



# Polarimetry

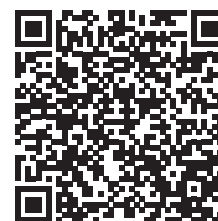
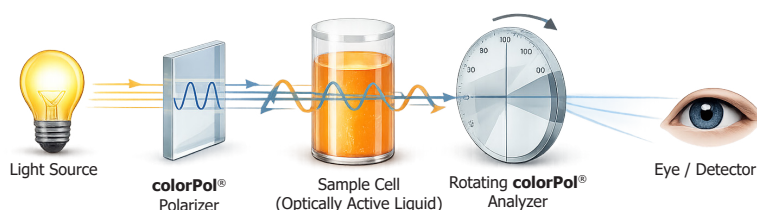
## OPTICAL CONCENTRATION MEASUREMENT



### PRECISION POLARIMETRY WITH STABLE POLARIZATION CONTROL

Polarimeters are used to measure the concentration of optically active materials. They analyze changes in the polarization state of light after it has passed through a sample. This change—typically a rotation of the polarization plane—is directly related to concentration, molecular structure, or chirality and is detected by converting polarization changes into intensity variations. For example, in sugar analysis, the measured optical rotation is directly proportional to the sugar concentration of the sample.

A wide range of applications, including chemical analysis, pharmaceutical quality control, life sciences, materials characterization, and optical research, relies on polarimetry.



**VIS 700 BC4**

### THE INTEGRATION CHALLENGE

Because the measurement principle of a polarimeter is directly based on detecting small changes in polarization, the performance of the system is highly sensitive to the quality of the polarization optics. System developers are therefore confronted with challenges such as:

- Insufficient polarization purity limiting angular resolution and measurement sensitivity
- Polarization drift causing offset errors and increased recalibration effort
- Wavelength-dependent behavior affecting accuracy in single- and multi-wavelength polarimeters

Any deviation from a well-defined and stable polarization state directly translates into measurement uncertainty, particularly in high-precision concentration measurements such as sugar analysis.

### IN PRACTICE

How **colorPol®** solves the integration challenge:

- **High polarization purity:** High contrast ratios guarantee a high degree of polarization at the sample entrance, enabling precise conversion of optical rotation into measurable intensity changes
- **Accurate angle detection:** A uniquely low polarization axis tolerance of  $\pm 0.05^\circ$  (upon request) or  $\pm 0.5^\circ$  in standard quality enables precise analyzer alignment and improves angular resolution in high-performance polarimeters
- **Broad spectral compatibility:** Polarizers available from UV to VIS, NIR and MIR support wavelength-specific as well as tunable polarimeter concepts
- **Long-term stability:** Glass-based polarizer technology prevents polarization drift caused by temperature variations, humidity, or aging, ensuring reproducible concentration measurements over long operating periods

# WHY DEVELOPERS CHOOSE US

## RELIABLE PERFORMANCE

Glass-based polarizers remain stable under UV exposure, humidity and cleaning cycles. Optical characteristics stay constant even after repeated sterilization.

## EASY SYSTEM INTEGRATION

Produced on glass wafers, **colorPol**® elements are compatible with automated processes such as pick & place or bonding. This ensures precise assembly and efficient series production.

## DESIGN FREEDOM

Custom wavelength ranges, polarization axes, shapes and AR coatings allow developers to design their system exactly as planned – without adjusting to component limits.

## CONSISTENT QUALITY

In-house production and ISO 9001:2015-certified processes ensure reproducible optical performance and full traceability across batches.

## LONG-TERM ECONOMY

High transmission and mechanical durability reduce recalibration, downtime and replacements, lowering total system cost.

**colorPol**® polarizers give developers freedom of design with reliable, long-lasting optical components made for integration and scalability.

## codixx AG

Innovation in Glass – Reliability & Quality

We develop and produce high-precision, customized polarizers and substrates that set new standards. Our products stand for the highest quality, long-lasting performance, and reliable availability.

Manufactured in Germany and supported by stable supply chains, we offer our customers maximum planning security and reliability – even for demanding applications.



[www.codixx.com](http://www.codixx.com)