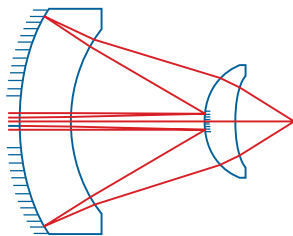


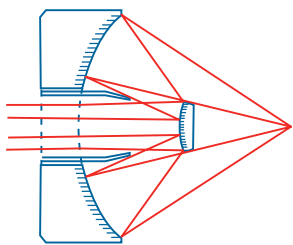
Tropel® μ CAT™ UV Micro-Objectives

High Numerical Aperture and Long Working Distance

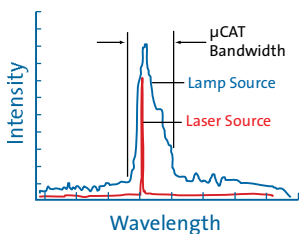
CORNING



Typical μ CAT Design



Typical Schwarzschild Design



Corning's Tropel® μ CAT™ family of catadioptric, long working distance micro-objectives are designed for use down to Deep Ultraviolet wavelengths. The μ CAT's superior design attributes outperform Schwarzschild objectives. Before considering an all-mirror system, take a closer look at the Tropel μ CAT.

Benefits of the μ CAT Design

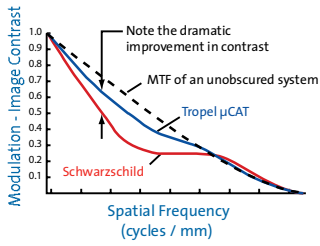
The μ CAT design incorporates reflective and refractive elements, resulting in a micro-objective with high numerical aperture, long working distance and low obscuration. High resolution and advantaged light collection, with a working distance that can work with a pellicle, the μ CAT's features combine performance and flexibility in a cost effective solution.

Broad-Bandwidth

The μ CAT designs can provide sufficient bandwidth to accommodate lamp-based systems, eliminating the need for expensive laser sources; lowering the overall cost of your system.

Less Obscuration Equals Improved Performance

Central obscuration within the lens has a direct effect on the mid-frequency modulation transfer function (MTF) (i.e. image contrast). The μ CAT's design reduces the amount of obscuration, and improves the mid-frequency MTF. The amount of central obscuration in the μ CAT design can be as low as 15%, while typical Schwarzschild objectives have greater than 35% central obscuration.



Another feature of the μ CAT design is the use of a "floating" secondary mirror, thereby eliminating mechanical struts or "spiders", which when present in other micro-objectives, obstruct some light from passing through the system. By eliminating these struts, there is also a reduction in unwanted diffraction effects that are present in many reflective micro-objective systems.

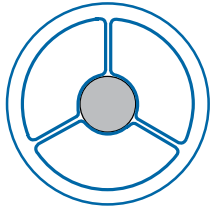
Well Designed for a Long Life

Corning's expertise in contamination control, optical materials selection, high transmission coatings, and low outgassing materials combine to offer a robust design - which translates into lenses with longer lifetimes for our customers.

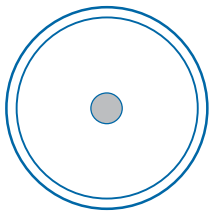
The μ CAT is an enclosed system designed to be purged with high purity nitrogen. Controlling the internal atmosphere by purging with high purity nitrogen prevents harmful environmental contaminants from depositing on the internal components. Corning's purge design enhances internal cleanliness and maintains UV transmission while maximizing system life.

All materials selected for use in the μ CAT objectives are ultra-low outgassing to minimize sources of contamination. μ CAT designs are free of cemented surfaces which are known to degrade system performance and reduce lifetime by lowering transmission in UV applications.

Corning designs include materials specifically selected to optimize transmission at wavelength and specially developed coatings are applied to the optical surfaces to maximize transmission and lifetime.



Schwarzschild Design



Tropel® μ CAT™ Design

Which do you think performs better?

UV Micro-objectives for High Performance Applications

Because of the low obscuration incorporated into the design, the μ CAT can be used in inspection applications with partial coherent illumination conditions, or to inspect images on reticles and wafers. μ CAT objectives are currently utilized in OEM applications including photomask and wafer inspection and writing.

UV Optics for High Performance Imagery, Interferometry, and Inspection Applications

All μ CATs are corrected at specified wavelength ranges and are certified at those UV wavelengths to verify their performance. A Certificate of Conformance and wavefront map are included with every micro-objective manufactured. All μ CATs are certified for diffraction limited performance. Standard wavelengths are 193 nm, 213 nm, and 248 nm, with additional wavelengths and configurations available with special orders.

Tropel® μ CAT™ micro-objectives are available to special order at different wavelengths, numerical apertures and mechanical configurations. Please contact Corning for your specific requirements. Specifications are subject to change.

CORNING

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