

Micropolarization cameras are ready to solve emerging technological and engineering challenges

Polarization cameras could solve many imaging challenges

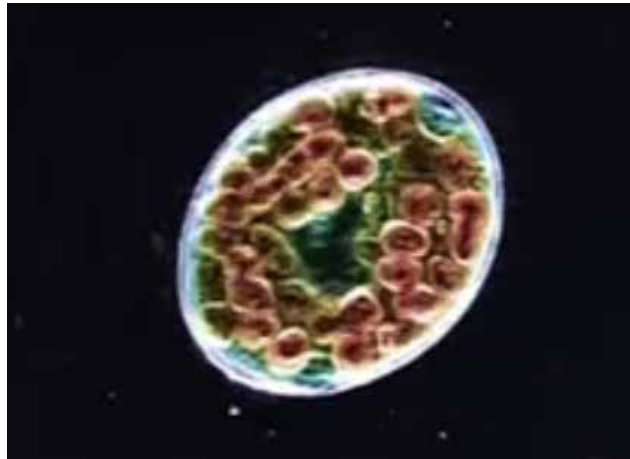
Having pioneered micropolarizing techniques—a way of capturing an image in a single frame that includes multiple polarization angles—it's no wonder 4D is way ahead in offering more camera options, and the best analysis software available. We made blur-free, compact, and fast polarized images a low-cost reality. Because we released our first polarimeter camera back when they were more of an R&D oddity than a critical piece of industrial hardware, we have more depth and alternatives. And we've seen more ways to use them, and more ways to optimize performance.

Some tough applications for pixelated polarization cameras

4D's PolarCam cameras, with the PolarView software, are ready to solve emerging technological and engineering challenges.

Biomedical

In microbiology, our patented method and software can reveal cellular detail with unique overlays in microscope images.



Combining imaging techniques can provide new ways of seeing cells, without using cell-killing light or toxic stains. This image was created using several image overlays including our patented technology and proprietary software.*

Wavelengths for seeing through fog and silicon

Whether clouds of dust and vapor, or materials that are transmissive in non-visible bands, PolarCam polarization cameras could make penetrating images of terrain and silicon possible. While all our current cameras work between 360nm and 1.06 μm , we can work with you to polarize a camera of your choosing. Contact our engineering department to get a pixelated polarization camera built to the wavelength response you need.

Machine vision applications

Customers can take advantage of PolarCam's high frame rate and low cost implementation to verify that every blister pack has a pill in a pharmaceutical packaging plant, or rapidly inspect parts to see if labels are affixed properly. They can inspect shiny machined

*Use of a micro-polarizing camera for interferometry requires a license from 4D Technology Corporation

parts without the blind spots caused by glare, or qualify polarization films for mass produced consumer products.

Autonomous vehicle vision

Drones may need to clearly differentiate manmade objects from organic materials, a driverless car needs improved contrast in shadows, and an autonomous truck may need to build three-dimensional shape models of the world around itself. Fast, full resolution linear polarization data can help make it possible.



In backlit conditions after sunset, machines could have trouble seeing man-made objects. Cameras that capture polarization can make these objects stand out.

Birefringence to make Augmented Reality/Virtual Reality practical

AR/VR will need mass produced injection molded optics at a grand scale. To meet the demand for them, and opto-mechanical mounts that don't distort images, high speed birefringence inspection will be necessary. PolarCam can help develop practical solutions—it's ideal for building low-cost inspection stations, or for helping R&D troubleshoot and verify designs. We helped a lens designer solve a thorny problem with her optical mounts, quickly and easily, by setting up an active illuminated test.



PolarCam: A polarimeter made to your specifications

4D offers a solid range of standard visible light cameras and accessories for common applications—varying by resolution and frame rates—and could make virtually any imaging sensor into a polarization camera, including IR and UV models. 4D is unique in this capability. [Contact us](#) about the camera you want to use.

PolarView: Better analysis and development software

With the easy to use PolarView software, you get more ways of viewing, analyzing and enhancing your polarized images. Or make your own customized control, analysis and output with our PolarCam Software Developer's Kit. These tools help you process active or passively illuminated scenes.

Review and analyze moving images—like birefringence caused by an optical mount—in PolarView, to see changes over time. Analyze cross sectional histograms, or evaluate sub-regions of the image.

Contact us today about getting your cameras customized—or obtaining polarized non-visible spectrum images—and using great analysis tools.

[Click here for more about PolarCam and PolarView](#)