DIP-09-2 KMC - 2

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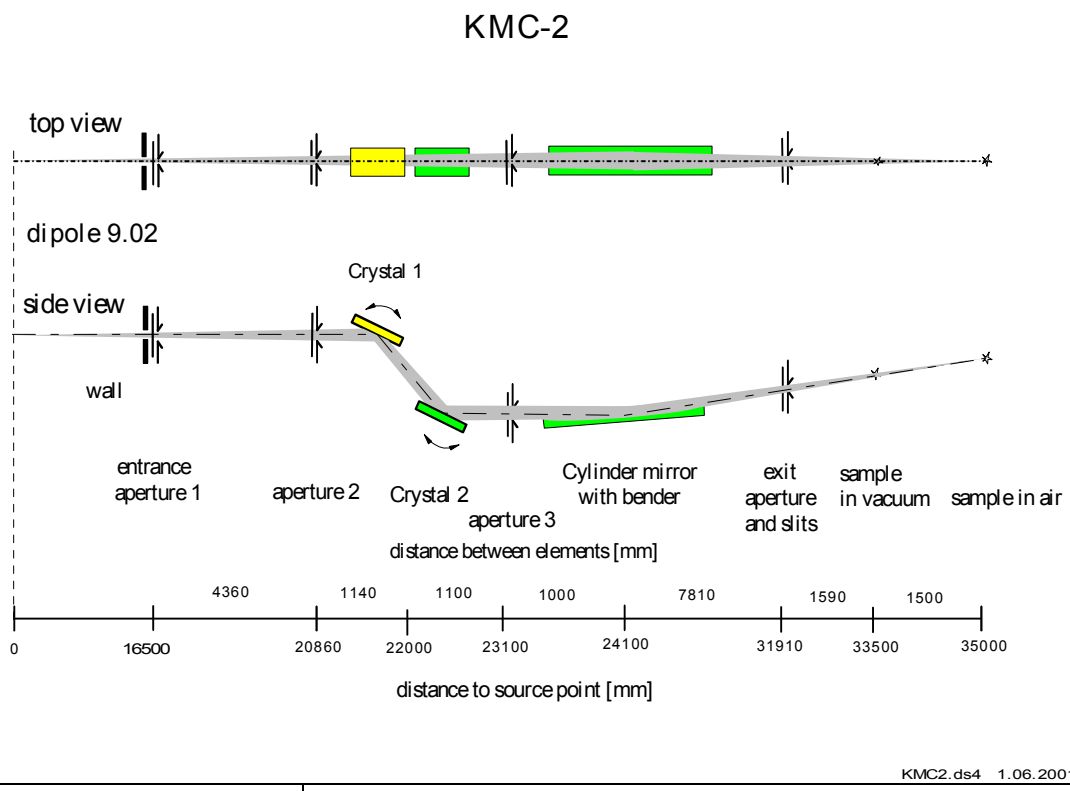
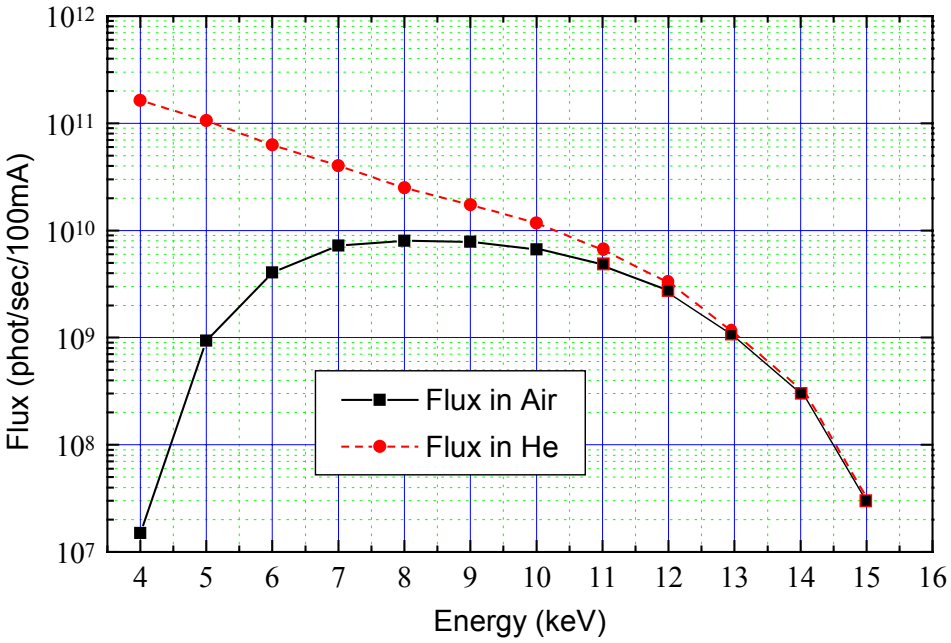
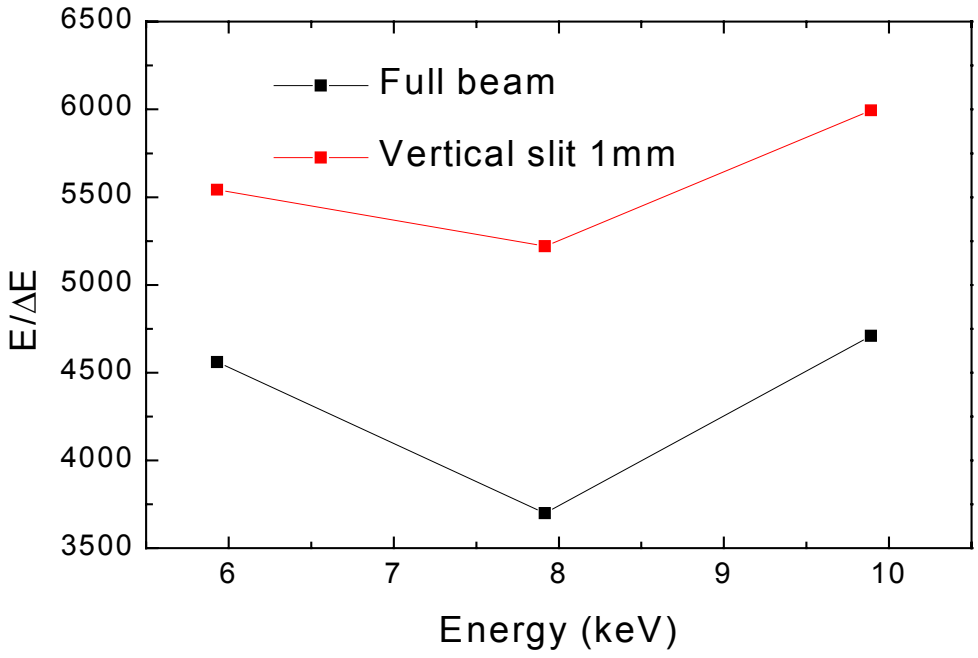
OPTICAL LAY-OUT (schematic)



premonochromator optics	no optics
entrance slit	Vertical and horizontal slits: 0-10 mm, water cooled
monochromator	Double-crystal monochromator, first crystal water cooled. 2 SiGe 111 graded crystals, angular range 2.16° - 70° Energy range 4 keV - 15 keV, feedback stabilization for EXAFS measurements
exit slit	Vertical and horizontal slits: 0-10 mm
postmonochromator optics	Rh-coated cylinder mirror with bending mechanics. Fixed horizontal focus at 35 m from the source, variable vertical focus 31 m - 36 m from the source. Vertical beam deviation: 0.5° above the horizontal plane
references	A. Erko, I. Packe, C. Hellwig, M. Fieber-Erdmann, O. Pawlitzki, M. Veldkamp, W. Gudat, "*KMC-2: the new X-ray beamline at BESSY II*, AIP Conference Proc. **521**, p.p. 415-418, (2000). A. Erko, I. Packe, W. Gudat, N. Abrosimov, A. Firsov**,** "*A Graded Crystal Monochromator at BESSY II*" SPIE **4145,** p.p. 122-128, (2000)

PERFORMANCE DATA	
resolution: **E/ΔE ~ 4 000**	**Exit flux:** **10^7 – 10^{10} phot/sec/100mA**
spot size at experiment:	horizontal: 250 µm, vertical: 600 µm (5 µm x 5 µm with capillary optics)
Maximal divergence at sample position:	2.5 mrad (hor.) x 0.5 mrad (ver.)



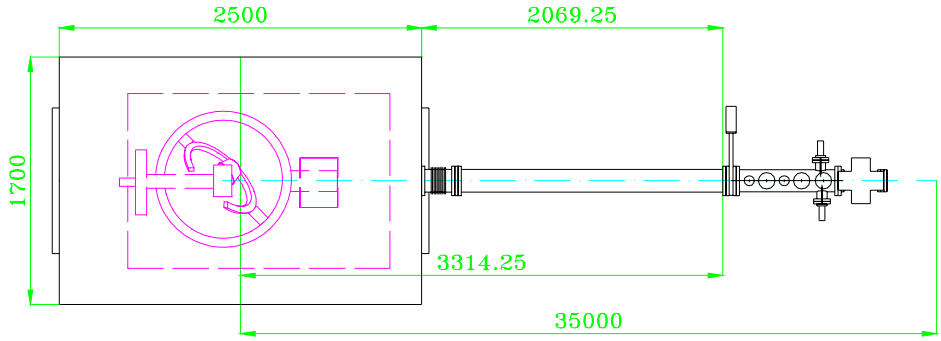


TECHNICAL REFERENCE

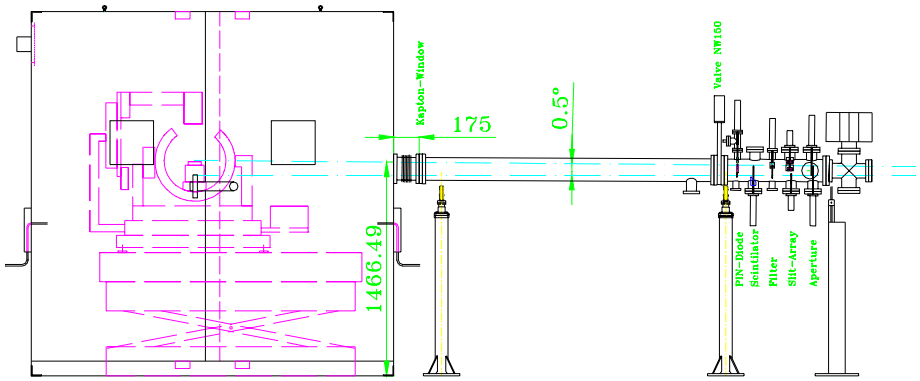
FLOOR PLAN

in – air experimental arrangement

Top view

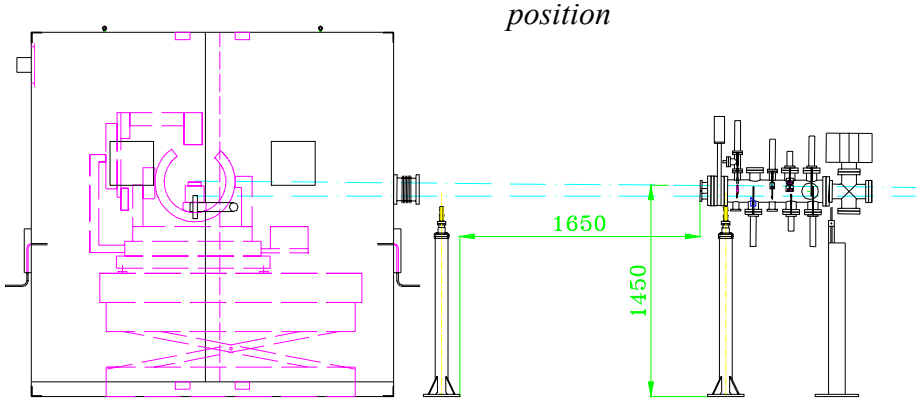


Side View



In – vacuum experimental arrangement.

Vacuum chamber position



Diagnostic Chamber: Hor./vert. slits 0-10 mm; vert. fixed slits 50 µm and 100µm; video monitor; filter assembly V, Ni, Fe, Cu foils, each of 1 µm thick; PIN diode.

GEOMETRICAL BOUNDARY CONDITIONS

	In-air experimental area	Optical table 1,8m x 1.2m, in the hutch (see floor plan), 2 Capton windows, differential pumping.
	Focus position in the hutch	Horizontal: 35 m from the source (see floor plan) Vertical: variable 30 m - 36 m from the source.
	Focus height in the hutch	1465 - 1490 mm above floor (depending on lateral position)
	In- vacuum chamber	User chamber must fit in 1.5 m overal length.
	User flanges	CF35

Special instrumentation	The beamline provides an experimental set-up for **EXAFS and XANES** measurements **at-air and in He** atmosphere in the energy range of 4 keV – 15 keV. Beam intensity is stabilized by MOSTAB electronics with an accuracy of 0.3 %. The detector system consists of three ionisation chambers, a Si-PIN photodiode for fluorescence measurements, a scintillation counter and an energy-dispersive detector (Röntec X-Flash). An add-on microprobe capillary system with the spatial resolution of >5 µm is available for micro-EXAFS, micro-fluorescence and micro-diffraction experiments. For **X-Ray diffractometry and reflectometry** the experimental hutch is equipped with a 6-axis HUBER goniometer and a 2-dimentional cross-wire detector with a spatial resolution of 150 µm. In addition detectors listed are available. A high-resolution X-ray CCD camera with a pixel size of 6.7 µm can be used for experiments alignment.

VACUUM REQUIREMENTS

max. pressure	~ 6 x 10^{-8} mbar at last valve for windowless experiment, live zero point signa for interlock
oil free vacuum system	yes
In - air experiments	yes

INFRASTRUCTURE AT EXPERIMENTAL STATION

electrical power supplies	220V, 380 V max 44 kVA
demineralized cooling water	closed system, forerun 30° / 10 bar, return run ≦42° / 2 bar
pressurized air	8 bar
oilfree exhaust line	not for hazardous gases!
He-recycling system	yes

DATA ACQUISITION

control system	PC-based BESSY monochromator controll system EMP/2
data-acquisition computer	Personal Computer, measurement bus-extention, OS/2-operating system .
data-acquisition software	Windows-NT, RADICON RDPW software, SPEC software for 6-axis HUBER diffractometer.
remote-control	V24-serial port, DMC/AMC-protocol