

Fjasekammer

The **Fjasekammer** is the smaller, simpler vacuum chamber in OV's laboratory. It features a large glass dome and is used for technical demonstrations, impurities and *Fjas™*. There are less restrictions on usage compared to the [Varian 3119](#).

Specs, issues and future improvements

Chamber Specifications:

Flanges

- 1 CF65 4"OD on rear of chamber, connected to turbopump assembly
- 3 CF40 2.75"OD on circumference of chamber
- 1 KF40 flange on turbopump assy, connected to gauge assembly

Feedthroughs

- 1 >10kV shielded ceramic HV feed on turbopump assy.
- 1 >5kV Ceramic CF40 feed on front of chamber
- 3 >1kV Ceramic CF40 feeds left of chamber
- 1 Swagelok gas inlet feed on turbopump assy.
- 2 >MHV/BNC Coaxial feeds on turbopump assy.

Dimensions

Vol ~15L

Current Capabilities:

The Fjasekammer is currently capable of pumping down to $\sim 2 \times 10^{-2}$ mBar.
The chamber can easily run basic plasma demonstrations.
It is for all serious vacuum uses shit, and must be improved upon.

Current state:

The Fjasekammer has of October gotten upgraded quite extensively;

- Fitted with a Varian TV-70 series turbopump
- Rigid mounting on steel bottom plate
- Controls operated from rear of rack

Issues with current state:

- Has major leak or outgassing issues preventing operation below $< 2 \times 10^{-2}$ mBar.
- The system is not yet truly presentable, rusty metal, poor welds, crappy wiring and exposed PCB's abound.
- For general high pressure plasma displays electrode is mounted and insulated poorly, is prone to falling apart and cannot withstand > 1.2 kV at practical lighting demonstrations without arcing.
- Vacuum gauging is done with a multimeter and printed conversion chart.
- No control panel exists, operation is spread across > 6 different control surfaces.
- Cannot do much useful

Future improvements:

- Unified Control Panel, possibly remote operation
- Vacuum floor at least at $< 1 \times 10^{-6}$ mBar
- Polished structure and appearance, lacquered side panels and polished steel surfaces
- HV feedthrough capable of > 35 kV operation with installed HV shield, proper mounting and connection of tungsten center electrode, appropriate HV-PSU, deuterium gas handling system and neutron detector can allow chamber to work as proper fusor, and allow demonstrations of ion jets and thrust. Also seriously fucking cool, probably first Norwegian neutron club initiates.
- Make completely self-contained and automated enough that experience w/ vacuum systems is not required.