

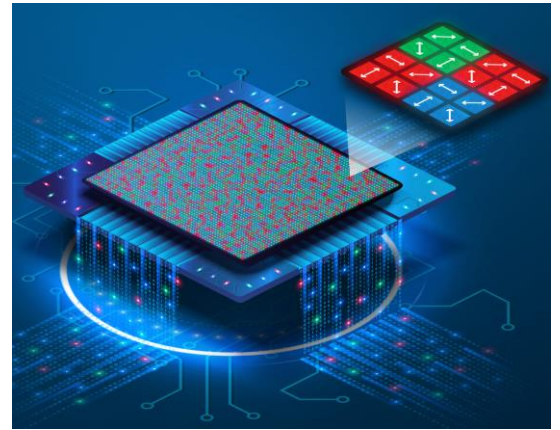


# The Pol-RGB SPAD camera

A pixel metasurface-integrated technology (PMiT) product

The Pol-RGB SPAD camera is the first commercialized single-photon avalanche diode (SPAD) camera that can detect all polarizations and colors of light in a single frame. It also features a record high polarization extinction ratio and a highly precise color reconstruction.

This camera offers enhanced sensing due to the additional polarization interaction with the measured sample or object, and the single-photon sensitivity of detection. Differently from previous spectro-polarimetric cameras, the seven times increase in polarization extinction ratio offers a much lower polarization noise level and thus higher polarization contrast, inherently providing unparalleled results.



The Pol-RGB SPAD camera represents a breakthrough in imaging advancements leveraged by pixel metasurface-integrated technology (PMiT). Nanostructured metasurfaces make up a multifunctional single layered filter array that makes for a versatile compact module.

## Key features

- Full color reconstruction
- Single frame polarimetry
- Polarization extinction ratio: -17 dB (60:1)
- Resolution: 512x512
- 100,000 fps
- Min. exposure time: 6ns

## Applications

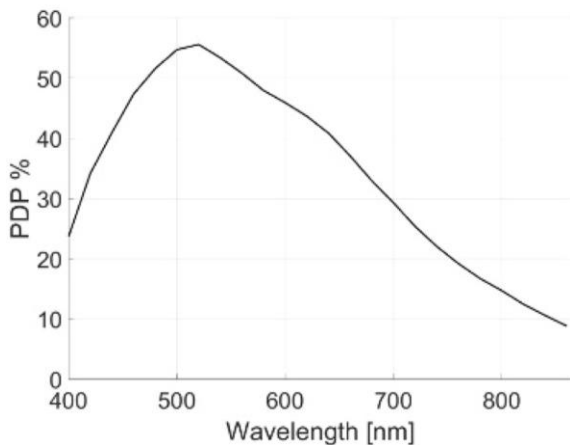
- Defense imaging
  - Material classification
  - Target recognition
- Cancer diagnosis/research
- R&D
- Satellite imaging
  - Climate
  - Defense
  - AgriTech



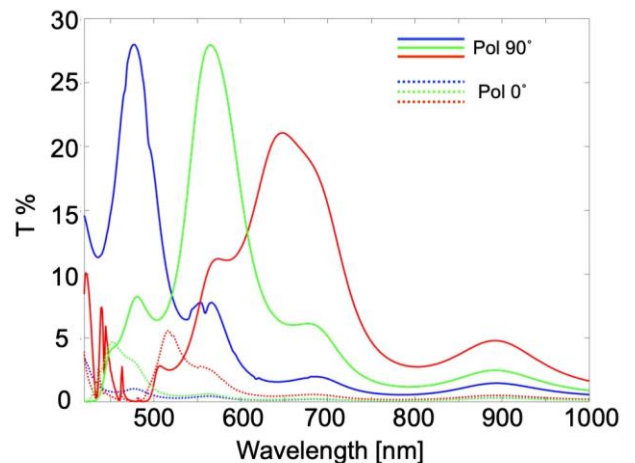
# Pol-RGB SPAD

The photon detection probability (PDP) is greater than 50% at approximately 500nm. It is important to mention that this curve does not reflect color or polarization filtering from the PMiT. The below polarization extinction ratio (PER) figure however shows the efficiency in polarization detection, which stands on average at a value of 50. The PER curves are a result of simulations, pending product testing. Curves from the devices only differ by at most 5%. In addition, a complete table of specifications is available below.

## Photon detection probability (PDP)



## Polarization extinction ratio (PER)



<b>Resolution</b>	512x512
<b>Color Filtering</b>	470nm (B), 550nm (G), 640nm (R)
<b>Polarization</b>	0°, 45°, 90°, 135° / DoLP (polarization degree, $\theta$ )/DoP (ellipticity, $\phi$ )
<b>Pixel Size</b>	16 $\mu$ m
<b>Fill Factor</b>	10.5%
<b>Maximum fps</b>	100,000
<b>Minimum exposure time</b>	6ns
<b>Peak QE @520nm</b>	50%
<b>PER</b>	-14 to -17 dB

For more information: [sales@metahelios.co.uk](mailto:sales@metahelios.co.uk)