



Ultra Sensitive Imaging

## Exploit the full field of view and resolution available from the new generation of large area sCMOS cameras

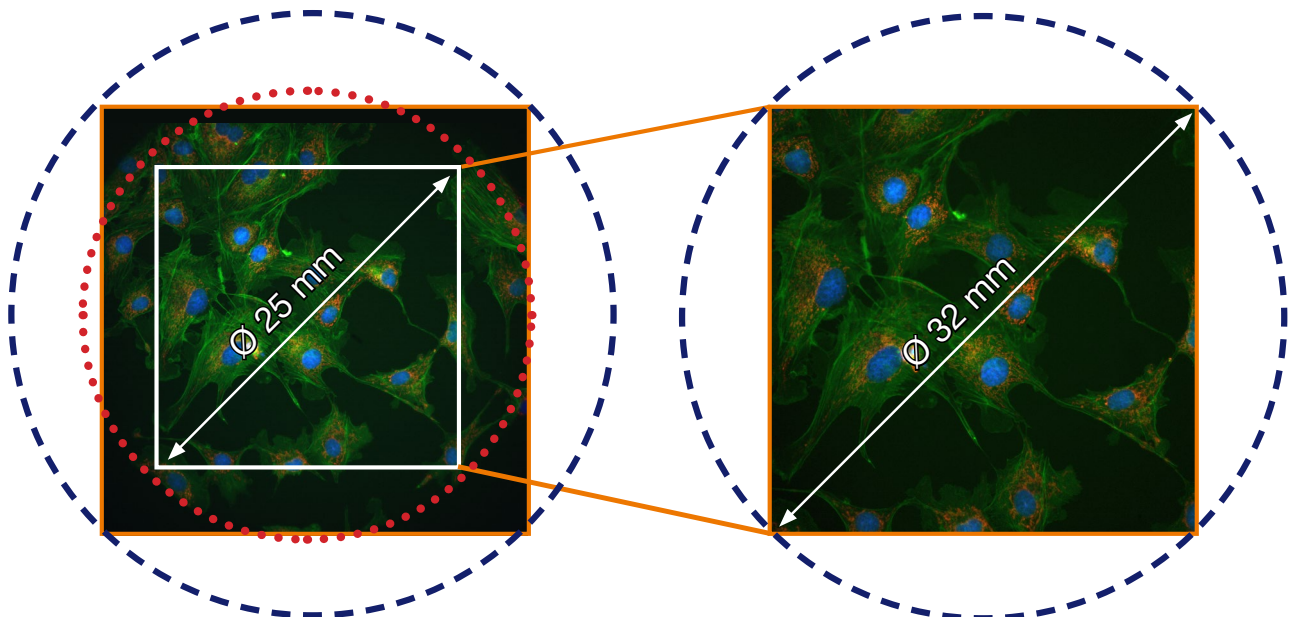
Andor's new back-illuminated sCMOS **Sona 4.2B-11** camera offers a large sensor area with an impressive 32 mm diagonal. In order to utilize the full field of view and resolution available you may require a **magnifying coupler unit (MCU)** for your microscope. Andor offer a range of MCUs for optimizing the field of view for several common types of modern fluorescence microscopes.

### Without Magnification

1.49 NA, x60 objective, no additional magnification

### With Magnification

1.49 NA, x60 objective and x1.5 lens tube magnification



Without additional magnifying coupler/tube lens:

- × Full sensor area not utilised
- × Vignetting effect

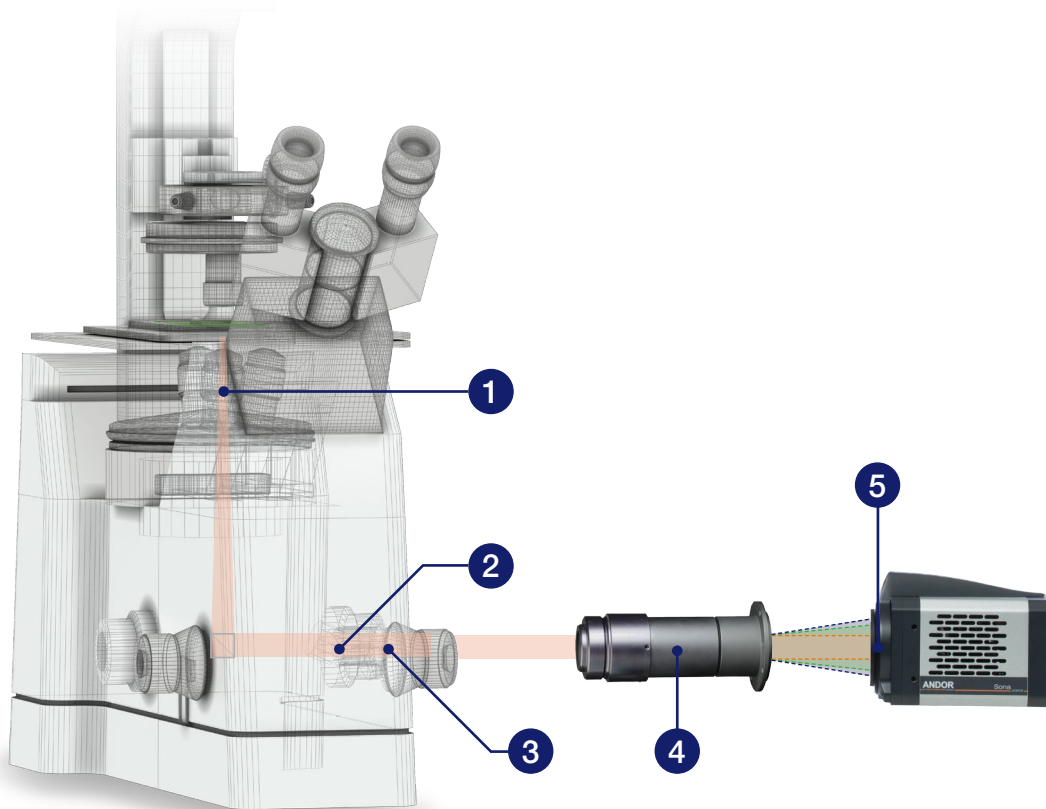
With additional magnifying coupler/tube lens eg. with tube lens providing x1.5 magnification:

- ✓ Uniform image across full  $\varnothing$  32mm sensor area
- ✓ Maintains Nyquist oversampling

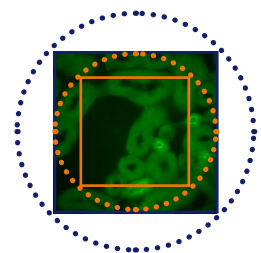
# Selecting the Appropriate Magnifying Coupler Unit

There are many possible combinations of various manufacturers' tube lenses, their native microscopes' couplers and the Andor MCU.

These should be selected so that the image overfills the sensor area, but also that Nyquist oversampling is still maintained. This ensures both maximum field of view and resolution.



- 1 Objective lens**  
Use lower magnification objectives e.g. x40 and x60 to maximize on-sample field of view while preserving resolving capability when combined with additional coupler magnification such as the MCU.
- 2 Microscope output port**  
Wider aperture ports are readily available up to Ø25 mm and up to Ø32 mm aperture (FN32) is also now available.
- 3 Tube Lens**  
Tube lenses of different focal lengths and magnifications are available to match the output of the microscope with various accessories.
- 4 MCU**  
The MCU provides additional magnification so that the output from the microscope port can be matched to sensor area of the Sona.
- 5 Sensor**  
The Sona 4.2B-11 sensor is Ø32 mm (2048 x 2048, 11 x 11  $\mu\text{m}$  pixels). Due to this size additional magnification such as from the MCU is required to fill the sensor area.  
Sona 2.0B-11 has a smaller Ø22 mm area and is perfectly matched to 22 mm C-mount without additional magnification.

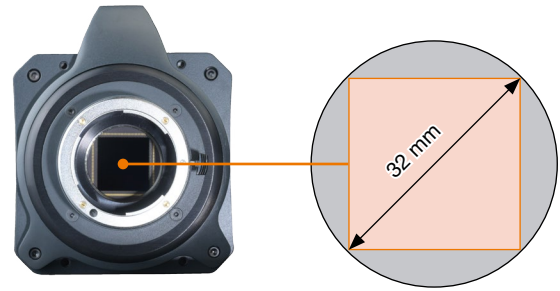


Relative sensor and aperture sizes (shown actual size)

- Ø22 mm
- Ø32 mm

## Sona 4.2B-11

The following table presents sets of commonly used magnifications and components as shown in the lightpath diagram on page 2. These combinations make full use of the Sona 4.2B-11 sensor providing different on-sample FOV.



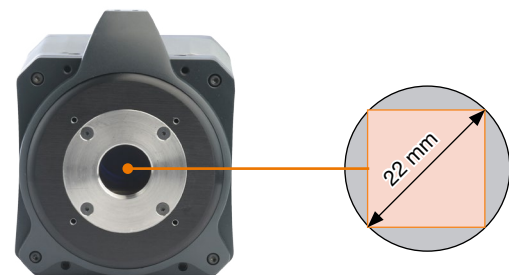
Microscope Configuration			④ Magnifying Coupler (MCU)	⑤ On-sample FOV (mm)
① Objective Magnification	NA	③ Microscope Tube lens (or native coupler)		
x60	1.4	not present	not present	0.37
		x1.5	not present	0.35
		not present	x2	0.27
		x1.5	x2	0.18

For more detailed information on specific combinations please refer to the tech note *Optimizing Field of View and Resolution in Microscopy: Matching sCMOS Camera to Objective Lenses*.

Description	Order Code
MCU with x2 magnification for matching Sona to Leica Microscopes	<b>MCU-SONA-LEI</b>
MCU with x2 magnification for matching Sona to Nikon Ti Series (TiE and Ti2) Microscopes	<b>MCU-SONA-NIK-TI</b>
MCU with x2 magnification for matching Sona to Olympus Microscopes	<b>MCU-SONA-OLY</b>

## Sona 2.0B-11

The Sona 2.0B-11, with its smaller 2.0 megapixel sensor is a perfect match for modern microscopes that have a standard 22 mm C-mount port.



Microscope Configuration			④ Magnifying Coupler (MCU)	⑤ On-sample FOV (mm)
① Objective Magnification	NA	③ Microscope Tube lens (or native coupler)		
x100	1.49	not present	not present	0.22

When coupled with a x100 objective there is no need for an additional coupler.

A magnifying coupler can be used if required for e.g. smaller port apertures, or for lower objective magnifications.

Please refer to the tech note *Optimizing Field of View and Resolution in Microscopy: Matching sCMOS Camera to Objective Lenses* for more information.

# ORDER TODAY



Need more information? At Andor we are committed to finding the correct solution for you. With a dedicated team of technical advisors, we are able to offer you one-to-one guidance and technical support on all Andor products. For a full listing of our local sales offices, please see: [andor.com/contact](http://andor.com/contact)

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