

# armstrong optical

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## $\mu$ Phase<sup>®</sup> Lenses

### $\mu$ Lens PLANO and SPHERO

The collimated test objectives  $\mu$ Lens PLANO and the spherical objectives  $\mu$ Lens SPHERO complement the  $\mu$ Phase<sup>®</sup> interferometry systems and allow for increased flexibility and modularity of the complete system.

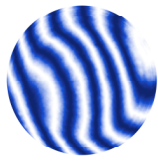
The  $\mu$ Lens PLANO objectives allow for measurements of flat surfaces or optical systems in transmission from 2 mm - 150 mm. The spherical objectives  $\mu$ Lens SPHERO enable to test spherical and aspherical surfaces with radii up to 225 mm (convex) and 98 mm diameter (convex), as well as optical systems in transmission.

#### Further Advantages:

- Existing  $\mu$ Phase<sup>®</sup> systems can be expanded easily and at low cost thanks to the modularity and compatibility of the objective design.
- Testing of small samples with radii of curvature under 1mm is possible.
- High measuring accuracy through minimum wavefront aberration of  $\mu$ Phase<sup>®</sup> and  $\mu$ Lens SPHERO objectives.
- Field of view correction allows high measurement safety and interferometry with high fringe densities.



$\mu$ Phase<sup>®</sup> objectives



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Select the Appropriate Objective from the Following Tables

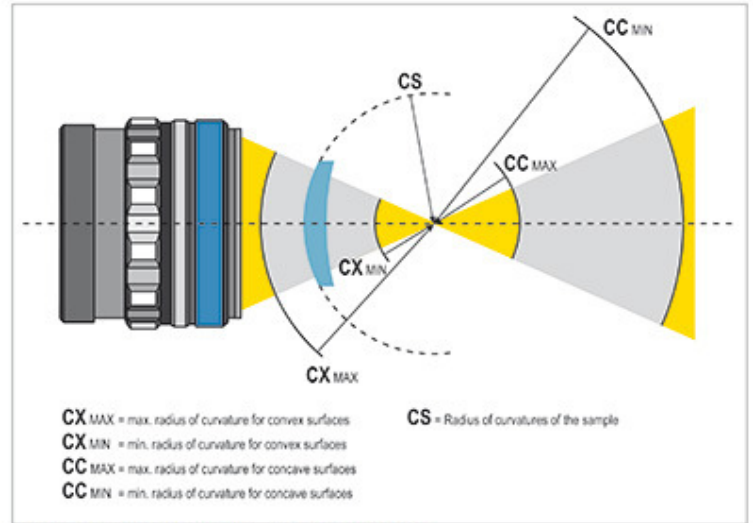
### Three Steps to Your Spherical Objective

1. Choose from "μLens SPHERO table" the spherical objectives which meets the requirement:  $CX_{max} > CS > CX_{min}$  or  $CC_{max} > CS > CC_{min}$  SPHERO"
2. Calculate the necessary f/# or max. diameter for the sample with

$$f/\# = \frac{\text{Radius of curvature of the sample (CS)}}{\text{Diameter of the sample}}$$

and check if the objective is the right choice: check if the f/# of the chosen objective is smaller than the calculated value.

3. Choose from the table "μLens PLANO" the appropriate plano objective corresponding to the spherical objective



μPhase® objective focussing range for imaging of spherical surface

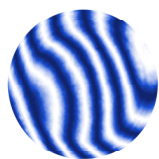
### μLens® PLANO Table

μLens PLANO	Ø [mm/inch]	Sample diameter	Focusing Range [mm]*
μLens PLANO 2	2 / 0.079	0.2 - 2	0.6
μLens PLANO 10**	10 / 0.39	2 - 10	19
μLens PLANO 50	50.8 / 2	10 - 50.8	250
μLens PLANO 100***	101.6 / 4	20 - 101.6	900
μLens PLANO 150***	152.4 / 6	30 - 152.5	2100

\* Internal focusing only possible with μPhase® 1000 with μLens objectives tested according to TRIOPTICS standards. Focusing range begins at the outer lens surface

\*\* Concave testing spacer required

\*\*\* Technical specifications for matching spherical objectives available on request



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## μLens® SPHERO Table

μLens SPHERO objectives for combination with μLens PLANO 10

Description	f/#	CXmax*	CXmin*	CCmax*/**	CCmin*/**
μLens SPHERO 10 f/0.7	0.7	8.0	2.2	-3.1	- ∞
μLens SPHERO 10 f/1	1	13.0	4.4	-6.0	- ∞
μLens SPHERO 10 f/1.5	1.5	20.0	8.4	-15.3	- ∞
μLens SPHERO 10 f/3	3.0	43.0	24.7	-330.3	- ∞
μLens SPHERO 10 f/5.2	5.2	73.0	52.0	-266.0	- ∞

\* Internal focusing only possible with μPhase® 1000

\*\* Concave testing spacer requested

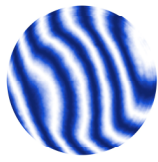
μLens SPHERO objectives for combination with μLens PLANO 50

Description	f/#	CXmax*	CXmin*	CCmax*/**	CCmin*/**
μLens SPHERO 50 f/0.7	0.7	26	5	-6	- ∞
μLens SPHERO 50 f/1	1	45	10	-13	- ∞
μLens SPHERO 50 f/1.5	1.5	70	19	-30	- ∞
μLens SPHERO 50 f/2.4	2.4	130	45	-102	- ∞
μLens SPHERO 50 f/4.1	4.1	225	106	-573	- ∞

\* Internal focusing only possible with μPhase® 1000

μLens SPHERO objectives for combination with μLens PLANO 100 and 150

Information about objectives for the combination with μLens PLANO 100 and 150 on request.



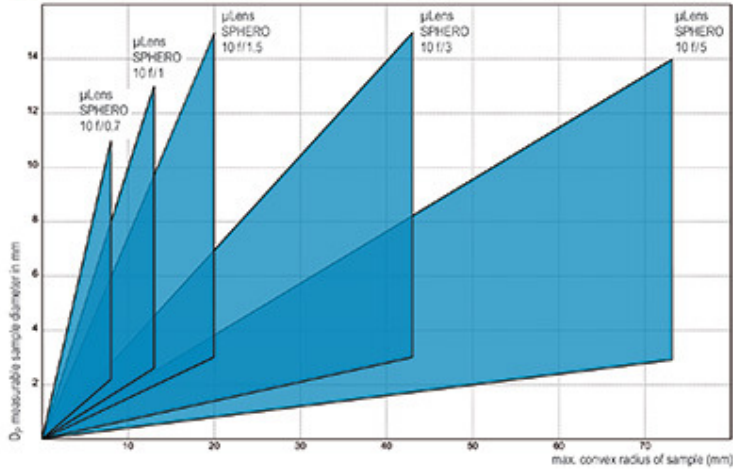
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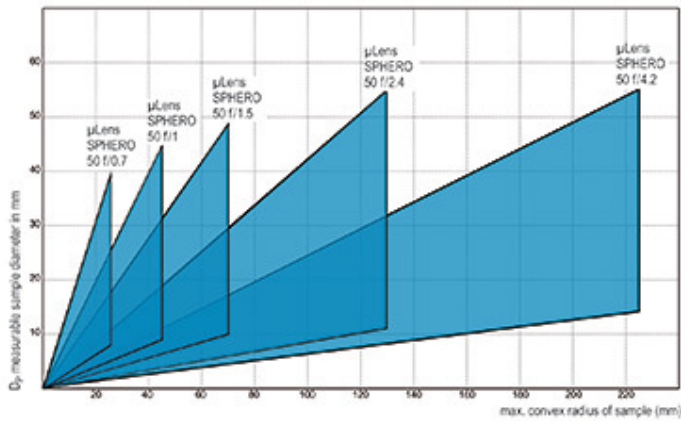
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## Saw Tooth Diagram for the Selection of the Objective

$\mu$ Lens SPHERO objectives for combination with  $\mu$ Lens PLANO 10



$\mu$ Lens SPHERO objectives for combination with  $\mu$ Lens PLANO 50



$\mu$ Lens SPHERO objectives for combination with  $\mu$ Lens PLANO 100 and 150  
on request