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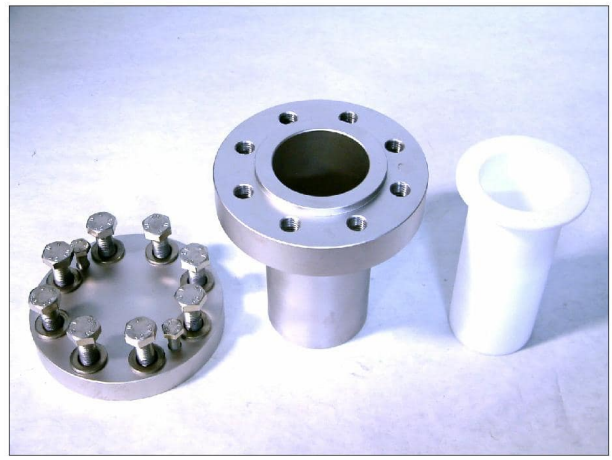
REP NEWSLETTER

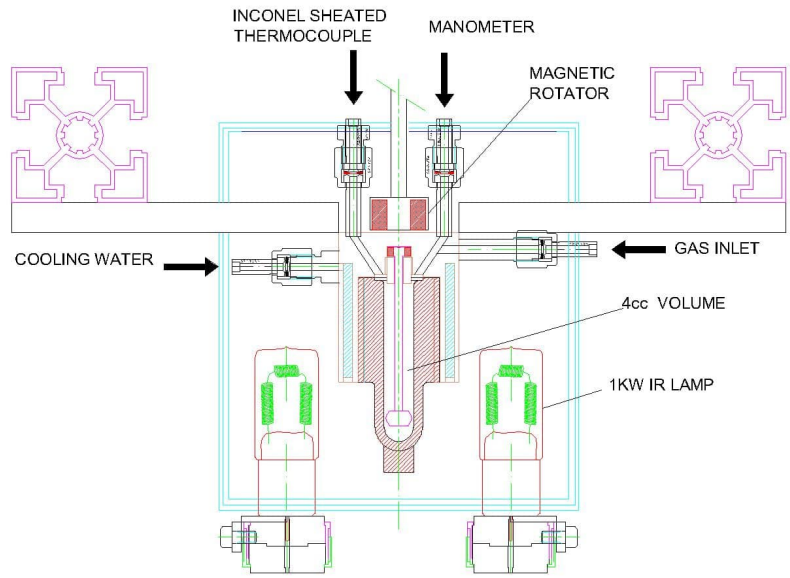
Volume 05, No. 03 May 24, 2011

HP-HT Chemical reactor



Chemical minireactor for high temperature and high pressure processes has been designed for laboratory research.
Lab reactors can be scaled by volume and automation level: very cheaper in simplest version, till very expensive in the full automated version.

Photo shows a titanium reactor with teflon lining working at 220°C and 160bar of pressure.
(sponsored by Chemistry Dpt of Uneversity of Rome)



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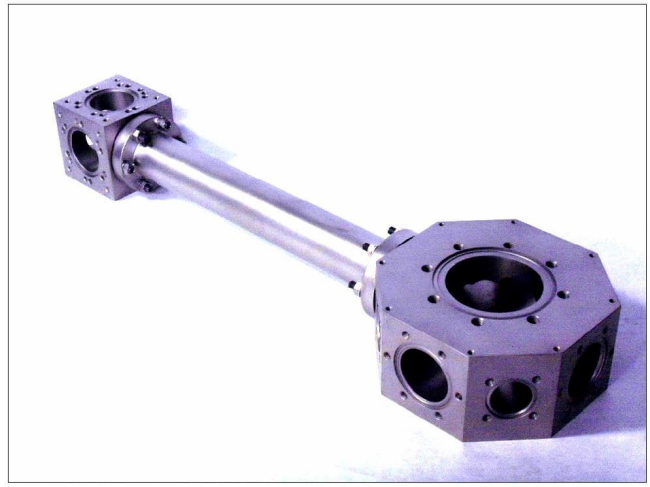
REP NEWSLETTER

Volume 06, No. 01 June 7, 2011

UHV Titanium chambers



CF25,CF40 and CF63 flanges hve been adopted to design UHV titanium chambers.
Also titanium bolts,nuts and washers has been used to connect the chambers, to avoid material residual magnetism.

UHV fused silica viewports, 36mm view diam on CF40 316L amagnetic flange, coated for 780nm both sides, r<0.25% per surface, flatness <lamda/10, scratch/dig 20/10, parallelism <10 arc second bakeable to 200C° gradient 25C°/min, have been mounted on the main beam for spectroscopy on Rb atomic source.

TOP VIEW

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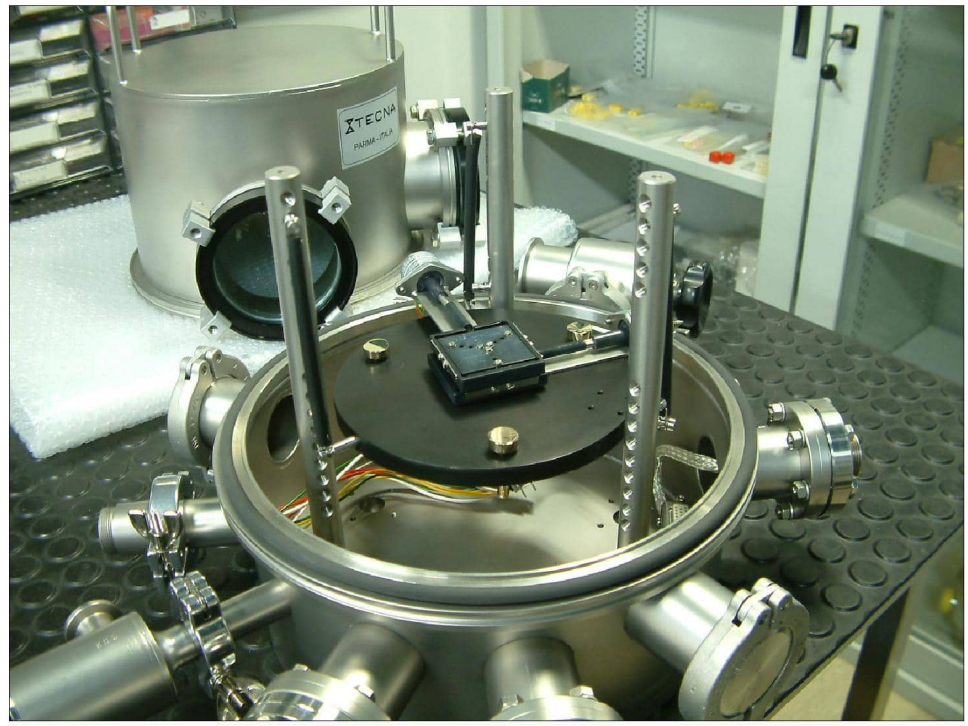
REP NEWSLETTER

Volume 06, No. 02 June 14, 2011

X-Y table for AFM



Samples analysed by AFM (Atomic Force Microscope) some time required x-y displacements.
In this case we have realized an X-Y table motorised by microstepping motors, to obtain a displacements of some ten of nm.
AFM and X-Y table are mounted on a disc dangling from tree springs in high vacuum to reduce vibrations..

Sponsored by
Dpt of Chemistry -University of Florence - Italy

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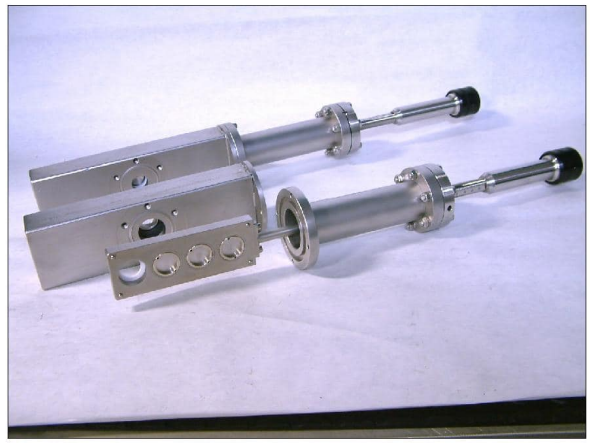
REP NEWSLETTER

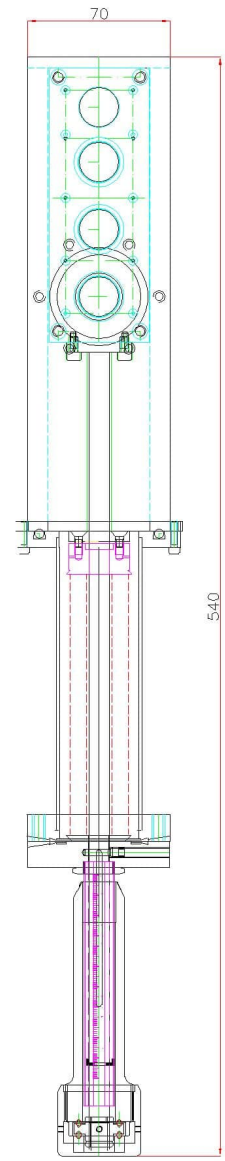
Volume 09, No. 03 September 19, 2011

CF40 SLIDE VALVE WITH FILTERS



CF40 THIN SLIDE VALVE WITH 3 FILTERS

The pad has 4 positions:
one is open and three have mounted metallic thin film filters
for extreme UV spectroscopy and syncrotron radiation.
Standard linear manipulator (PLP100) drives the slide.
Operating vacuum : 1.10*-7mbar



Sponsored by
LUXOR - Laboratory for UV and X-Ray Optical Research - CNR-Istituto di Fotonica e Nanotecnologie- Padova-Italia
Prof Luca Poletto

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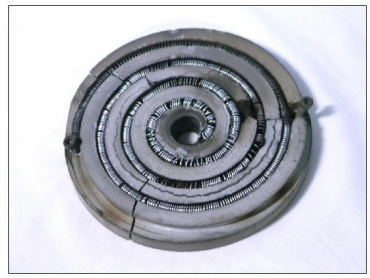
REP NEWSLETTER

Volume 10, No. 01 October 10, 2011

Heater repair



Old fashion heater into 4"sample holder of Se sputtering system has been substituted. RF sputtering power installed is 1,5KW at 13,56MHz

- very expensive allumina holder
- break
- contamination of exposed wire
- short circuit
- no shield on the back

New heater into sample holder Se evaporator has been mounted .

- 1KW thermocoax has been locked with tungsten wire
- K thermocouple inconel sheated has been inserted on the back
- two inconel screen as reflector has been mounted on the back
- controlled temperature till 1000°C

Outcome
-more efficiency
-more reliability
-better controle of temperature
-fast reply
-cheaper

- control of temperature at 600°C : +/-2°C
- with a 6mm graphite sample support, temperature gradient is <1°C in a 40mm circumference

Sponsored by
Thin Film Laboratory, Dpt of Physics, University of Parma - Italy - Prof. Alessio Bosio .

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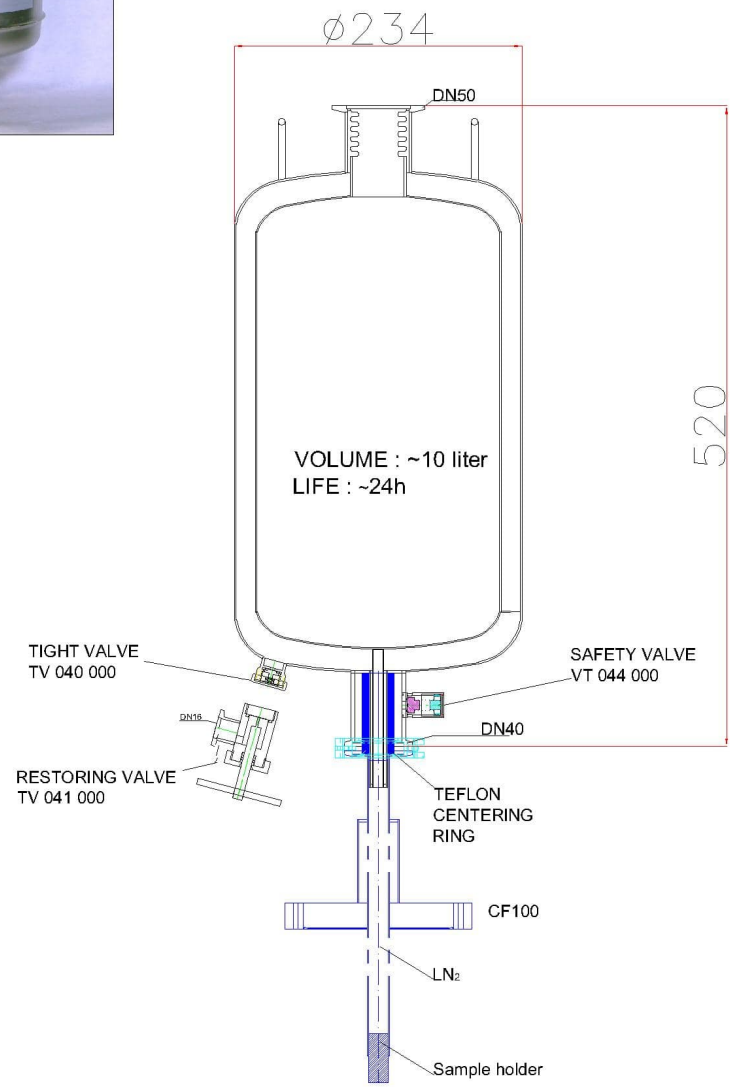
REP NEWSLETTER

Volume 10, No. 02 October 10, 2011

LN2 at fall

A smaller LN2 dewar at fall has been produced for Mark Plank Institute-Gottingen

In this case the very small volume of the experimental set up did not allowed a life more than some tenth of minutes.
With this reservoir the life of the experiment is longer than 24 h



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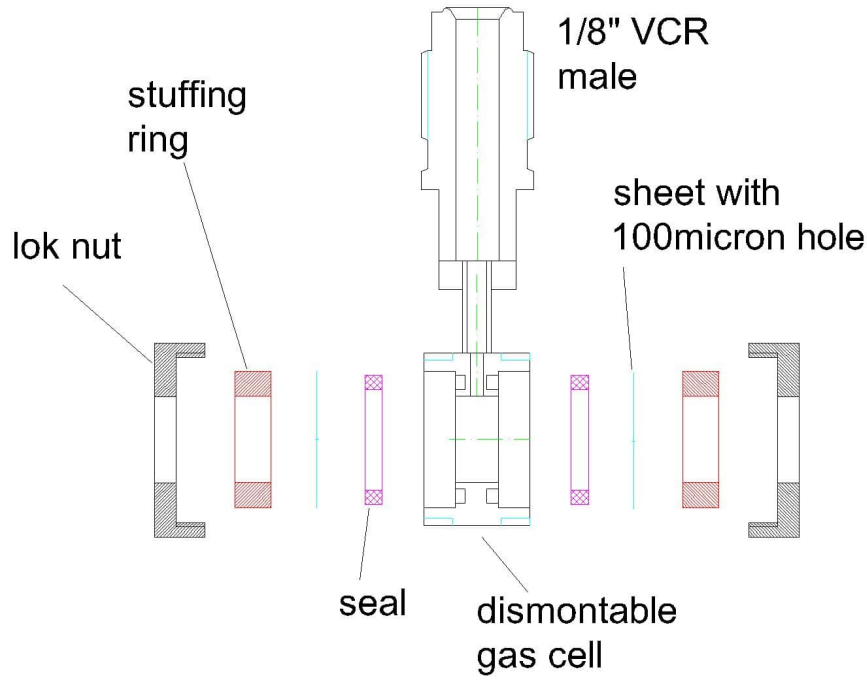
REP NEWSLETTER

Volume 10, No. 03 October 18, 2011

Gas expansion cells

GAS LASER INTERACTION CELLS
PHYSIC DPT OF POLITECNICO - MILANO

In both sides of the cell thin metallic sheet with different hole can be mounted.Gas enter laterally and expand through the holes into the vacuum.Laser passing through the expansion phase produces UV harmonic waves.



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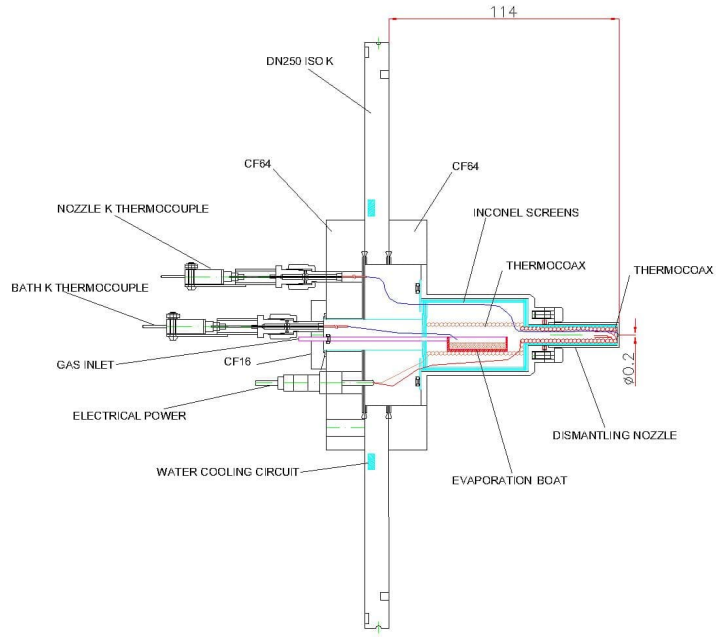
REP NEWSLETTER

Volume 10, No. 04 October 18, 2011

Gas expansion furnace



HIGH TEMPERATURE SOURCE FOR SUPERSONIC EXPANSION

On DN250 ISO–K flange a source for supersonic expansion till 700°C temperature for microwave rotational spectroscopy of molecolar beam system has been designed.
In this experimental set up the small hole of the nozzle tends to clog. To prevent this fault, dismantling nozzle is equipped with a thermocoax indipendent circuit that mantains the hole warmer.
Dismantling nozzle has the advantage to change the size of the hole or the manufacturing material.

Sponsored by Chemistry Dpt of University of Bologna-Italy

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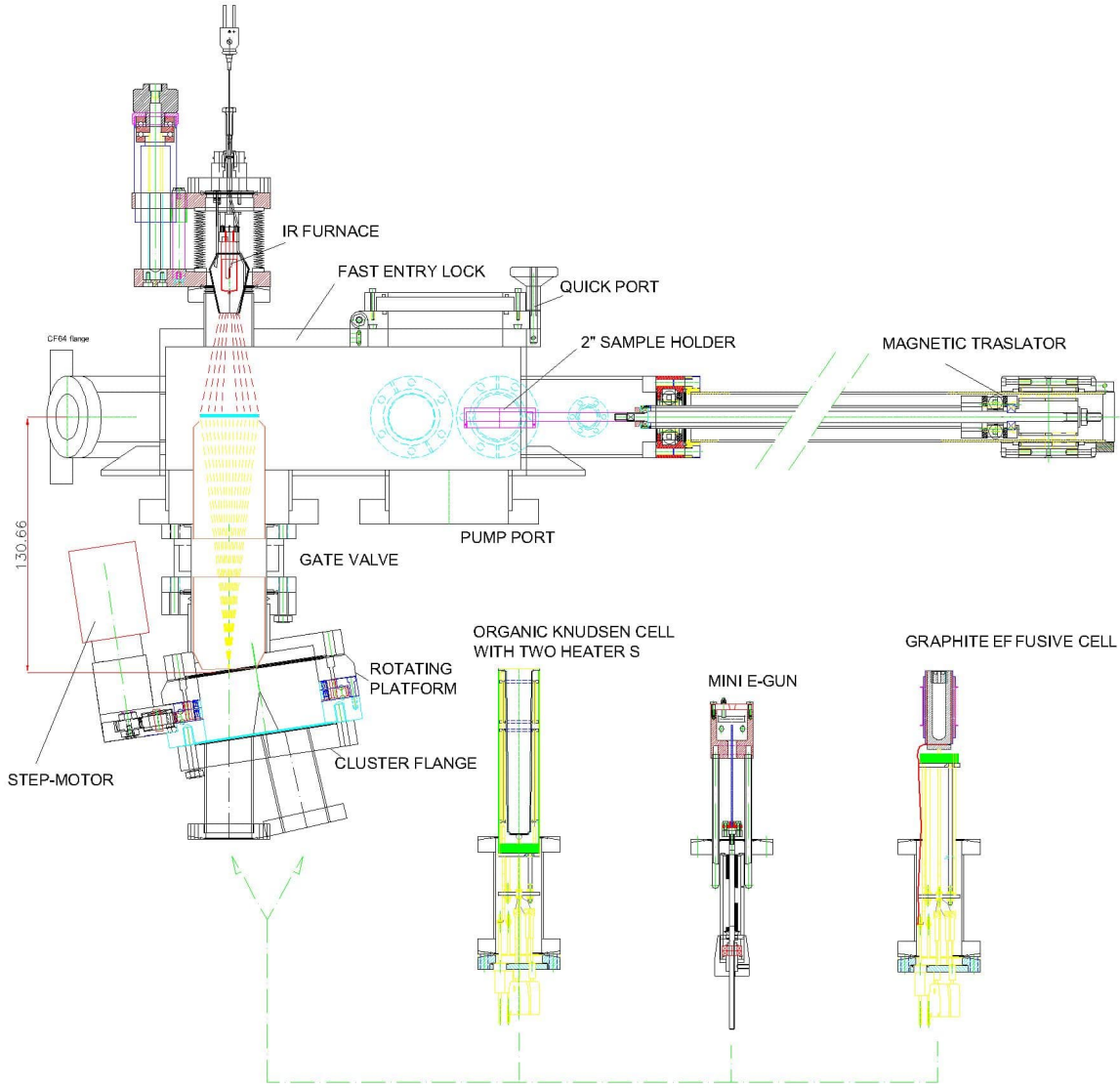
REP NEWSLETTER

Volume 11, No. 01 December 02, 2011

Revolver evaporator



REVOLVER DEPOSITION SOURCE

CF100 rotating platform allows to shift three cells in an evaporation position.
In this experimental set up, on the evaporation target an infrared furnace adjusts the heating of the sample.
These facilities are mounted on a fast entry lock where other options are possible (sample storage, ion milling, RF etching)
Dismantling chimney has the advantage to avoid the contamination of the system.
Programming the stepping motor and the cell temperature is possible to create repeatability of the multilayer deposition set up.