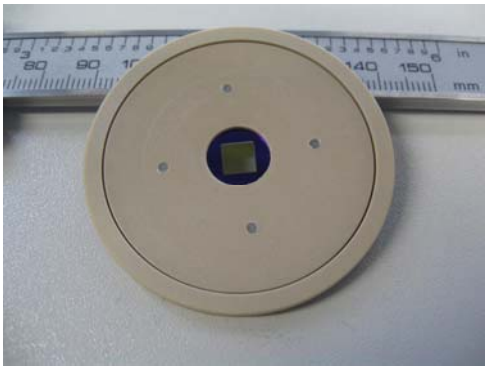
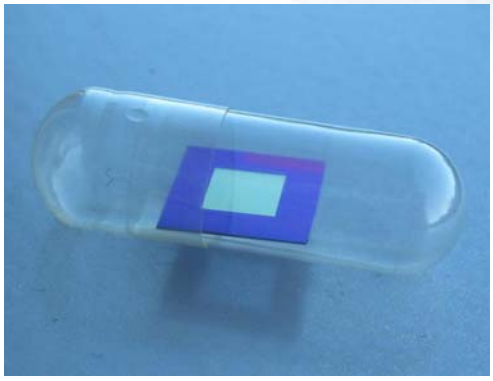
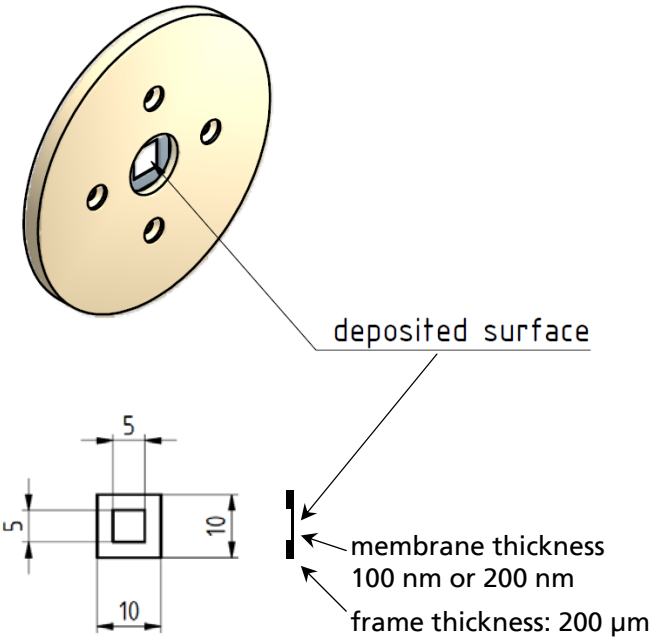
Thin Film XRF Reference Samples RF4-100-S1749 and RF4-200-S1749







Element content:
The reference samples contain the 7 elements **Pb, La, Pd, Mo, Cu, Fe** and **Ca** plus **Si** and **N** from the silicon nitride membrane. Further, they may contain traces of C, Ar or other contents of ambient air that are not important for most XRF measurements.

Possible applications:
- Absorption free standard: no matrix correction necessary
- Mass depositions in the range of ng/mm² (1-3 atomic layers) permit quantification without the need to interpolate from higher values
- Wide selection of non-overlapping XRF lines, exact calibration curve with many points over a large energy range
- Adjustment of confocal µ-XRF
- Transmission experiments due to low thicknesses of 100 nm or 200 nm

Sample dimensions:
The reference samples are available in two different designs: Fixed to a circular PEEK holder for easier handling or on a small silicon frame. The frame size is 10x10 mm² with a 100 nm or 200 nm thin usable area of 5x5 mm² in the center. The plastic holder is 3 mm thick with an outer diameter of 30 mm or 49 mm.

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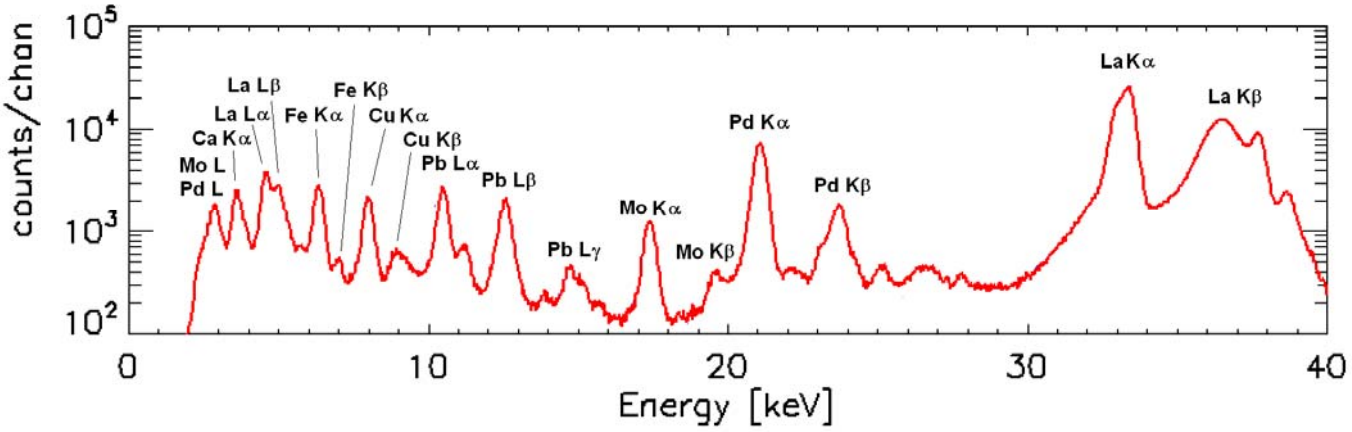
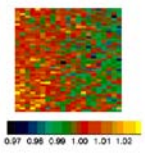
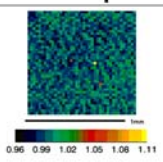
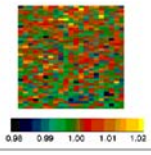
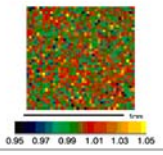


Energy spectrum of the 7-element reference sample RF4-200-S1749 measured at 40 keV excitaton. The energy range from ~2 keV to ~40 keV is covered with peaks of comparable intensity.

Mass deposition:
Mass depositions on the sample are in the range from 1 ng/mm² to 20 ng/mm² and listed below for all elements contained.
The mass deposition values listed here are average values measured by AAS, ICP-OES and µ-XRF. Despite the very precise measurements these reference samples are no "Certified Reference Materials (CRM)".

Element	Mass (ng/mm²)	Emission Lines (eV) Kα	Lα
Pb	7.61±0.96	85335	10541
La	11.01±0.62	33298	4649
Pd	1.8±1.0	21123	2838
Mo	1.32±0.40	17444	2293
Cu	2.84±0.35	8040	930
Fe	5.04±0.87	6401	747
Ca	19.31±1.10	3691	341
Si	Substrate	1740	

Lateral homogeneity:
The lateral homogeneity of all elements deposited on these reference samples has been tested with µ-XRF mappings. The deviation is smaller than 1% over the entire sample area.

	Large area map SF1	µ beam "mapping" S10
Energy	26 keV	9.5 keV
Area	15 x 15 mm²	1.2 x 1.2 mm²
Beam size	0.8 x 0.4 mm²	2.8 x 12 µm²
Step size	0.8 x 0.4 mm²	~ 30 x 30 µm²
Cu Kα		
La Lα		

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