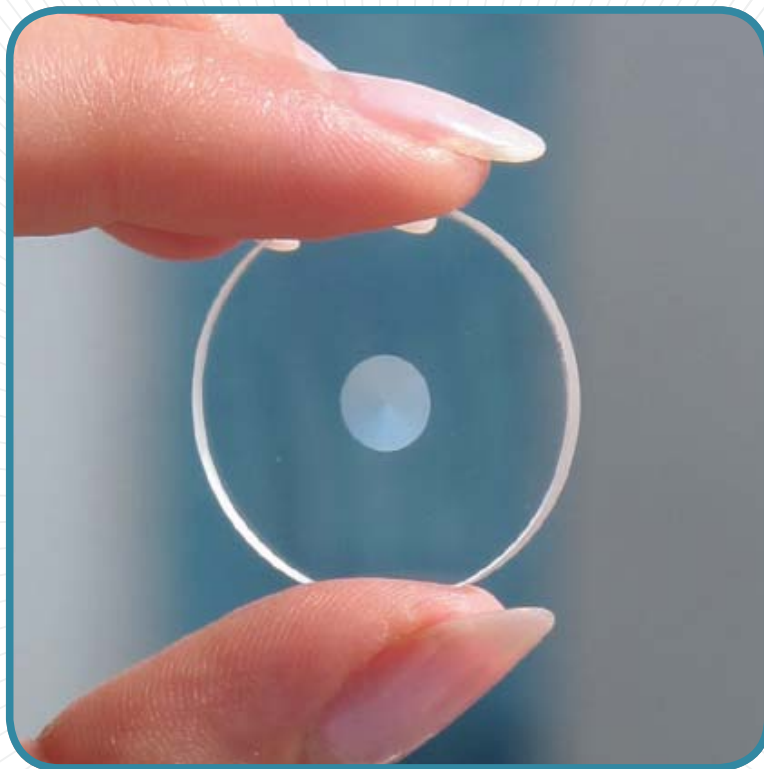




Workshop of Photonics



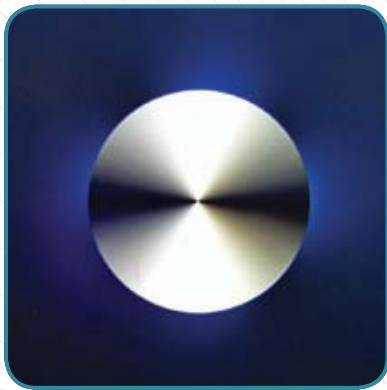
# S-waveplate - linear to radial polarization converter

*Workshop of Photonics* presents new **S-waveplate polarization converter**.  
S-waveplate is a super-structured waveplate which converts linear polarization to radial or azimuthal polarization.

# S-waveplate - linear to radial polarization converter

S-waveplate is a super-structured waveplate which converts linear polarization to radial or azimuthal polarization. Product is unique for its high damage threshold 100 times exceeding alternative devices\*. Unique results achieved by forming birefringent nanogratings inside a bulk fused silica glass. Enabling technology was developed by Prof. Peter G. Kazansky group from Optoelectronics Research Centre at Southampton University.

\* According to ISO 11254 – 2 is  $\theta_{1000\text{-on-1}} = 22.80 \pm 2.74 \text{ J/cm}^2$ , at  $\lambda = 1064 \text{ nm}$ ,  $\tau = 3.5 \text{ ns}$ ,  $f = 10 \text{ Hz}$ .



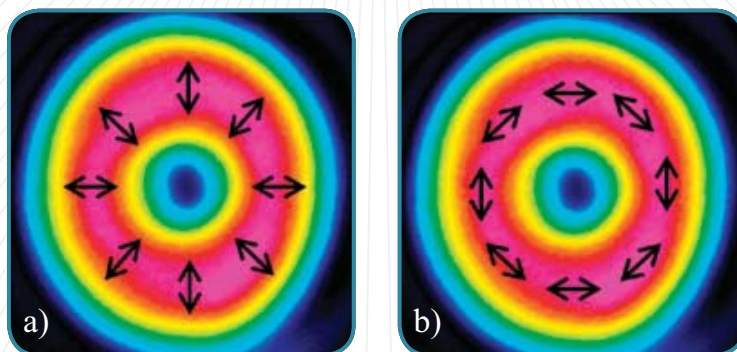
Microscope photo made with crossed polarizers

## S-waveplate features:

- Converts linear polarization to radial or azimuthal
- Can an optical vortex
- High damage threshold
- 100% polarization conversion
- 55-90% transmission (wavelength dependent)
- Large aperture possible (up to 10 mm or bigger; standard is 6 mm)
- No glued components – more resistant to heat
- No “ineffective center” problem
- No segment stitching

How can S-waveplate benefit in your applications? Radial polarization enables focusing of laser beam into smaller spot size (with high NA>0.9 optics). For polarization direction sensitive applications azimuth polarization allows same machining properties in all directions). It is also applicable in optical tweezers, STED microscopy or any other depletion application.

Standard S-waveplate models are available for 488 nm, 515 nm, 532 nm, 632 nm, 800 nm, 1030 nm, 1064 nm, 1550 nm wavelengths. Dielectric anti-reflection coatings can be applied on both converter sides. Custom wavelength, size and configuration converters are available at request.



Converted beam intensity distributions ( $\text{TEM}_{01^*}$  mode) with electromagnetic field direction shown a) radial, b) azimuthal polarization

[www.wophotonics.com/products/accessories/radial-polarization-converter/](http://www.wophotonics.com/products/accessories/radial-polarization-converter/)

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