically, this cover is used for multiple sample processing per single run or large samples. Sample positioning is carried out utilizing bottom cover's sample positioning system.
				1.4	Chamber cover with 3-axis sample position system (in the picture on the left). Depending on size from single to multiple samples can be irradiated per single run.
				1.5	Camber cover with optical fiber inlet. This cover has an additional vacuum bellow positioning system for optical fiber positioning. This chamber I designed for: • in situ observation of the sample state during implantation process • performing additional in situ measurements of sample properties (luminescence, microwave probed photoconductivity etc.)
				1.6	Coming soon: sample temperature control – from ambient to 700°C (option for evaporation at 1200°C is also planned)
				1.7	Coming soon: sample placement on liquid nitrogen cryostat finger for precise temperature control using PID controller.

2	High Energy Beam Line#2		Diameter: 51 cm Height: 22 cm Ion beam irradiation - Yes This chamber is oriented for analysis using RBS, ERDA or Ion Beam Channeling techniques, but could be adapted according to specific requirements for particular experiment. It is equipped with removable 5-axis goniometer. When the latter is removed the chamber has significant volume for different equipment to be placed inside. Typical parameters: • Ions – from H$^+$ to Au$^+$ • Ion Energy from 700 keV to 2MeV for single charged ions and up to 5 MeV for 4 times charged ions. • implantation depth from 0,5 to 60 um depending on the ion species and/or energy • Pressure: ~1e-6 mbar • A range of different diameter ion beam collimators available	2.1	6 custom (non-standard) ports*, located on the sidewalls of the chamber. Different feedthroughs are available: high voltage, high current, signal, viewports, etc. Custom port adapters could be manufactured on site. Each port has bore diameter of 5 cm.
				2.2	4 custom (non-standard) ports*, located on the top cover of the chamber. These are mostly viewports or blanks, but could be converted to feedthroughs upon request. The bore for each of these ports is 50 cm
				2.3	1 custom (non-standard) port, located on the sidewall of the chamber. Bore diameter – 12 cm
				2.4	5-axis goniometer for precise positioning
				2.5	Coming soon: sample temperature control – from ambient to 700°C (option for evaporation at 1200°C is also planned)
				2.6	Coming soon: sample placement on liquid nitrogen cryostat finger for precise temperature control using PID controller

3	Low Energy Chamber		Length: 26cm Width: 23cm Height: 26cm Ion beam irradiation - Yes Typical implantation parameters: • Ions – from H^- to As^- • Ion Energy from 10keV to 30keV • Size of implanted area – up to 5x5 cm • 5-axis sample positioning system • possibility of *in situ* observation of sample state during implantation process • Pressure: <2.0 e-5 mbar • A range of different diameter ion beam collimators available	3.1	4 custom (non-standard) ports. Currently these are blanks or viewports, signal and high voltage feedthroughs. The chamber equipped with Faraday cup inside the chamber for ion beam current control.
				3.2	The chamber is equipped with 5 axis sample positioning system. If needed, this system can be de-mounted for larger samples or system accommodation
4	Stand-alone high vacuum chamber #1		Diameter: 22cm Length: 55cm Ion beam irradiation - Optionally, on demand The intended use of this chamber – equipment testing. The chamber has multiple viewports, manipulators, heating elements, feedthroughs etc. It could be customized for different requirements. Pressure range: from overpressure and down to ~10 e-6 mbar.	4.1	3 DN25CF ports. Various feedthroughs and adapters present on site, from ISO-KF to SWAGELOK (gas supply), but can replaced by request.
				4.2	8 DN45CF ports. Different viewports, feedthroughs and adapters present on site, from ISO-KF to SWAGELOK (gas supply)
				4.3	4 DN63CF ports. Different feedthroughs and viewports are present on site
				4.4	4 DN100CF ports, as viewports and blanks.
5	Stand-alone medium vacuum chamber #2		Length: 38cm Width: from 6 to 25cm Heigth: 35cm Ion beam irradiation - No The intended use of this chamber – equipment testing. It is connected to roughing pump only, dedicated to relatively "dirty testing". Pressure range: down to 10 E-3 mbar	5.1	DN50ISO-K port. Different feedthroughs and adapters present on site, from ISO-KF to SWAGELOK (gas supply).
				5.2	DN100ISO-K port. Currently blanked off.
				5.3	DN45ISO-KF port. Different feedthroughs and adapters present on site, from ISO-KF to SWAGELOK (gas supply)
				5.4	2 DN25ISO-KF ports. Different feedthroughs and adapters present on site, from ISO-KF to SWAGELOK (gas supply)
				5.5	1 non-standard port (currently blank) with bore of 3cm
				5.6	Relatively large door with viewport

* – drawing on request. If needed, design and metal processing services are available on site.