µFOCAL VUV OPTICS

FOR UVS 300 AND TMM 304

KEY FEATURES

- Retractable focusing capillary (< 250 µm/50 µm FWHM)
- Ultimate Photon Flux Densities
- UVS 300 µFOCAL high brilliance source (< 2 meV for He I)
- TMM 304 µFOCAL UV mono-chromator (< 1 meV for He I)

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µFOCAL VUV OPTICS

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Focused VUV optics with 250 µm and 50 µm spot size for the proven high brilliance laboratory source UVS 300 and the UV monochromator TMM 304

Modern electron analyzers for Angle Resolved Photoelectron Spectroscopy (ARPES) experiments allow for highest angular resolutions. In complete experimental setup, the spot sizes of the laboratory UV sources used are meanwhile the limiting factor for further improvement. Additionally, the samples studied are often inhomogenous at the surfaces with domains in the range of several hundreds of micrometers. An excitation of only a single domain also requires small VUV spot sizes. Furthermore, Momentum Microscopes benefit from small circular spots with adjustable sizes in the range between 50 µm and 500 µm, that can be adapted to the respective field of views.

The new series of µFOCAL 50 and µFOCAL 250 offers, as an addition to the proven range of focused VUV sources and monochromators, uncomparable and adjustable spot sizes. The use of special retractable capillaries makes them adaptable and easy to use to mostly all experimental ARPES setups, allowing for circular spot sizes of well below 250 µm and even 50 µm at ultimate photon densities. By this, results taken in the laboratory are finally comparable in angular resolution and measuring times to experiments performed at modern beamlines/monochromators at synchrotron sources.

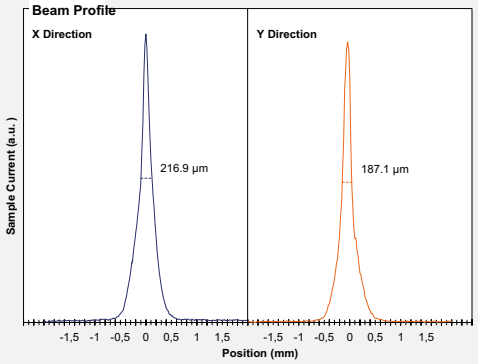

Fig 1. Spot Size of UVS 300/TMM 304 µFOCAL 250 measured in two perpendicular directions on calibrated photodiode for monochromated He I VUV light

Technical Data	
µFOCAL 250	
Spot Diameter	Circular spot with 250 µm FWHM
Photon Flux	> $3*10^{11}$photons/s
Photon Flux Density (monochromatized)	> $1*10^{14}$ photons/(s*mm) for He I, > $6*10^{12}$ photons/(s*mm) for He II
Photon line width	< 2 meV (He I radiation)
Working distance	10 mm
Operating pressure	< $5*10^{-8}$ mbar, < $2*10^{-10}$ mbar with monochromator
Monochromator	TMM 304 with two cassettes (line with < 1 meV for He I)
µFOCAL 50	
Spot Diameter	down to 50 µm with up to 10 times higher flux density