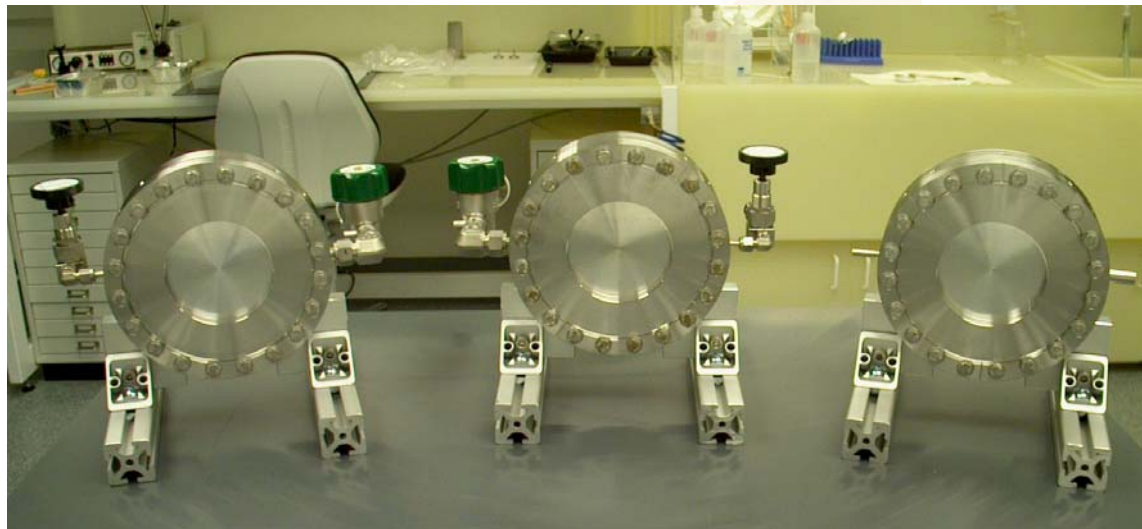


The investigative detectors – a status report

I. Defendi, A. Siebert, S. Winkler* and K. Zeitelhack

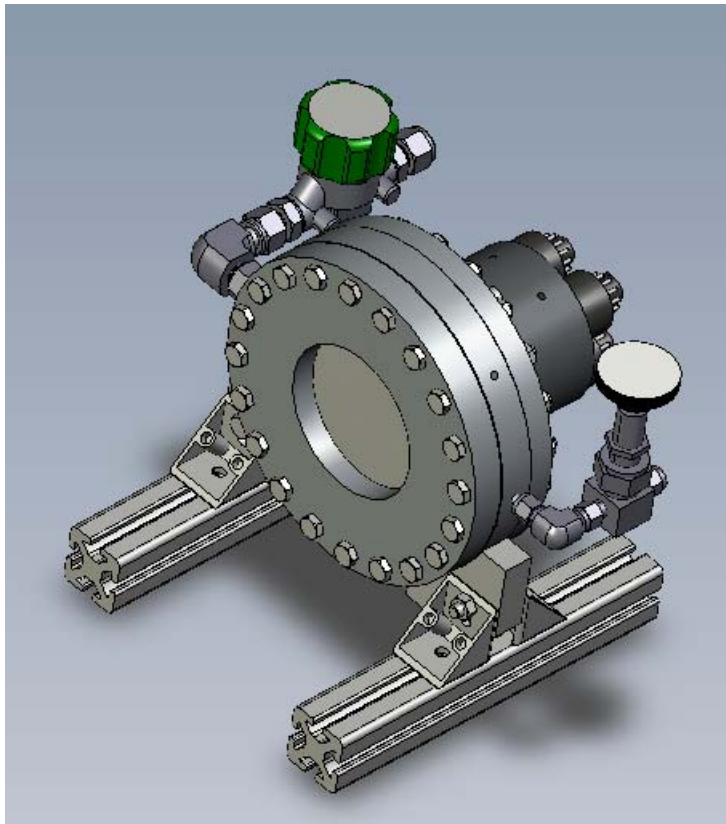
Forschungsneutronenquelle Heinz-Maier-Leibnitz FRM II

**TU München, Physikdepartment E12*



The investigative detectors – a status report

■ Vessel design



Design derived from LIPC/ILL device
based on stainless steel CF150 flange
3 vessels built at FRM II

Entrance window:

6mm Al 6082; 98mm aperture

Exit window:

11mm Suprasil 2B / Borofloat 33
aperture 96mm

$p = 3.5$ bar at full aperture

MSGC:

ILL6C design

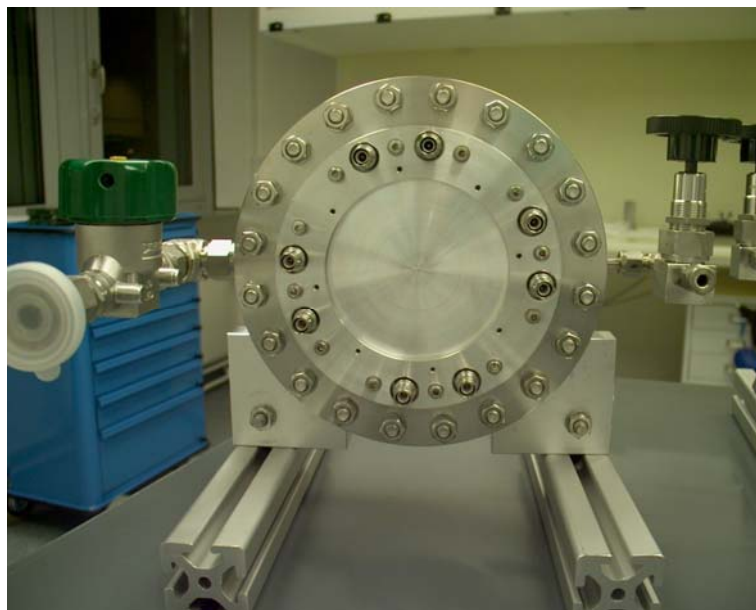
summed anode / cathode

PMT-mounting

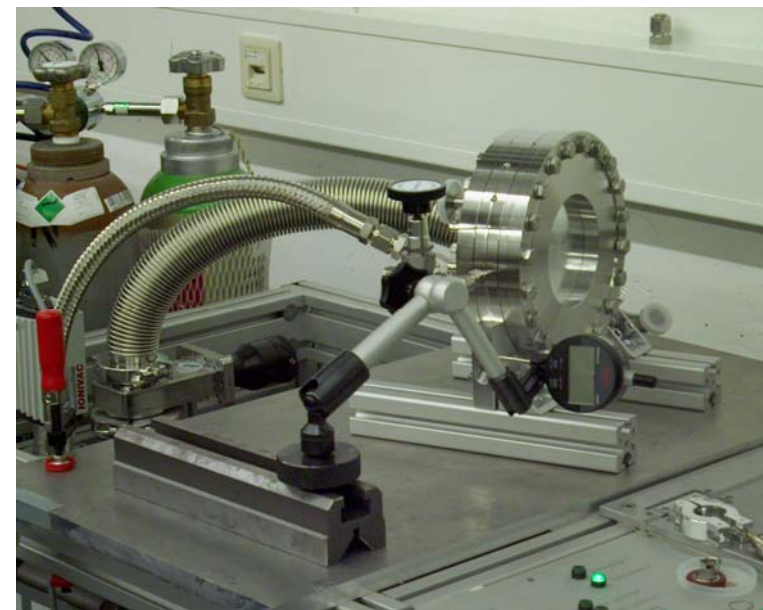
easy change without effect on device

Leak and pressure test

Rear view with 11mm Al 6082 window for pressure test

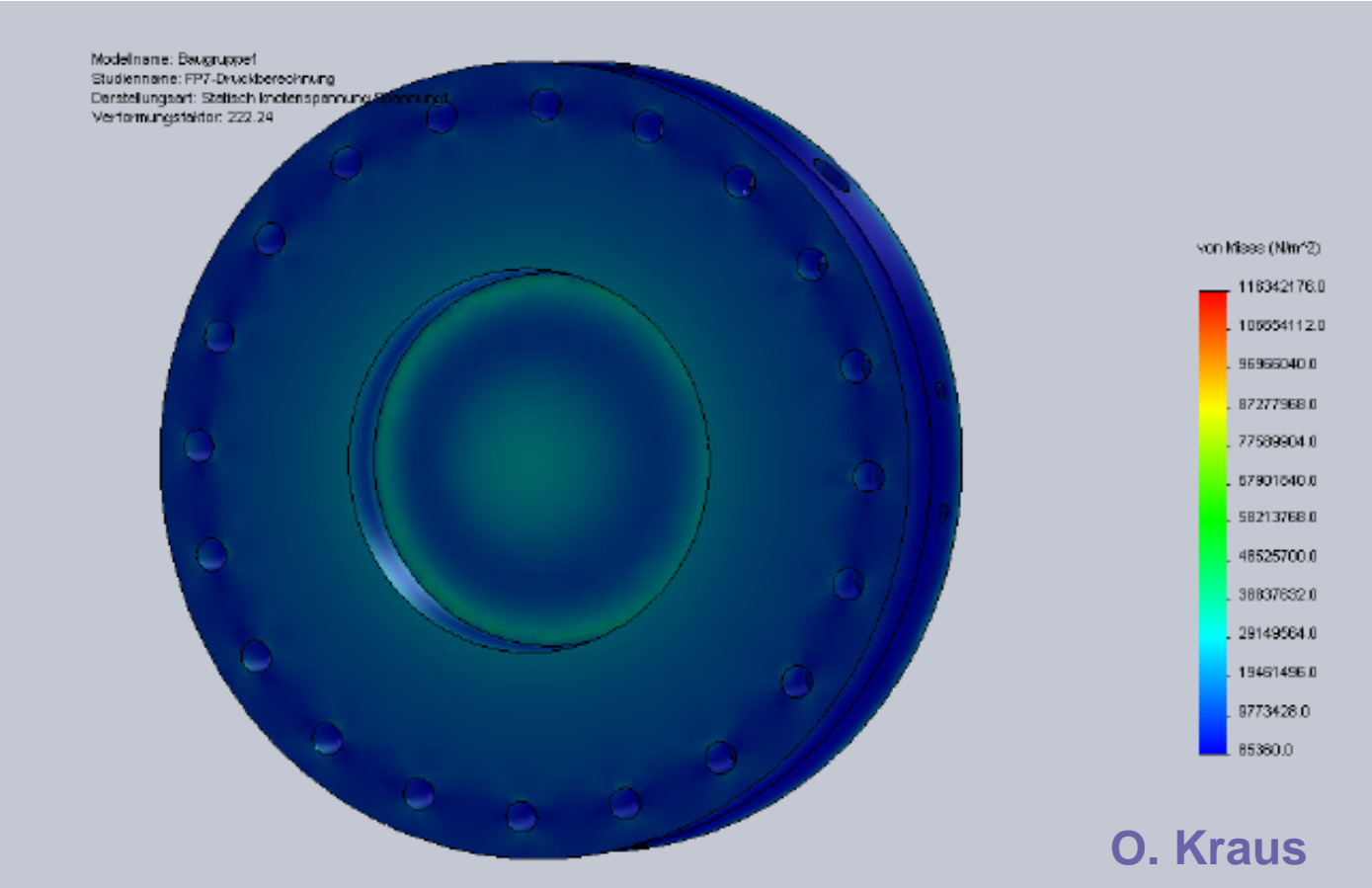


Device on gas filling station for He-leak and pressure test

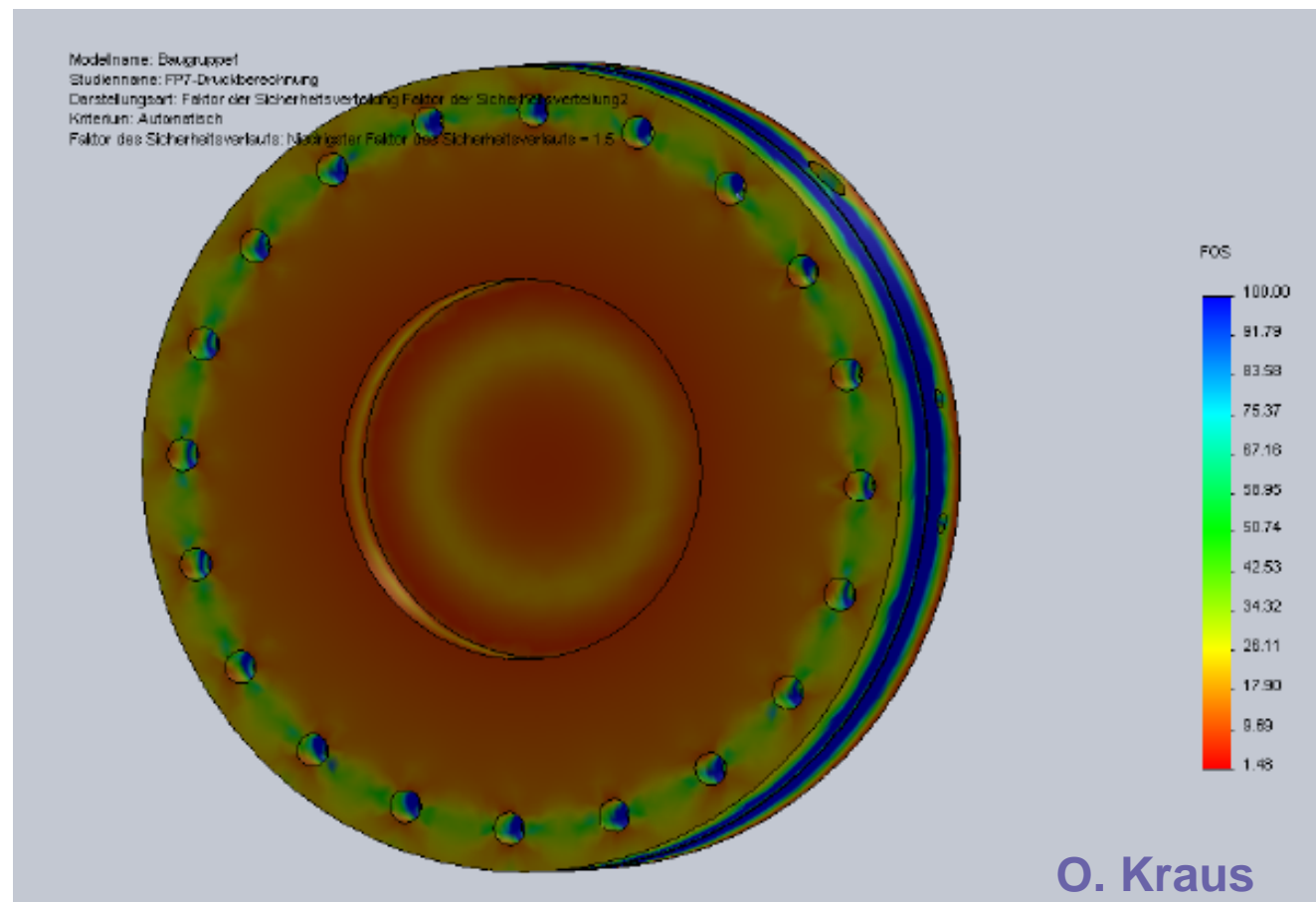


Max. fill pressure $p=10$ bar
Measure strain on front window

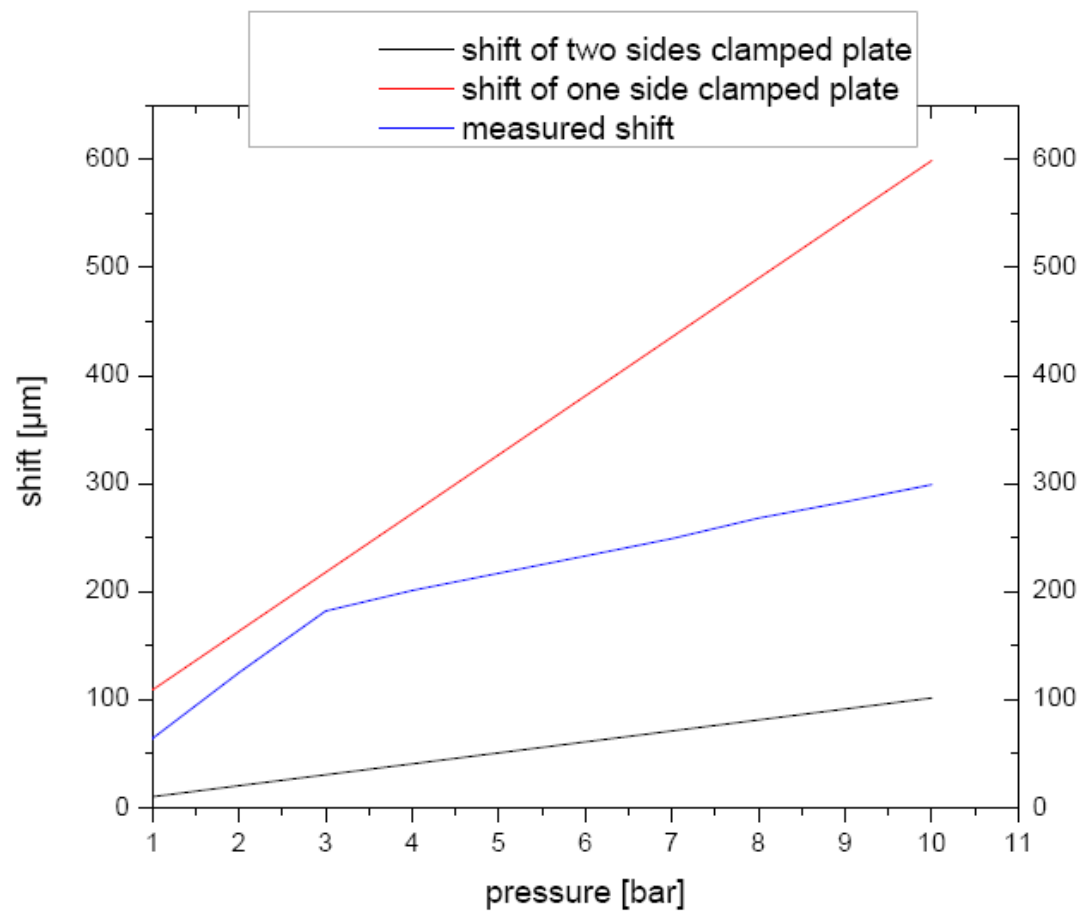
Al front window: Fill pressure: 10 bar
 Max stress: 70 N/mm²



AI front window: Fill pressure: 10 bar
Safety factor: 1.5



Measured strain of 6 mm Al-6082 front window



O. Kraus

Quartz window

Heraeus SUPRASIL 2 grade B

Thickness: 11 mm

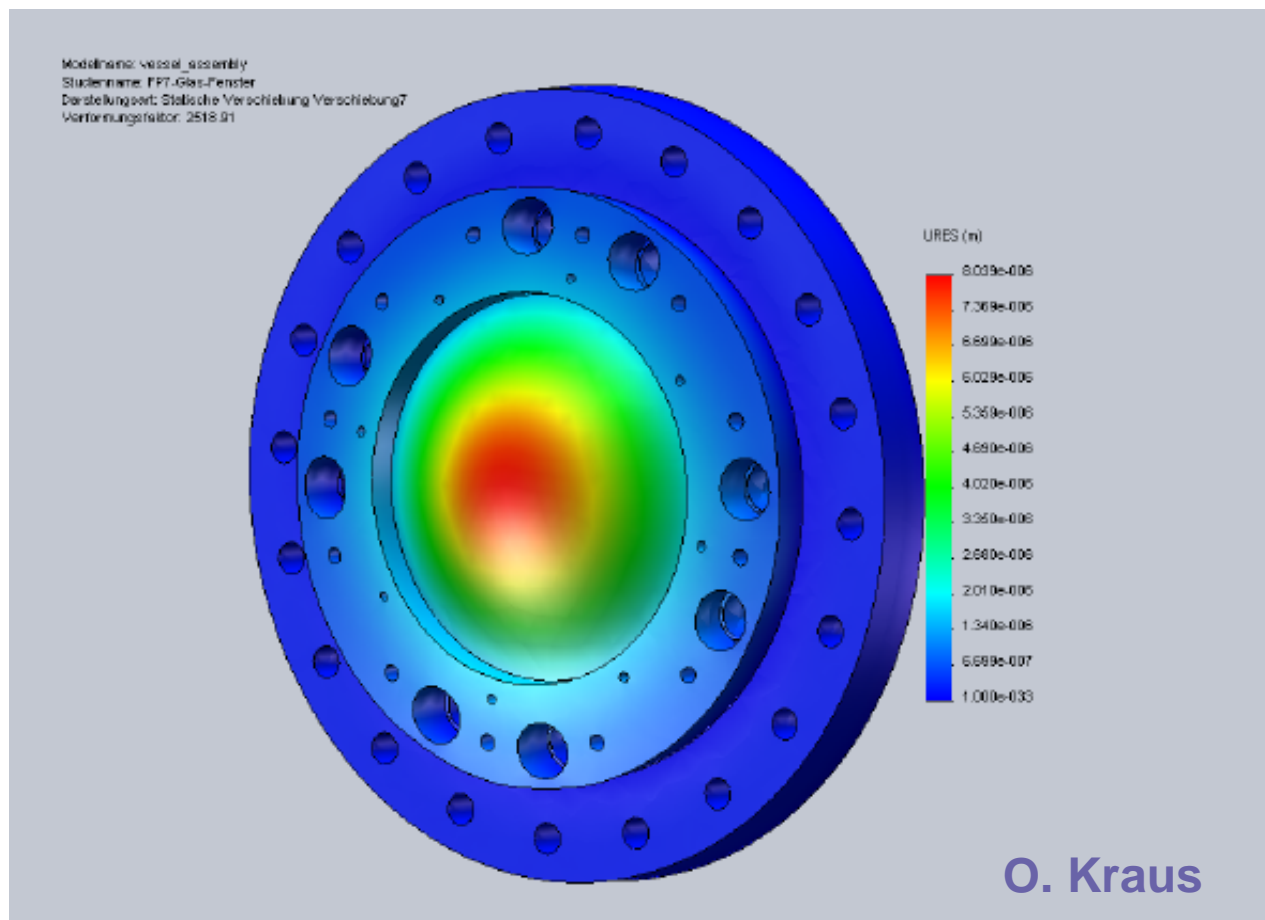
Aperture: 98 mm

Certified to 3.6 bar

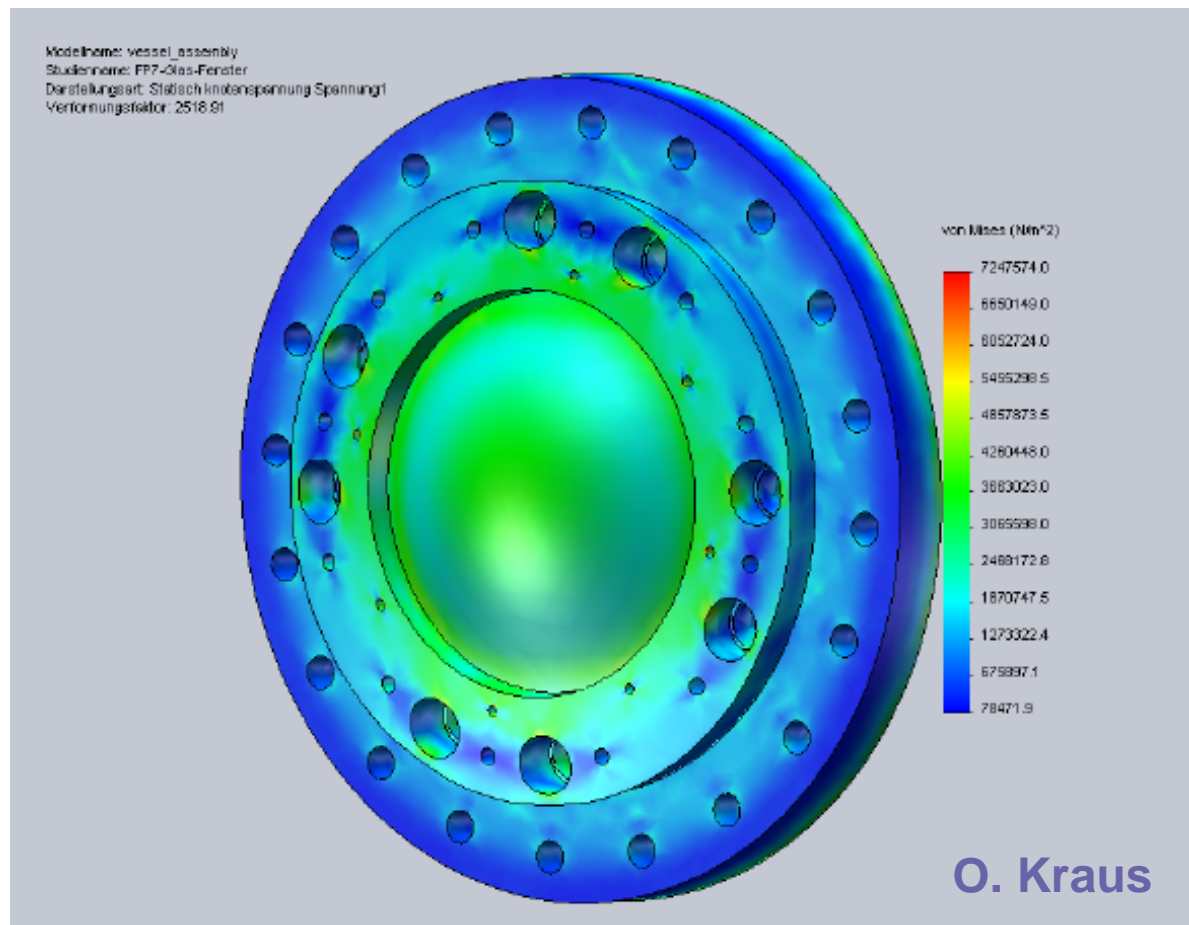
- transparent > 170nm
- bulk transmission > 98%
- No fluorescence
- Low internal stress
- 430,- € per window
- Max. permanent stress permitted: 4 N/mm²



Suprasil 2B window: Fill pressure: 4 bar
Max strain: 9 μm

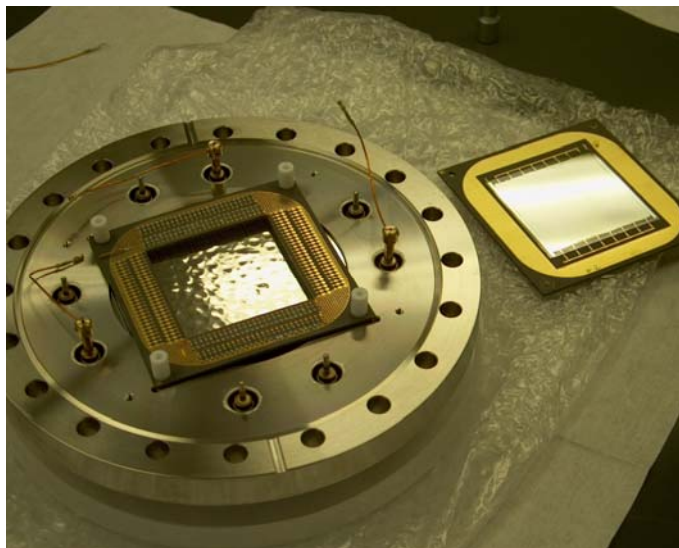


Suprasil 2B window: Fill pressure: 4 bar
Max stress: 4.5 N/mm²



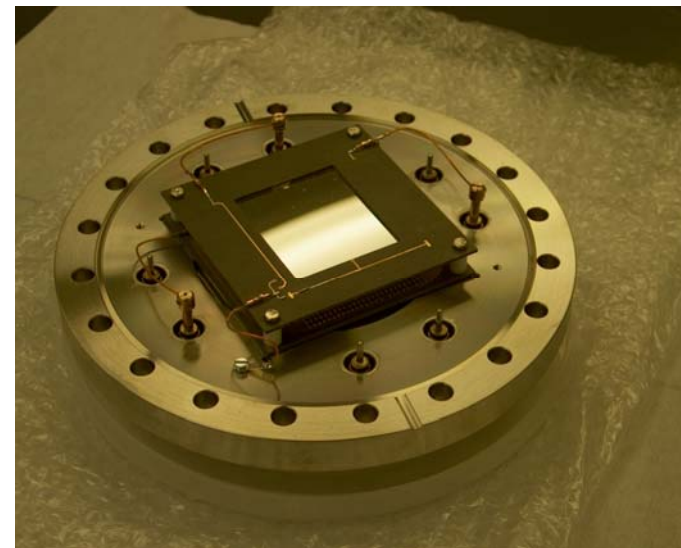
“training device” with homemade MSGC (MucPad)

Back flange with drift grid



50 μ m Au plated W-wire
1mm pitch

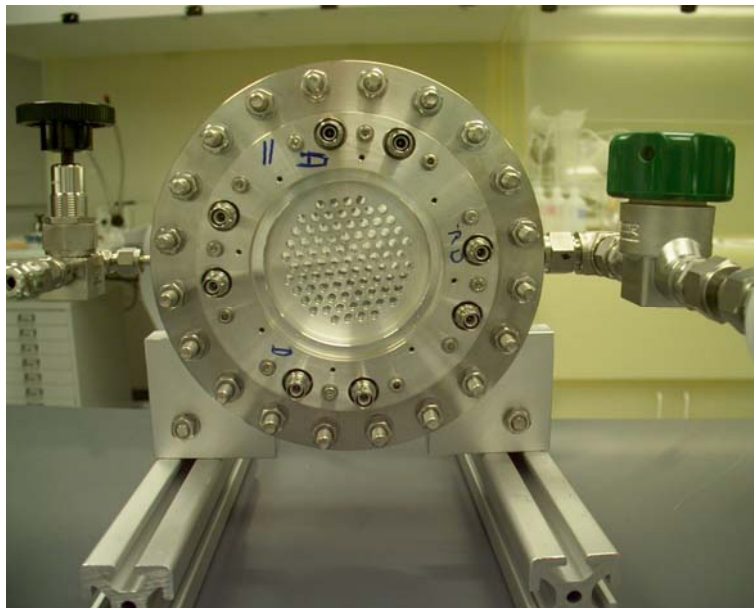
MSGC & drift grid mounted



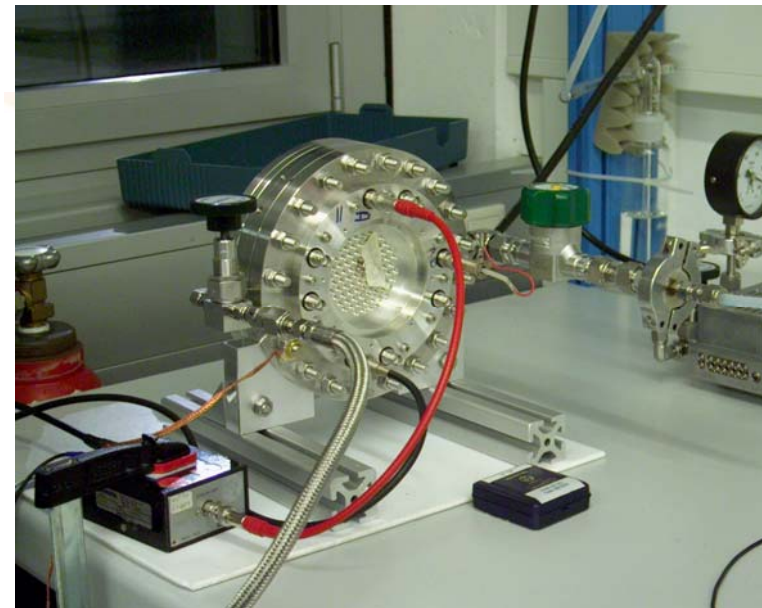
Al-strips on D263
Active area 53 x 43 mm²
Anode: 10 μ m
Cathode: 350 μ m
Pitch: 660 μ m

MSGC quality test with ^{55}Fe source

Rear view with Al-Mylar window for ^{55}Fe test

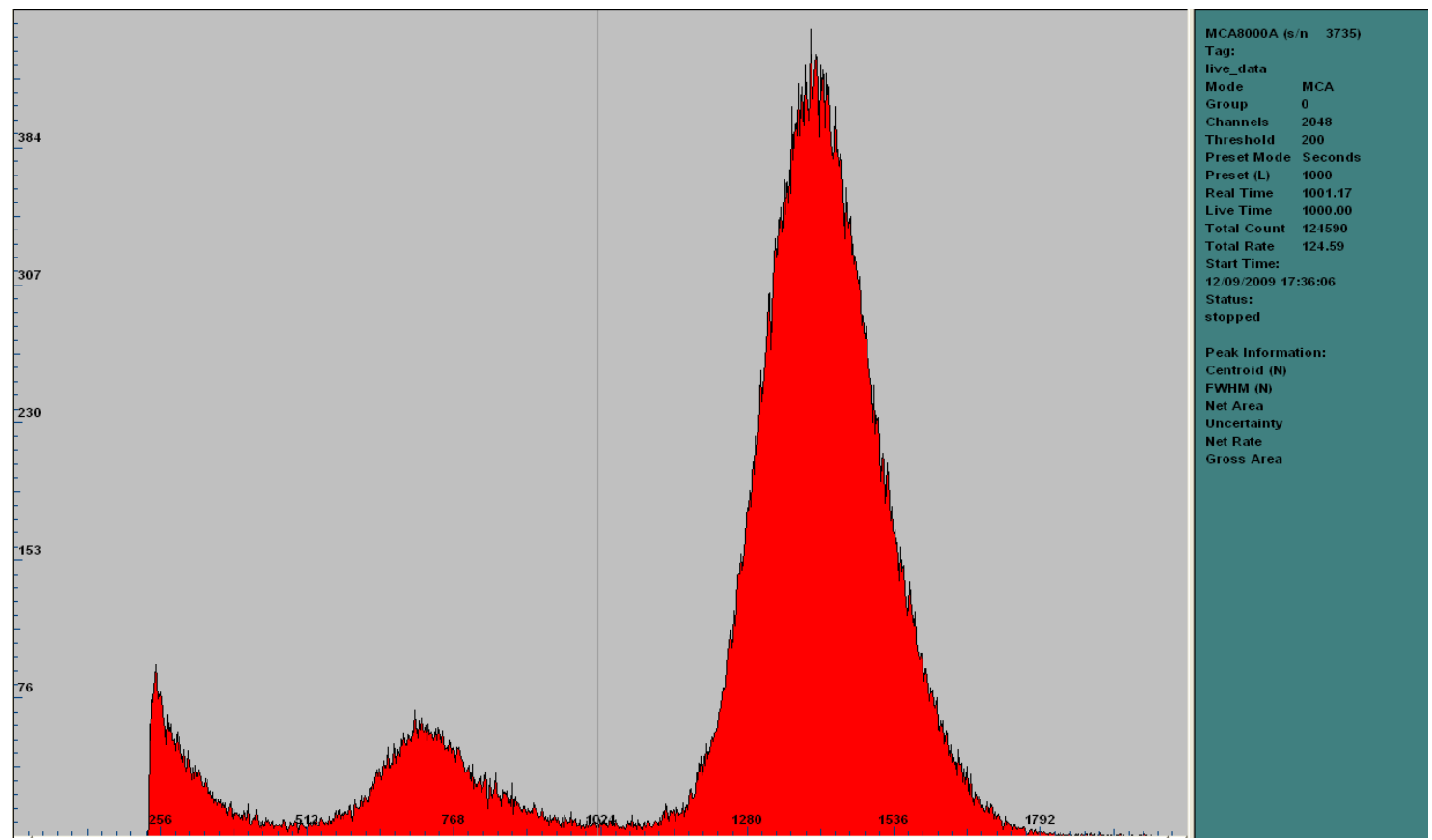


Setup for Fe-source test
Detector gas: Ar/CH₄ 90/10
 $p = 1\text{ atm}$



First ^{55}Fe anode pulse height spectrum

$U_{\text{anode}} = +500 \text{ V}$
 $E_{\text{drift}} = 900 \text{ V/cm}$



To Do...

- Pressure Test & certification ($p = 10\text{bar}$) for #2 and #3
- Leak & pressure test with Suprasil window
- Design / build ILL6C mounting and connections
- Design / build drift electrode
- Design / build PMT-holder
- Purchase Borofloat 33 window
- Study “training device” with ^{55}Fe -source
- Finish ^3He recycling station (~ Feb. 2010)

