

colorPol[®] - Nano-Technology Glass Polarizers

- Wavelength selectable polarization in the UV, VIS, and IR
- High contrast
- Operating temp. -50 °C ... +400 °C
- High resolution customized patterns
- Can be handled and processed like glass
- Resistant to UV radiation, chemicals, and scratches

The CODIXX AG, a new German company founded in 1998, has developed a unique technology for the production of dichroic glass polarizers in the last two years. Based on soda-lime display glass containing metallic silver nano particles a process has been developed to stretch the silver clusters and to give them all a uniform orientation causing the polarizing effects.

colorPol[®]-polarizers are flat and thin like foils, can be processed like silicon wafers, are resistant to UV radiation, solvents, and temperatures from very low temperatures up to +400 °C.

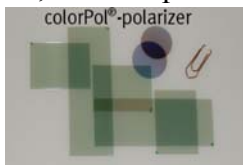


Fig. 3 various colorPol[®]-Polarizer

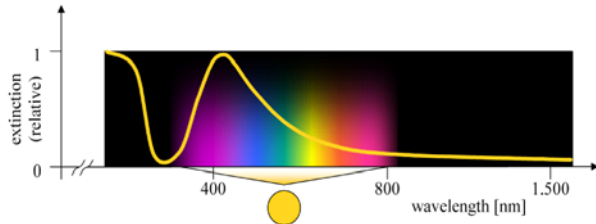


Fig. 1 absorption spectra of soda-lime-glass containing spherical silver-cluster

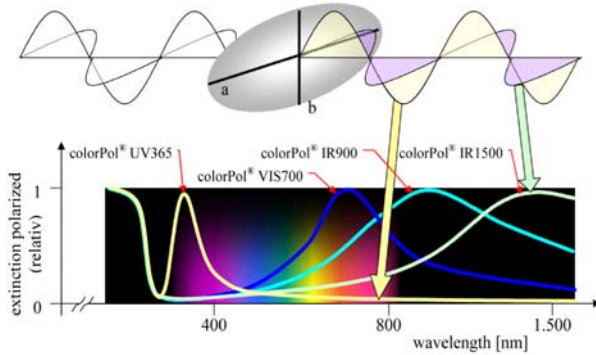


Fig. 2 extinction of uniformly oriented prolate silver particles

A unique feature of colorPol[®]-polarizers is the chance to produce patterned polarizers. Based on the special properties of the colorPol[®]-polarizers CODIXX can produce polarizers with patterns of neighboring areas with a different orientation of the polarization and/or wavelength of maximum polarization (color in the VIS range). The dimension of the areas can be scaled down to the micron range. Samples of patterned colorPol[®]-polarizers are shown in Fig. 5-6.

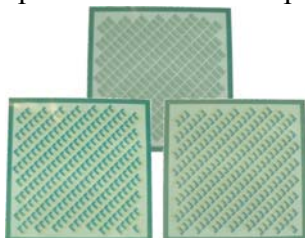


Fig 5: colorPol[®] S: 'L-shaped' structures polarizing perpendicular to each other for mounting on a silicon-chip after dicing

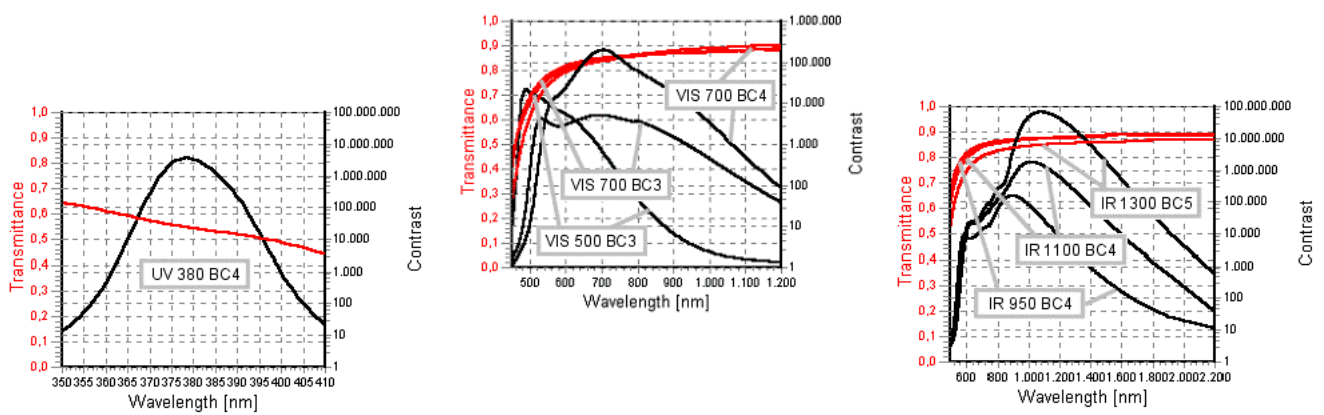
The sample in Fig. 5 is a glass wafer with chips containing 2 ranges with different orientation of polarization. Fig. 6 shows a polarizer with 3 ranges of polarization shifted by 60°. The wavelength of maximum polarization can be chosen freely for each range.



Fig 6: colorPol[®] S: pie-shaped patterns with 3 directions of polarization displaced 60° to each other

colorPol[®]-polarizers have a high contrast ratio and a high transmittance. The wavelength ranges of maximum polarization and contrast ratio can be adjusted according to customer's requests. The standard polarizer is available for the UV-range (340nm - 410nm) and for the VIS and NIR range (450nm - 1700nm). The contrast ratio classes are 1:10000, 1:1000 and 1:100. Higher contrast ratios are available for selected wavelength ranges. The standard thickness of the colorPol[®]-polarizer is 200 - 400 μm . Other thicknesses can be obtained by grinding and polishing or by laminating the glass foils on substrates, sustaining all the excellent properties of the polarizer.

Currently polarizer dimensions of maximum 100mm x 30mm can be reached, and the shape can be chosen by the customer. To improve transmittance and to reduce the reflectivity the colorPol[®]-polarizer can be ordered with an AR-layer coating.



colorPol[®] Applications include:

- optical isolators
- optical sensors
- fiber applications
- measurement equipment
- light sources for polarized radiation
- fiber gyroscopes

LASER COMPONENTS USA, Inc.

9 River Road
 USA Hudson, NH 03051
 Phone: + 1 603 821 7040
 Fax: + 1 603 821 7041
 info@laser-components.com
 www.lasercomponents.com